figures? What are the properties of these finite figures as inferred from the properties of their infinitesimally small parts? The infinitesimal methods evidently corresponded with the atomistic view of natural objects, according to which the great variety of observable phenomena, the endlessly complicated properties of natural objects, could be reduced to a small number of conceivable properties and relations of their smallest parts, and could then be made intelligible and calculable.

The general reader who is unacquainted with the numberless problems and intricate operations of higher mathematics can scarcely realise how in these few words lie really hidden the great questions of all the modern sciences of number and measurement; the trained mathematical student will recognise in a process of inversion not only the rationale of such extensive doctrines as the integral calculus, the calculus of variations, the doctrine of series, the methods of approximation and interpolation, but also the application of analysis to geometry, the theory of curves of higher order, the solution of equations, &c. All these various branches were diligently cultivated by the great mathematicians of the eighteenth century, mostly, however, with the object of solving definite problems which were suggested by the applied sciences,[1]

[1] In general it can be stated that the impetus given to mathematical research by the problems set by the applied sciences has been immeasurably greater than that which can be traced to the abstract treatment of any purely mathematical subject. We have a good example of this at the beginning of the nineteenth century in the great work of Laplace as summed up, for the most part, in the 'Mécanique Celeste' and the 'Théorie des Probabilités,' which contain the beginnings and the development of a great number of purely mathematical theories suggested by problems in astronomy, physics, and statistics. On the other side we have at the same time the so-called "Combinational School" in Germany, whose members and