

what geology can tell us about the history and constitution of the earth. Professor Osborne Reynolds preaches the great doctrine of steam, its achievements and possible applications. Professor Williamson brings the evidence supplied by primeval vegetation to bear upon theories of natural selection and evolution. He thinks that vegetable types have been much more persistent than animal ones, and reverently concludes that between the knowable and the unknowable there is a definite boundary line which men may ever seek to pass, but will seek in vain. Professor Gamgee gives us an interesting dissertation on the relations of scientific discovery to practical medicine. Professor A. S. Wilkins applies philology to history; and, under its guidance, inquires what may be surmised concerning the prehistoric history of man. Professor Theodores gives us an interesting and curious account of the Talmud. Professor Breyman tells us about Provençal Poetry in Old and Modern Times. Professor Bryce expounds the Judicature Act of 1873; Professor Jevons treats of the Railways and the State; and takes up the attitude of protest against their assumption by the State assumed by this Review a couple of years ago; while Professor Wood discourses on means and expedients for preserving the peace of Europe. Theology is left to theological colleges, as it should be; but surely a place should have been found in the volume for metaphysical and moral philosophy, as also for the science of political economy, as distinguished from any special topic of it.

We do not pretend to the multiform knowledge necessary to pronounce critical judgments upon these various topics; we may, however, safely say, concerning the essays as a whole, that they compass at a very high level a wide range of scholarship. Manifestly, unless aptness to teach is in inverse proportion to learning, if the students of Owens' College are a whit behind those of the national universities, the fault is not with the professors. We wish the highest success to this noble institution.

*The Structure and Distribution of Coral Reefs.* By CHARLES DARWIN, M.A., F.R.S. With Three Plates. Second Edition. Revised. Smith, Elder, and Co.

The first edition of this work appeared thirty-two years ago, and Dr. Darwin finds but little to revise. He admits the force of some slight criticisms of Professor Dana, for instance, that in determining the distribution of coral reefs he had not laid sufficient weight on the mean temperature of the sea. Other criticisms of Professor Dana he traverses, and maintains against them the positions taken in his first edition. He does not, for instance, admit the degree in which volcanic action prevents the growth of coral reefs, which Professor Dana asserts, nor that volcanoes in a state of action are found within the areas of subsidence, but only within those of elevation. On the other hand, the late Professor Jukes, in speaking of the great barrier reefs of Australia, fully accepts Dr. Darwin's theory of their formation; while, against Professors Semper and Chamisso, he maintains that atolls or lagoon islands and barrier reefs were formed during a period of subsidence, wherein rocks sunk sufficiently low beneath the level of the ocean to become the foundation of coral structures.

The volume is a beautiful example of facts carefully collected, and of scientific conclusions cautiously reached. After minute descriptions of various coral formations, in which the atoll or lagoon reef, the barrier

reef, and the fringing reef are discriminated, it is shown that the reef-constructing polypifers cannot live either above the water or at a very great depth beneath its surface; the atoll and barrier reefs, therefore, from which enormous depths have been fathomed as from a perpendicular wall, must have some foundation of rock. The real difficulty is to account for this, the apparent necessity being that the coral formations all rest on mountain summits; which, although rising near the surface of the sea, in no one instance rise above it. Dr. Darwin maintains that there is but one theory possible, namely, the prolonged subsidence of the rocky foundations. On this theory, he thinks every difficulty vanishes. With fringing reefs, or reefs adhering to the land, there is no difficulty, as uprisings and subsidences of parts of the crust of the earth must be admitted. Our only difficulty in accepting Dr. Darwin's theory is the nearly uniform level of the rock foundations, and the wonderful balance of formation and waste that is preserved. He frankly says that direct proofs of subsidence are, from the nature of the case, impossible; as frankly, we admit, that we can urge no scientific objections to his theory. We commend his very charming book to all lovers of science.