

outdoor research, into the arena of real life. On this I dwelt in the last chapter. Ideas of a cognate kind had already emanated from other schools, such as that of Liebig,—the circulation of life in the different provinces of nature, the interdependence of different species of living things. Isolated investigations, like those of Gärtner and Sprengel, of Huber and Lubbock, on insect life, or of bacteriologists like Pasteur and Boussingault on fermentation and fertilisation, received a fitting place as important chapters in the economics of nature. The problem of life became twofold—the life of the community and the life of the individual: organisation and individuation. Two great questions presented themselves: What is an individual? what is a society of individuals? Physiologists were from of old accustomed to ask the former; economists like Rousseau and Adam Smith had asked the latter question. Both now became questions for the biologist. Physiology and economics joined hands. In isolated instances, as in those of Liebig and von Baer, these two interests had already been united. The real meaning and reason of this union now became clear to every one: it revealed itself as founded on the two characteristic features of life—individuality and co-operation. With the exception of the strong emphasis put by Liebig on the latter side of natural, notably organic processes, biologists before Darwin had mainly studied the phenomena of individual life. In two special directions—in embryology and in the cellular theory—they had made great progress. I have already treated of these advances in their bearing upon morphology, the study of forms, and upon genesis, the study of change

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Organisation  
and individ-  
uation.

29.  
Biology and  
economics.