containing copper ore, metallic copper being found at the bottom of the lodes, produced by the decomposition of the ore and precipitation of copper, as in the electrolytic process—from the same cause copper is extracted by the use of a reducing agent. The case with gold was different; gold could not decompose or diffuse by heat, and must sink down amongst the detritus of the original rocks and remain near the shaft where it was formed. The most abundant in the older rocks was owing to the fact that those being the rocks most frequently in the requisite mineral and physical conditions—Mr. C. Darwin stated that he had observed in the eastern side of the Cordillera, in rocks much newer than the Neocarstian series; the mines were poor, but the comparatively modern origin of the rocks was in harmony with the fact that he believed all rich gold veins were confined to the older Palaeozoic rocks, but his observations did not relate to the occurrence of minute quantities.

The Report on the Geological and Dynamical Facts of Earthquakes, by R. MAUSSON. The Report commences with a review of the literature of the subject, and of the past theories of origin, divided into two classes: those which attributed them to explosive agents, and those which supposed a cause operating below the surface. From the consideration of all the existing records, the following propositions are drawn, that the most violent earthquakes occur over parts of the earth's surface, both on land and under the ocean. 2. They occur at all times, at all seasons, and at all hours of the day and night. 3. There seems no definite ground for supposing that they are more frequent, or with greater intensity, in any portion of past time than at any other. 4. Or that one part of the earth's surface is more liable to them than another. 5. But those regions which surround the present great centres and lines of volcanic action do appear to be more subject to earthquakes than other parts. 6. Earthquakes are most prevalent and most violent in regions of volcanic action, and under the intensification and intensity of volcanic action in those regions at given times. 7. Many regions which are not now, or never have been, subject to volcanic action, are subject to very frequent earthquakes. 8. Regions of extinct volcanic action do not appear more subject now to earthquakes than other areas altogether non-volcanic. 9. Although active volcanic regions are not frequently affected by earthquakes, yet the most violent recorded earthquakes have appeared to have caused regions lying some degrees away from the volcanic areas. And in general the most violent earthquakes have occurred upon the sea-coasts, or not far inland; some doubt, however, hangs over this in connection with very ancient and remote recorded cases. 10. Earthquakes have been felt on the ocean at vast distances from any land; and in some cases they have been nearly vertical in places where the depth was profound, and no shock occurred at the surface. 11. The destructive effect of earthquakes increases in proportion to the depth of the point of impact. 12. The earth's atmosphere is thrown by the shock into a state of turbulence. 13. The total duration of motion at a given spot varies indifferently, but between limits which have not been ascertained. 14. The absolute area convulsed at one earthquake period varies within limits which have not been ascertained. 15. The maximum force of the shock is not known. 16. The shock, or earthquake, is a true undulation of the solid crust of the earth. 17. The undulation, which constitutes the earthquake, has a real motion of translation. 18. The direct motion of the solid earth varies from vertically upwards to nearly horizontally in any direction, e.g., shock felt. 19. Within the limits of the origin they are sensibly inclined to east. 20. Some of the most destructive have emerged recently. 21. Two shocks may succeed one another at the same point with different directions.

The motion of translation of the earth's crust is of great interest. It has in all cases a true wave form upon the surface, and when its direction is nearly horizontal, the wave crests advance along a given line and parallel to itself. 22. The earth's waves have destructive dimensions in height and breadth, dependent on the force of the original impulse. 23. The velocity of its transit has not yet been determined by observation or experiment; it is proved, however, to be only between or nearly equal to the velocity of sound and the density of the formations through which it passes. 24. The direction and velocity of transit change occasionally in passing from the boundary of one formation to another. 25. Earthquakes, of the greatest violence, are accompanied by various sounds having a stunninganeous origin, which sounds may either proceed, accompany, or succeed each other before, during, or after the earthquake. 26. Other earth quakes, of the greatest violence, are unaccompanied by any sounds whatever. 27. When the centre of an earthquake is under the sea, and is not accompanied by a tidal wave, the passage of the shock is accompanied by a disturbance of the sea, the earth, at about the moment the shock is felt along the shore, moves slightly, and then again rolls in as the great sea-wave of translation, when it can no longer be considered as an earth quake, depending on the distance of the centre of impulsion.

Earthquakes, however great, are incapable of producing any permanent elevation or depression upon the surface of the earth by their direct action. But they are capable of producing effects by the following means: namely, 1. Vast rock-lands take place. 2. New lakes and rivers-comes are formed and old ones obliterated. 3. New valleys are hollowed out. 4. Faults—deep fissures or fractures—open up, and are filled with sediments by direct action; in incoherent or loose materials by subsidence or lateral disturbance, by the action of water. 5. At the moment of the earthquake, the earth's surface is subject to violent and sudden changes, which are observed to last for a very short time, and which often cause water to spout from fissures, wells, and springs, and raise dust unaccountably from the ground. 6. Water often spouts from fissures, wells, and springs, and rises up unexpectedly from the ground.