

four-fifths of the city were then entirely destroyed; and the shock, attended by a very loud subterraneous noise, resembled, as at Riobamba, the explosion of a mine at a great depth. Happily the most violent shock was preceded by a slight undulating motion, so that most of the inhabitants were enabled to escape into the streets, and a small number only perished of those who had assembled in the churches. It is a generally received opinion at Cumana, that the most destructive earthquakes are announced by very feeble oscillations, and by a hollow sound, which does not escape the observation of persons habituated to this kind of phenomenon. In those fatal moments the cries of 'misericordia! tembla! tembla!\*' are everywhere heard; and it rarely happens that a false alarm is given by a native. Those who are most apprehensive attentively observe the motions of dogs, goats, and swine. The last-mentioned animals, endowed with delicate olfactory nerves, and accustomed to turn up the earth, give warning of approaching danger by their restlessness and their cries. We shall not attempt to decide, whether, being nearer the surface of the ground, they are the first to hear the subterraneous noise; or whether their organs receive the impression of some gaseous emanation which issues from the earth. We cannot deny the possibility of this latter cause. During my abode at Peru, a fact was observed in the inland country, which has an analogy with this kind of phenomenon, and which is not unfrequent. At the end of violent earthquakes, the herbs that cover the savannahs of Tucuman acquired noxious properties; an epidemic disorder broke out among the cattle, and a great number of them appeared stupified or suffocated by the deleterious vapours exhaled from the ground.

At Cumana, half an hour before the catastrophe of the 14th of December, 1797, a strong smell of sulphur was perceived near the hill of the convent of San Francisco; and on the same spot the subterraneous noise, which seemed to proceed from south-east to north-west, was loudest. At the same time flames appeared on the banks of the Manzanares, near the hospital of the Capuchins, and in the gulf of Cariaco, near Mariguitar. This last phenomenon, so extra-

\* "Mercy! the earthquake! the earthquake!"—See Tschudi's Travels in Peru, p. 170.