

in a great measure by the particular mode of action of the blood vessels of that part. The quantity, and sometimes even the quality of the secretions, are dependent, in like manner, on the conditions of the circulation; and the action of the ducts, which convey the secreted fluids to their respective destinations, is also resolvable into the effects of a muscular power.

The immediate cause which, in these organs, excites the muscular fibre to contraction, may frequently be traced to the forcible stretching of its parts. This is the case in all hollow and tubular muscles, such as the stomach, the heart, and the blood vessels, when they are mechanically distended, beyond a certain degree, by the presence of contained fluids, or other substances. At other times, the chemical quality of their contents appears to be the immediate stimulus inciting them to contraction. But numerous instances occur, in the higher orders of animals, in which these causes alone are inadequate to explain the phenomena of the vital functions. No mechanical hypothesis will suffice to account for the infinite diversity in the modes of action of the organs which perform these functions, or afford any clue to the means by which they are made to co-operate, with such nicety of adjustment, in the production of the ultimate effect. Still less will any theory, comprising only the agency of the muscular power, and the ordinary chemical affinities, enable us to explain how an irritating cause, applied at one part, shall produce its visible effects on a distant organ; or in what way remote and apparently unconnected parts shall, as if by an invisible sympathy, be brought, at the same moment, to act in concert, in the production of a common effect. Yet such co-operation must, in innumerable cases, be absolutely indispensable to the perfect accomplishment of the vital functions of animals.

Nature has not neglected objects so important to the success of her measures, but has provided, for the accomplishment of these purposes, a controlling faculty, residing in the nervous system, and denominated the *nervous power*. Ex-