

## CHAPTER IV. NOTES ON THE ANEI ISLETS.

**25. Smaller Islets.** The following notes relate to the Anei-jima,\* or the group of the islets formed off the N. E. coast of the island of Sakura-jima after the great eruption of 1779, which I have visited on Oct. 21, 1916.

*Inoko-jima* (猪之子嶋). When seen at 7 A. M. at the time of a minimum tide very nearly, there was to be observed only a rock head 1 metre in diameter projecting 1 foot above the water. This disappeared under water at high tide times. About 120 feet apart there was another rock piece seen under the water surface.

*Doro-jima* (泥嶋). After the recent great eruption, this islet, once sufficiently large in dimension, became entirely submerged under water even at the lowest tides. At 7.50 A. M. (Oct. 21st), when the tide was lowest, a rocky prominence of the sunken islet was 6 feet deep, while another was 7 feet deep, the surrounding part being at the depth of 15 feet. On the submerged surface of the Doro-jima there were several rock blocks 6 feet or more in size, being similar to those scattered on the Moe-jima, probably precipitated from the neighbouring eruption vents in 1780.

*Nakano-shima* (中之嶋一名輕石嶋). The islet (fig. 67), also called Karuishi-jima (Pumice Islet), is almost entirely composed of spongy pumiceous materials of ashy or brownish colour, mixed occasionally with small compact lava



Fig. 65. Nakano-shima seen from Doro-jima.

A.....Highest Rock.  
B.....Small Depression.

pieces of light black colour. On the side facing the Iwo-jima, the beach about 80 feet in width,

where pine trees had formerly grown, has been converted into a soft clayey bed with roots and broken trunks of dead trees, partly standing in water. At the time of my visit the height of the highest point (A, fig. 65) of the islet was about  $22\frac{1}{2}$  feet above sea level. The middle depression B, about 50 feet in diameter, is surrounded by large pumiceous fragments, 12 feet in maximum height, with some smaller blocks at centre. This may be the collapsed source of lava, or craterlet, being much similar to the Mar-yama (丸山) of the Omoe-zaki, and the Kyono-tsuka (經之塚) of the Moe-zaki. The precipitation of the new ashes was about 1 foot in thickness. Some pine trees 0.2 or 0.3 foot in diameter were still growing on the islet. The depression since the recent eruption seems to have been about 6 feet.

\* See the Bulletin, Vol. VIII, No. 2.

*Iwo-jima, or Sulphur Islet* (硫黄嶋). At the time of my visit, 9 A. M. (Oct. 21st), the islet (fig. 68), crescent in form and composed entirely of black solid lava blocks, had the maximum width of about 80 feet and the length above water of about 320 feet, the highest rock being 10 feet above sea-level. At a full tide time, the height of the islet would be reduced to only about 1 metre. At the inner, or concave, side of the islet there is a narrow deep vertical crack just covered by water, for the length of about 210 feet; the width was generally  $2\frac{1}{2}$  feet, and the depth varied mostly between 15.6 and 19.1 feet along the crack length. At one point, however, the depth reached an extraordinary great value of 43.1 feet.

The lava of Iwo-jima, which was formed by a submarine eruption from the centre situated probably on the concave side, is entirely different in nature from that of the new lava islets formed after the recent eruption, there being no special conchoidal, wavy, tubular, or filamental arrangement so characteristic of these latter. The Iwo-jima, which is higher toward the end facing the Moe-jima, is overgrown by reed, there being found only one dead pine tree 5" in diameter.

**26. Moe-jima.** (燃嶋) The islet\* (fig. 66) is the largest of the Anei group and consists of the north and south plateaus separated by a narrow valley district, on which the habitations of 45 houses are situated. The plateaus, skirted by a narrow beach of maximum width of 120 feet, have steep sides, the north cliff reaching the height of 43.2 metres. The islet is mainly composed of whitish pumice lying on layers of soft clay which dip down towards the n. w., and which are well exposed at the s. e. and the s. bases of the south plateau. On the inner, or s. w., side of the latter there is no exposure of the clay. The surface layer, about 6 feet in thickness, is composed of ordinary pumice particles which was mainly the result of the submarine precipitation of the ash and pumice in the Sakura-jima eruption of 1779, prior to the upheaval of the Moe-jima; the ash precipitation on the occasion of the 1914 eruption being only about 1 foot thick. The underlying layer of white pumice, generally 7 or 8 feet in thickness, is thickly mixed with various dead shells; being abundant, amongst the others, smaller species of the oysters growing unfixed to the rocks, now extinct in the Kagoshima bay. (See figs. 69, *a* to *d*.) The shell-bearing layer, which is found throughout the islet and extends over tops of the two plateaus and the intervening depressed village portion, represents of course the sea bottom elevated at the time of the eruption of 1779, and the thick underlying portion of the white pumice layer free from the mixture of

\* See the Bulletin, Vol. VIII, No. 2, Pl. XII, fig. 7.

shells must be in the main the result of the precipitation of pumice during the previous eruptions of Sakura-jima, probably in 1468 to 1476. At the s. end of the islet the shell-bearing layer lies directly on the well developed strata of clay.

Throughout the islet here and there are found large blocks of loose and well burnt lava placed on the pumiceous surface layer. These were probably projected in 1779 from some of the neighbouring eruptive vents prior to the elevation.

## CHAPTER V. ON SUCCESSIVE OCCURRENCES OF EARTHQUAKES AND VOLCANIC ERUPTIONS.

**27. Successive Occurrences of Earthquakes.** The severe Kagoshima earthquake of Jan. 12th, at 6. 28 P. M., was preceded by a shock in the central part of the Inland Sea, which took place on the same day at 6. 12 P. M. (See Table XI.) These two earthquakes, whose time interval was only 16 minutes, may be regarded as being co-relative. The direct distance between the centres of the two earthquakes was 375 km. The Inland Sea earthquake, whose origin was situated near the Myojin islet (明神嶋), at  $\varphi=34^{\circ} 8' N.$ ,  $\lambda=133^{\circ} 13' E.$  was not destructive and had a small area of sensible motion, the maximum radius being 145 km. The major and minor diameters of the strong intensity area were about 56 and 37 km. respectively.

The following are examples of successive occurrences of destructive earthquakes from the Inland Sea and from some other part of Japan.

(i). The earthquake on June 2nd, 1905, at 2. 39 P.M. caused some damage both on the Sanyo-do and the Shikoku coasts, namely, at Kure, Edajima, and Hiroshima, as well as at Mitsugahama, Gunchu and Matsuyama, resulting in the casualty of 188 persons and the total destruction of 64 houses. Simultaneously with this disturbance in the western part of the Inland Sea there took place numerous shocks at the island of O-shima (Izu) and the vicinity, which began on May 28th. Among these there were two strong earthquakes which occurred respectively on the 5th, at 1.45 A.M. and on the 7th, at 2.39 P.M. The second shock was semi-destructive and produced in the island of O-shima a partial collapse of three houses, and cracks and falling down of roads and stone fence walls at 674 places. The after-shocks continued till the 15th of the same month. (ii). Three among the group of the destructive