

## LETTERS TO THE EDITOR.

## Recent volcanic activity in the United States: eruptions of Mount Baker.

In a late communication to *Science* from Capt. Dutton of the U. S. geological survey, he mentions the date 1850 as that of the latest volcanic eruption within the limits of the United States. This must necessarily exclude Alaska. He also refers to vague reports of volcanic activity at later dates.

In adding a mite to the subject of his paper, I would ask your permission to recall three instances of volcanic activity on this coast, leaving open the question, What is the exact line between the smoldering of the 'living' volcanoes, and those which are 'active,' or in 'eruption' ? etc.

1°. In 1854 I was one day observing at the trigonometrical station on Obstruction Island in the Rosario Strait, Washington Sound: I had finished the measures for horizontal direction of the summit of Mount Baker, and was commencing a series of measures of the vertical angles for elevation, when I found the whole summit of the mountain suddenly obscured by vast rolling masses of dense smoke, which in a few minutes reached an estimated height of two thousand feet above the mountain, and soon enveloped the higher parts. Baker was distant thirty-nine geographical miles from my station, and bore about north seventy-five degrees east, true. The weather was fine, and we hoped to see a brilliant display at night; but unfortunately the sky clouded, and we could not see the light at night, nor the mountain next day: when the weather cleared, the eruption had ceased; and, instead of the white mountain mass, we discovered that the snow covering it was apparently melted away for two or three thousand feet below the two heads. Of course the snow may not have been melted, but only covered with ashes and scoriae; and we had not the means of deciding the question at that distance.

We had been in those waters during parts of 1852 and 1853, and then the snow-clad mountain was quiet.

We discovered that the crater was not on the summit, or on the secondary peak to the south-eastward, but on the flank of the higher peak, and opening towards the south or south-west. In subsequent years we occasionally saw small volumes of smoke issuing from this crater. The facts of this eruption were reported by me at the time.

2°. In 1858 Mr. John S. Hittell of San Francisco was in Victoria, and he informs me that the night clouds over Mount Baker were brilliantly illuminated by the light from an eruption of Mount Baker. Upon his making inquiries among the citizens of Victoria, they expressed themselves as being well aware of the eruption then going on.

3°. I left these waters at the close of the season of 1857; but my colleague, Capt. James S. Lawson, who succeeded me in that section, says there was no eruption for the years he observed in the Gulf of Georgia. In 1867 and in 1869 I passed through the waters of Washington Sound and the Gulf of Georgia, and returned, all in sight of Mount Baker; but there was nothing unusual in the appearance of the mountain. In 1870, when I was passing through Admiralty Inlet and the Strait of Fuca, towards Victoria, Mount Baker was very clearly in sight at about sixty miles distance, when I beheld great volumes of smoke projected from the crater to an estimated height of eight hundred feet above the higher peak. During my stay at Victoria in September, with Mount Baker distant seventy-three and three-quarter geographical miles, and bearing north seventy degrees east, true, from Rocky Hill, I made observations for the height of the two

peaks, the position and size of the crater, and the height of the snow-line. I made also an accurate drawing of the outline of the mountain and its surroundings, the more particularly because rumors had found their way into the newspapers, asserting that the summit of Mount Baker had fallen in. On the contrary, I was perfectly satisfied, from my years of familiarity with its features, that no such catastrophe had taken place between 1852 and 1870; nor was I able to detect any changes in 1877, when I was daily in sight of Mount Baker for some time.

I should call attention to the fact, that, a good many years since, Mr. E. T. Coleman of Victoria (if I remember his name properly), after two unsuccessful attempts in two different seasons, was the first alpine climber who made the ascent of Mount Baker. He published his account thereof, with illustrations of the glaciers, névé, etc., in *Harper's magazine*; but I cannot recall the date. I add the following data, which were incidentally obtained in different years by Capt. Lawson and myself when engaged in regular coast-survey duty:—

The geographical position of the higher and main peak of Mount Baker is, latitude,  $48^{\circ} 46' 34''$  north; longitude,  $121^{\circ} 50' 4''$  west. The height is 10,755 feet above the sea level; the height of the second peak, which lies probably two miles towards the south-east, is 10,163 feet; the upper part of the crater is 596 feet below the summit of the mountain; and the length of the crater about 400 feet. The crater appears to be four times as long as it is broad; the narrowest part is the upper limit; and it lies on the southern slope of the main peak, and parallel with the slope, which I judged to be thirty degrees with the horizon. The lowest limit of the snow-line in September, 1870, at the close of the summer dry season, was 5,301 feet above the sea.

These observations were made with a small instrument at a long distance; but my height of the principal peak differed only seventy-two feet from the mean of previous observations, and I believe they are trustworthy.

GEORGE DAVIDSON.

Davidson observatory, San Francisco, Cal., Sept. 1.

## Linguistic studies at the Siletz agency.

In the abstract of my first paper read in Section H., A.A.A.S., as published on p. 230 of *Science* for Sept. 11, a slight mistake was made. For 'three sets of cardinal numbers, human, inhuman, and inanimate,' read 'two sets of cardinal numbers, the human, and the non-human series.'

J. OWEN DORSEY.

Washington, D.C., Sept. 19.

## Spectrum of the great nebula in Andromeda.

By employing the eye fresh from some hours' sleep, by looking for some time in the spectroscope, and by

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giving the spectrum a slight apparent to-and-fro motion, I have been enabled, independently, upon Sept. 5, 7, 9, 12, 21, to discern three bright lines superposed upon the continuous spectrum of the nebula in An-