

SOLUTION OF THE WORLD-PROBLEMS

modern chemistry along which it has advanced with a rapidity and success beyond all anticipation. The same must be said of physics in respect of the law of the conservation of energy. Its discovery by Robert Mayer (1842) and Hermann Helmholtz (1847) inaugurated for this science also a new epoch of the most fruitful development; for it put physics in a position to grasp the universal unity of the forces of nature and the eternal play of natural processes, in which one force may be converted into another at any moment.

IV.—PROGRESS OF BIOLOGY

The great discoveries which astronomy and geology have made during the nineteenth century, and which are of extreme importance to our whole system, are, nevertheless, far surpassed by those of biology. Indeed, we may say that the greater part of the many branches which this comprehensive science of organic life has recently produced have seen the light in the course of the present century. As we saw in the first section, during the century all branches of anatomy and physiology, botany and zoology, ontogeny and phylogeny, have been so marvellously enriched by countless discoveries that the present condition of biological science is immeasurably superior to its condition a hundred years ago. That applies first of all *quantitatively* to the colossal growth of our positive information in all those provinces and their several parts. But it applies with even greater force *qualitatively* to the deepening of our comprehension of biological phenomena, and our knowledge of their efficient causes. In this Charles Darwin (1859) takes the palm of victory; by his theory of selection he has solved the great prob-