LIFE AND A GLASS EARTH

Milk, meat, albumen, bacteria, viruses, lungs, hearts—all are protein. Wherever there is life there is protein. Protein is of fairly recent origin, considering the hot state of the earth in the beginning. How the proteins and therefore life originated has puzzled biologists and chemists for generations. Accepting the speculations of the Russian scientist A. I. Oparin of the Soviet Academy of Science, Prof. Harold C. Urey assumes that in its early days the earth had an atmosphere of methane (marsh gas), ammonia and water. Oparin suggested highly complex but plausible mechanisms for the synthesis of protein and hence of life from such compounds.

In a communication which he publishes in Science, one of Professor Urey's students, Stanley L. Miller, describes how he tested this hypothesis. A laboratory earth was created. It did not in the least resemble the pristine earth of two or three billion years ago; for it was made of glass. Water boiled in a flask so that steam mixed with Oparin's gases. This atmosphere was electrified by what engineers call a corona discharge. Miller hoped that in this way he would cause the gases in his artificial atmosphere to form compounds that might be precursors of amino acids, these amino acids being the bricks out of which multifarious kinds of protein are built. He did much better. He actually synthesized some amino acids and thus made chemical history by taking the first step that may lead a century or so hence to the creation of something chemically like beefsteak or white of egg. Miller is elated, and so is Professor Urey, his mentor.

Biologists long ago accepted the idea that the earliest forms of life did not require oxygen and that the oxygen of our air came chiefly from green plants. Oparin develops this hypothesis. Suppose that he is right, and suppose further that a living cell came out of some broth of the right composition. Millions of years would have to elapse before anything much higher would evolve; for evolution is a slow process. It is not an impossibility that a few generations hence synthetic muscle will be created, which will not be alive but which can be stretched just as we stretch our living muscles, which will spring back when released and which will even twitch when it is poked. These are only wild surmises as yet. But Miller, treading on firmer ground, dwells on the possibility of improving his technique so that amino acids may be produced in factories, which would in itself be an extraordinary accomplishment.