

He viewed with great conservatism the doctrine of the infectiousness of disease based upon observations that were made possible only by a later perfection in optics and by later advancements in the technique of biologic research. The most that can be said of the relation of the germ theory of disease to that of cellular pathology is, that without invalidating the important conclusions embraced in the latter, it left Virchow's recorded observations unimpaired and undisputed. The new doctrine of the Ions, involving the principle of Osmosis, may bring other and important supplementary facts which shall serve to show that the discoveries of Virchow comprised in the aggregate a single but important link in the imploring chain of science.

The next phase of Virchow's character as a scientist relates to his work in the department of anthropology. This, the science of man in its broadest conception, can scarcely be said to have had more than a mere beginning before Virchow, commencing with his work in biology, was led into it by the widening circle of associated ideas. It may be said, indeed, no valuable contributions were made to the subject during the first half of the 19th century. Blumenbach, Gottingen, had made his famous collection of skulls—his "Golgotha" as he called it—which was the basis of his own investigations, and which may be said to have been the starting point of systematic anthropological study. About the same time—that is the last years of the 18th and the first years of the 19th century—von Sommering, of Frankfurt, studied the eyes, not only with reference to their anatomical detail but with reference to their ethnic significance, while Camper, of Holland, made a careful study of the facial angles. This was practically all that was done with the subject until Darwin issued his "Origin of Species" in 1859. His "Descent of Man," his first contribution to the subject of ethnology, did not appear until 1872. Long before the latter date, however, Virchow had taken up the subject at two points of contact. The first point of contact was developed out of his philosophy of cell genesis, the doctrine that all cells are derived from pre-existing cells, which he promulgated in 1859, and which brought up as a natural corollary the question of variation of type. His antagonists—the believers in special creations—seized eagerly upon this declaration as a refutation of the then rapidly growing materialistic philosophy, and as a vindication of their own ontologic dogmas. If the cell is the vital unit, as Virchow declares, and if the individual is but the sum of cells, they urged then, variation in the individual cannot only occur as the results and commensurately with the variation in the constituent cells; if, they added, like cells always beget like cells, as Virchow declares,