THE HOT SPRINGS OF ATAMI.

BY

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Note translated from the Japanese Transactions of the Seismological Society.

The following observations of the Hot Springs of Atami and its neighbourhood were made by Mr. Kuwabara during the past summer holidays.

The rocks at and near Atami consist of hard trachyte and bands of a pumiceous conglomerate. The former is hard and durable, making a good building stone, but the latter is soft and easily weathered. The *Ejectementa*, forming the conglomerate, seems to have been derived from some volcano at no great distance from Atami,—the fragments of which it is composed being from 1 to 6 inches in diameter.

From ancient history it would appear that the spring which is now more than 100 feet above sea level was once beneath the sea. If this is true it would seem that in consequence of internal heat Atami is rising. The author did not however meet with any proofs of this elevation round the Idzu coast. The largest spring in Atami is called Ōhu. It is intermittent in its action and erupts at equal intervals of time three times every day. Just before an eruption it always sends out a quantity of steam, and makes a noise. After that, water is thrown out for about 30 minutes. The first eruption is usually between 7 and 8 p. m.

From chemical analyses of the water, which shew it to contain Potassium and Sodium chlorides, and from its position, it is very likely that this spring derives its water from the sea.

Some persons think that eruptions are caused by the tide. Mr. Kuwabara, because the time of eruption is constant, has hardly the same opinion. Also if the eruptions were due to the tide, all the hot springs in Atami might be expected to erupt or boil at the same time, which is not the case. Mr. Kuwabara therefore suggests that the action is caused by the water percolating from the sea into an underground chamber which is connected with Atami by an underground fissure. When the chamber is filled, then the steam acts by its pressure on the water and the contents of the chamber are driven up the fissure.

The paper was followed by a very lively discussion in which nearly all those present took part.

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