

men naturally attribute them to invisible powers. Thus the Dyaks of Borneo ascribe sickness to wounds from invisible spears wielded by invisible spirits, and during an epidemic of disease in the Middle Ages the cry often arose that the wells had been poisoned. These crude ideas contain germs of truth, and when we look at Professor Metschnikoff's drawings of a *Daphnia* attacked by a *Monospora* we seem to recognize the invisible darts of the Dyaks, while during an epidemic of typhoid fever we have often to acknowledge that our wells have been poisoned by bacilli.

It is impossible to trace the steps by which the crude ideas of savage peoples regarding physiology, pharmacology and pathology have grown into definite sciences, or even to indicate the most important landmarks, though we naturally think of the names of Aikmaon, Galen and Harvey in physiology; of Nicander, Magendie and Bernard in pharmacology; and of Morgagni, Virchow and Pasteur in pathology. During this century these three sciences have developed with almost incredible rapidity: a complete knowledge of them is enough to tax severely the most retentive memory, and it is almost impossible for any individual to keep up with the advance of all three of them.

But just as the whole subject of astronomy became suddenly simplified by a change of standpoint at the very time when cycles and epicycles became most bewildering, so at the very time when these three sciences are becoming most complex and diverse they appear to be tending to unification and simplification. Pathology, for example, is now becoming to a great extent a branch of pharmacology, for while a few years ago its chief object was to discover, examine and classify the microbes which give rise to disease, it is now striving rather to discover the nature and actions of the ferments and poisons which they form, and by which they are able to cause disease and death in the animals they attack. Pharmacological investigation, instead of being confined to the alkaloids and other poisons formed by higher plants, has now extended to those formed by microscopic plants or microbes, and thus comes to include a great part of pathology.

In the same way, though pharmacology is a branch of physiology, inasmuch as it deals with the phenomena of life as modified by drugs, yet physiology may to a certain extent, be regarded as a branch of pharmacology, because some of the latest researches regarding the processes of life have been made by pharmacological methods, using the products of animal life instead of vegetable poisons. Among the pioneers in this line I may mention my two masters, Kuhne and