

during his first visit, until I showed him a camera lucida sketch that I had taken of the crater, in which it appeared conspicuous in the foreground.

Our track from the sulphur-banks was directly to the place of ascent. Laden with specimens, we returned, quite worn out, to our encampment before sunset. Lieutenant Budd, who had not succeeded in reaching the end of the black ledge, returned shortly after us. On his side, the air was too hot and stifling to permit this object to be accomplished; and, although I was watching for him with my spyglass, I could see nothing of him after we parted.

In doing this, I perceived a curious effect of refraction, produced by looking over the lakes, when the line of sight passed through the heated columns of air as they arose from the fluid below. The opposite bank seemed at times in motion, dancing up and down, as the breakers on the sea-shore are sometimes seen to do. The stratification of the rocks seemed to be twisting and dancing up and down also.

After being at this volcano four days, I was as little disposed to leave it as at first; it is one of those places that grow in interest, and excite all the energies both of body and mind: the one to undergo the necessary fatigue, and the other to comprehend the various phenomena.

The discharge from the large lake during the night of the 17th, must have been equal to fifteen million cubic feet of melted rock; this, undoubtedly, found cavities to receive it on the line of the eruption. It is impossible to calculate the discharge from the smaller, or Judd's Lake, but supposing it had continued as rapid as it was at the first filling, it would have thrown out, by the time I was there next day, upwards of two hundred million cubic feet of lava. It will readily be perceived, that with such a flood, it would be possible, within the lapse of a period comparatively short, geologically speaking, for a mound the size of Mauna Loa to be heaped up. However large the above numbers may seem to be, we have reason to suppose, from appearances, that the "boiling up" and overflow of the terminal crater of Mauna Loa must have been far greater, so much so indeed that the outpourings of Kilauea cannot bear a comparison with it. Its whole height, of more than six thousand feet above the plain of lava, appears, as I have before noticed, to be entirely owing to the accumulation of ejected matter.

All the parties having arrived, I despatched them to Hilo, with the exception of Lieutenant Alden, who was ordered to pass by the cone of Tulani, an old crater on the north flank of Mauna Loa, in order to