

the utmost attempt to scale the mountains as far as possible, and the baggage had therefore been reduced to a minimum, it not being expected that suffering from cold would be experienced. The thermometer showed, at about half an hour before sunset, 75° F., about an hour later, 68°·5, at midnight 63°·0, at daybreak 60°·5, and in about half an hour after daybreak it rose to 61°·5. The main stream of the valley running past the huts had a temperature at daybreak of 65°·0, having retained throughout the night the heat of the former day, which the air had so rapidly lost. The effect of the stream on the climate here, is thus just the opposite of that of the streams of such an island as Tristan da Cunha.

From this camp, the way led over several steep minor ridges in the head of the valley, and then up to an elevation of 3000 feet, which was reached on one of the extremely narrow ridges, characteristic of Tahiti, situated just to the west of the "Diadem." From the ridge, a descent was made into the Punaru Valley by the aid of ropes fastened to the trees. The precipitous side of the valley which was thus descended, was covered at this elevation, from about 3000 to 2000 feet altitude, with a dense vegetation, composed almost entirely of ferns. A Tree Fern (*Alsophila tahitiensis*) formed a sort of forest almost to the exclusion of other trees, and with this were associated huge clumps of the Giant Fern (*Angiopteris evecta*) and masses of the Birds-nest Fern (*Asplenium nidus*). With these grew a trailing Screw Pine and a *Dracæna*, but the three ferns together formed a remarkably large proportion of the entire vegetation.¹

The second camp was made at an elevation of about 1800 feet, at a native hut in the upper part of Punaru Valley. The natives have not forgotten their religion since the time of Darwin's visit;² the guides said their prayers every evening before sleeping, even when huddled together out of the rain, all repeating the words together, and the native family at the hut did the same. The temperature at the hut sank at daybreak to 59° F. Much suffering from cold was experienced in the night, and still more from mosquitos. An old piece of canvas was lent to the party to lay on the ground to sleep on, but was used as a coverlet for warmth.

In the morning the attempt was made to cross over a high ridge at the head of Punaru Valley, and so to reach the proposed destination, the Papeno Valley, but the attempt failed, for it was found after toiling up to an elevation of about 3000 feet that the guides did not know the way at all. One of them had been over the pass many years before, but all he seemed to know was, that he had been up a stream, so the day was spent in wading through pools and clambering over slippery boulders in its bed, creeping along under the overhanging branches. Attempts were made time after time in various impracticable places, and at last a hurried descent was made in the evening into the valley, and a camp had to be prepared almost entirely in the dark, and in heavy rain, at a height of 2500 feet.

¹ On the significance of this, see A. R. Wallace, *Tropical Nature*, p. 269, 1878.

² C. Darwin, *Journal of Researches during the Voyage of H.M.S. "Beagle,"* p. 411, ed. 1879.