

P R E F A C E.

THE second title assigned to this volume, — namely, **CHEMICAL AND GEOLOGICAL ESSAYS**, — fails to indicate its character and scope, by reason of the indefiniteness of the word *Geology*, which is now commonly used to designate both the Natural Philosophy and the Natural History of our earth, except so far as modern geography and meteorology, and the existing flora and fauna, are concerned; descriptive mineralogy and lithology being inseparable from the study of the earth's crust. In this popular sense, geology is made to include the whole history of organic life in past ages, — a field which rightfully belongs to botany and zoölogy. The fossil remains of extinct organic forms, valuable as they may be in the diagnosis of stratified sedimentary strata, have, however, no geognostic significance save in their chemical and lithological relations; and paleontology should, therefore, be distinguished alike from geogeny and geognosy.

The proper application of these two terms is defined farther on, in an essay on *The Order of the Natural Sciences*. Therein will be seen the subordination of geogeny to dynamics and chemistry, and of geognosy to descriptive and systematic mineralogy, which are included under the respective heads of Mineral Physiology and Mineral Physiography, suggesting, as the more definite title of the volume, **MINERAL PHYSIOLOGY AND PHYSIOGRAPHY**. The essays of which it is made up have been written in accordance with a predetermined plan, which is now