Lack of time forbids my consideration of such interesting matters as "zones," "the doctrines of colonies," and other interesting divisions of this portion of the subject.

An important part in the formation of rock masses has been played by fossils, for although the sand and clay rocks have not been shown to be of organic origin, yet the greater part of the lime rocks, some of the flint rocks and all the coal and blacklead, with presumably the phosphates, were built up of the remains and through the agency of the animals and plants of the periods of their deposition.

The greater part of the limestones and chalks are compact masses of organic remains of corals, molluscs, echinoderms, foraminifera, calcareous algæ, and other organic forms which possessed lime skeletons. Many flinty deposits are due to polycystina, diatoms and sponges, and the coal, blacklead and other forms of carbon have undoubtedly been produced through the agency of plants.

It is not generally known that geology originated from a study of fossils, and that without palæontology there would have been no science of geology—that is to say, palæontology was the foundation, not a branch, of geology.

Zoology and botany also owe much to the study of fossils. The classification of both animals and plants has been rendered much more nearly complete, through the insertion of many intermediate orders, the blastids, the cystids, the cyclocystids, the peculiar palæozoic starfishes, the receptaculites, the trilobites, the eurypterids, the many orders of fishes from the old Red, the labyrinthodonts, the wonderful reptiles of the secondary, the odontoterms or toothed birds, including the archæopterix (a bird with a tale of a reptile), the strange Eocene mammals and ungulates, the extinct marsupials of Australia and edentata of South America, and the Pliocene hippopotami of Asia and Africa are some of the examples.

Vertebrate palæontology has furnished data for some fairly well proven genealogies of various existing animals, especially of the large mammals, which have been traced back through allied forms, in a closely connected series to early tertiary times. In several cases, notably in that of the horse, the series are so complete that there can be little doubt that the line of descent has been demonstrated.