

LECTURE VIII.

1. Introductory remarks. 2. Silurian and Cambrian systems. 3. Silurian system. 4. Cambrian, or slate system. 5. Structure of slate rocks. 6. Organic remains of the Silurian and Cambrian systems. 7. Metamorphic character of slate and greywacké. 8. Metamorphic or primary rocks. 9. Mica-schist and gneiss. 10. Unstratified metamorphic rocks—granite. 11. Volcanic agency. 12. Vesuvius. 13. Eruptions of Vesuvius. 14. Volcanic products of Vesuvius. 15. Mount Etna. 16. Phlegrean fields, and the Lipari isles. 17. Hawaii—volcano of Kirauea. 18. Stewart's visit to Kirauea. 19. Earthquakes. 20. Volcanic island in the Mediterranean. 21. Volcano of Jorullo, in Mexico. 22. Organic remains buried beneath lava. 23. Ice preserved by incandescent lava. 24. Herculaneum and Pompeii. 25. Professor Silliman on geological evidence. 26. Basalt or trap. 27. Staffa—Fingal's cave. 28. The Giant's Causeway. 29. Rocks altered by contact with basalt. 30. Trap dikes and veins. 31. Strata altered by contact with metamorphic rocks. 32. Granite veins. 33. Metamorphic rocks. 34. Metalliferous veins. 35. Copper ore of New Brunswick. 36. The sapphire, ruby, and emerald. 37. Review of the Silurian and Cambrian systems. 38. Review of the metamorphic rocks. 39. Organic remains in the metamorphic rocks (?) 40. Relative age of mountains. 41. Successive changes in the organic kingdoms. 42. Successive development of the organic kingdoms. 43. Geological effects of mechanical and chemical action. 44. Rocks composed of organic remains. 45. General inferences. 46. Final causes. 47. Geological theory of Leibnitz. 48. Astronomical relations of the solar system. 49. Concluding remarks.

1. **INTRODUCTORY REMARKS.**—In the former lecture the flora of the ancient world constituted the principal object of our investigations. We examined the primeval forests of coniferæ, and the groves of palms and arborescent ferns, which clothed the surface of the soil in that remote epoch of the