

PREFACE TO THE FOURTH EDITION.

THE present Volume contains above one fourth more letterpress than the Third Edition : being printed closer, and in a fuller page, in order to comprise numerous additional facts, and the important discoveries recently made in Geology. There are five entirely new chapters, beside considerable additions to most of the former chapters. The new chapters in this Edition are :—Chap. XV. On the Formation of Secondary Limestone and Sandstone, and on the progressive Development of Organic Life. Chap. XVII. On the Quaternary Strata. Chap. XX. On Subterranean Currents, and on Caverns. Chap. XXII. On the elevation of Mountain Ranges and Continents. Chap. XXIV. On the Temperature of the Earth ; on Central Heat ; and on Astronomical Causes illustrative of Geological Theories. Beside two new plates, the present Volume contains also numerous wood cuts.

Since the publication of the Third Edition, the Author has revisited several of the localities which were the scenes of his earliest investigations ; he has also examined certain parts of England, of which the geology was dubious ; and has inserted in this work such alterations as were deemed necessary. These, however, bear a small proportion to the valuable labours of foreign and English geologists, during the last five years, of which an account is given in different parts of the volume. In a preliminary dissertation on certain living species of animals that elucidate fossil conchology, and also in the work itself, the author has endeavoured to direct the attention of geological students to a subject hitherto much neglected. Great importance is attached to the study of fossil shells ; but the character of the animals that inhabited them, or the power they might possess of modifying the form of the shell under various circumstances, has scarcely been thought of. Some French conchologists are endeavouring to establish the doctrine that fossil conchology, independent of the succession and stratification of rocks, is the only true basis of geology ; and a trifling difference in the form of a shell, is deemed sufficient to constitute a new species, and to warrant the most important conclusions respecting the age of rock formations. Cato, when the Roman Haruspices were gravely examining the entrails of the sacred victims, to ascertain the future revolutions of empires by the convolutions of the intestines, said, that he much wondered how they could refrain from laughing, whenever they looked each other in the face. Surely we might say the same to fossil conchologists, when they gravely attempt to ascertain the past revolutions of the globe by the convolutions of a shell.