

librium. The process is complicated by the intervention of all the other acids and bases of the body. Of these, however, only phosphates, and in lesser degree proteins, are important. Thus it is certain that in the one universal chemical equilibrium of protoplasm which has thus far been defined and quantitatively described the carbonates take a principal part.

It is not possible to explain the significance of carbonic acid in this physiological process as chiefly an adaptation; for natural selection can have nothing to do with the occurrence of carbonic acid in the living organism, or, presumably, with the nature of the original living things upon the earth.<sup>1</sup> The presence of carbonic acid is inevitable, and whatever the first forms of terrestrial life may have been, certain it is that carbonic acid was one of the constituent substances. From that day to this it has steadily fulfilled the function of regulating the reaction of protoplasm, and of body tissues and fluids.

The recent studies of Hasselbach and Lunds-gaard<sup>2</sup> indicate that the hydrogen ion concentration of normal blood at body temperature

<sup>1</sup> It was this obvious fact which originally led me to a re-consideration of fitness.

<sup>2</sup> "*Biochemische Zeitschrift*, Vol. 38, p. 77, 1912.