

A paper was next read, entitled "Description of the Insulated masses of Silver found in the mines of Huantaxaya, in the province of Tarapaca, Peru;" by Mr. Bollaert, and communicated by Mr. Darwin, F.G.S.

The mines of Huantaxaya are three leagues from the Port of Iquiqui (lat. $21^{\circ} 13'$ S. long. 70° W.), and in a mountain-hollow 2800 feet above the level of the sea. This depression is bounded towards the west by a hill called Huantaxaya, 3000 feet above the sea level, or 200 feet above the hollow, and on the opposite side by a hill of similar height. The great mass of the mountain consists of a reddish, argillaceous limestone, but the escarpment, towards Iquiqui is covered with loose sand, and near the base, porphyry and granite are visible. The limestone is traversed by numerous argentiferous and other veins, which range from N.E. by E., to S.W. by W., but the mines of Huantaxaya are in a superficial detritus called Panizo.

This deposit is from eighty to one hundred yards thick, and is composed of fragments of limestone not water-worn, and dried mud apparently derived from the same rock. It is divided into beds, some of which, called Sinta, are metalliferous, and others, called Bruto, are barren. The nodules of ore, to which the name of papa has been applied, from their resembling a potatoe in form, consist of pure silver, chloride, and other chemical compounds of silver, sulphurets of copper and lead, and carbonates of copper. The papas are of all sizes, and some have produced 160 ounces of pure silver in a hundred pounds. One celebrated papa weighed about 900 pounds, and resembled in shape the top of a table. The miners believe, that each layer of Sinta has been derived from a particular vein in the limestone, and that they can determine to which vein a papa originally belonged.

The only instruments used in working the Panizo, are an iron bar six inches long and a small iron mallet. With these tools, the Panizero rapidly advances in the soft materials, but rarely makes a larger excavation than is sufficient for his body to pass on hands and knees. In clearing out the contents of these honey-combed galleries, a hide-bag is strapped over the shoulders and under the arms; but in crawling through the narrower parts, the miner transfers the bag to one of his feet and drags it after him.

The danger of working these unconsolidated beds is greatly enhanced by frequent shocks of earthquakes.

* [See the President's Address, and also the Proceedings of the Royal Institution, p. 519 and 533 of our last number.]

The following section of the principal shaft will illustrate the nature of the Panizo deposit.

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|--|-----------|
| 1. Caliche. This bed contains near the surface a large quantity of common salt, and occasionally a few small papas are found in it | 28 yards. |
| 2. <i>Sinta Cenizada</i> , ash-coloured, with a few papas | ‡ |
| 3. Caliche, or Bruto..... | 12 |
| 4. <i>Sinta</i> , Tisa chiquita, a bed consisting of 96·4 white sand, 3·6 sulphuric salts and water; also a trace of muriatic salts. }
A few papas..... | ‡ |

- | | yards. |
|--|--------|
| 5. Bruto | 4 |
| 6. <i>Sinta cascajosa</i> | ‡ |
| 7. <i>Sinta Tiquillosa</i> | ‡ |
| 8. <i>Sinta challosa</i> | ‡ |
| 9. Bruto manto, many fossil shells..... | ‡ |
| 10. Bruto conchado, shelly layer* | ‡ |
| 11. Tisi chiquita, resembling number 4 | ‡ |
| 12. <i>Sinta Tiquillosa</i> | ‡ |
| 13. Bruto | 4 |
| 14. <i>Sinta Tiquillosa</i> | ‡ |
| 15. Bruto | 4 |
| 16. <i>Sinta challosa</i> | ‡ |
| 17. <i>Sinta cascajosa</i> , gravelly layer | ‡ |
| 18. Bruto conchado, shelly* .. | ‡ |
| 19. <i>Sinta conchado</i> , shelly*... 2 | 2 |
| 20. <i>Sinta challosa</i> | ‡ |
| 21. <i>Sinta conchado</i> , shelly,* few papas | ‡ |

- | | yards. |
|---|--------|
| 22. <i>Sinta cascajosa</i> , gravelly layer | ‡ |
| 23. <i>Tisa grande</i> , similar to 4. 6 | 6 |
| 24. Bruto | ‡ |
| 25. <i>Sinta cascajosa</i> , gravelly layer | ‡ |
| 26. Bruto | ‡ |
| 27. <i>Sinta chadosa</i> | ‡ |
| 28. Bruto | ‡ |
| 29. <i>Sinta barrosa</i> , clayey layer | ‡ |
| 30. <i>Tisa</i> , similar to 4..... | ‡ |
| 31. Bruto | 6 |
| 32. <i>Sinta cascajosa</i> , gravelly layer | ‡ |
| 33. Bruto | ‡ |
| 34. <i>Sinta chadosa</i> | ‡ |
| 35. Bruto | 3 |
| 36. <i>Sinta chadosa</i> | ‡ |
| 37. Bruto | 1 |
| 38. <i>Sinta barrosa</i> , clayey layer..... | ‡ |

The layer 38 rests upon the limestone rocks.