Such an arrangement is evidently much less simple than the other, the sexual way, but as said before—it has become the method among all higher organisms. There must be very important advantages connected with it. We are not able to give clear and complete reasons for the general adoption of the sexual method, but one advantage has been indicated by contrast. In sexual reproduction—say in Spirogyra, a simple plant fragments of two individuals take part in the formation of each new spirogyra individual. The parent filaments of spirogyra being free floating plants, did not grow under exactly similar conditions and are not likely to be offspring of the same two parents. Hence they will have qualities which are somewhat unlike. This variety of qualities will be inherited by their offspring, and the offspring will thereby be more adaptable and plastic than though derived from a single parent having but one set of qualities. As the young spirogyras float about they will certainly have a better power of adapting themselves to the variety of conditions they will meet, than has the young fungus, which has no varied assortment of qualities, derived from a varied assortment of ancestors. It is certain this is an important advantage, but probably there are many others yet to be learned. But mark, that by acquiring this adaptability protoplasm has secured the power to live under all sorts of conditions, and this adaptability seems to be largely the result of sexual reproduction.

Let us now turn to the ability of many plants to live in the light. They must in some way prevent the actinic rays from penetrating them through and through. We find that protoplasm has responded to the danger of destruction by light, by the extremely wise method of changing a deadly enemy into a friend and even into a valuable servant. The change, however, is not in the light but in the protoplasm. In a part of its own substance it develops a green coloring matter—chlorophyll—which it places near the surface, and this absorbs the energy of the light, preventing its killing the inner protoplasm. More than this, through the energy thus captured, the protoplasm is able to accomplish some most astonishing chemical changes. There are certain substances so stable that when a man in his chemical operations forms these substances, he lets them go as waste products. Among these are prominently carbon dioxide and water. The energy required to decompose these substances is so great that under no ordinary conditions of manufacture can we undertake it. But protoplasm, with the energy absorbed from sunlight, quietly takes apart these refractory materials, and builds up their separated elements into such complex substances as starch, fats, and proteids, and as if in derision of man's efforts, gives these to man to be his foods. Man, if properly informed—reverently accepts them, confessing his ignorance and inability to make them for himself. It is suggested—in view of this power of green protoplasm, that greenness is an important condition of progress. Plants, such as bacteria and the other fungi, lacking greenness have to live as man and the other animals do—on the products of the energy and ability of the green plants. It is very probable that it is because of this power of green plants to manufacture an abundance of food for themselves, that large and enduring plant structures become possible.

(To be continued).