men had a larger number of genuine admirers, or gathered around them a wider circle of sincere and attached friends. And not alone to the fields in which he himself worked did he extend his interest and sympathies. Amid the labourers in very different departments of thought he found some of his most cherished friends—frequent and always welcome guests at his hospitable home. For these, and for all who had enjoyed the privilege of his friendship, the sorrow at his loss will be softened by the ennobling memory of his life.

GEO. J. ALLMAN

BRITISH ASSOCIATION, SECTION B: DISCUSSION ON THE NATURE OF SOLUTION

IT may perhaps be convenient to those chemists who have announced their intention of joining in the proposed debate in Section B, at the approaching meeting of the British Association, that, having accepted the invitation of the President to open the discussion, I should indicate briefly the general nature of the subjects upon which I shall offer some remarks, and the order in which I shall probably take them.

After an historical sketch of the theories which have been framed with the object of explaining the constitution of saline and other solutions, the phenomena of solution will be dealt with somewhat as follows :—

Thermal and volume changes occurring in the act of solution and their mutual relations. How far and under what circumstances are thermal and volume changes to be considered as indicating chemical change?

The molecular volumes of salts in solution. The specific heat and vapour pressures of salt solutions. The relation of solubility to molecular volume, to fusibility, and to the composition of the liquid.

Action of solids and especially of porous bodies on solutions. Phenomena of supersaturation.

What is chemical combination, and is there any criterion by which it may be distinguished from adhesion or mechanical combination?

In consequence of the very wide-reaching character of the subject, it will not be possible to take up the question of solution except as relating chiefly to solids, and especially salts, in water. For the same reason I cannot fully discuss the phenomena of absorption-spectra nor generally the action of solutions upon light, but I hope some of those chemists who have worked on this part of the subject will be present, and will give us the benefit of their experience.

There will of course be a great number of questions incidentally touched upon in my opening, which may well form the basis of remarks from other speakers, such as—

How is saturation to be explained, *i.e.* why is there generally a limit to solubility?

Is there any general connection between solubility and atomic weight in a series of compounds in which only one constituent varies?

What becomes of water of crystallisation when a salt containing water is dissolved in water?

WILLIAM A. TILDEN

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THE RECENT VOLCANIC ERUPTIONS IN NEW ZEALAND

WE have been favoured by Dr. Hector, F.R.S., Director of the Geological Survey of New Zealand, with a copy of a Preliminary Report drawn up by him for the New Zealand Government regarding the volcanic eruptions of last June in the North Island. It is gratifying to find that the hope expressed in NATURE (p. 322) has been so promptly fulfilled, and that the investigation of the remarkable phenomena has been undertaken by so competent an observer as Dr. Hector. The following is his Report, but it is merely a preliminary outline, and will no doubt be followed by much ampler details.

"*Colonial Museum of New Zealand, Wellington, June* 23, 1886

"According to instructions from Government, I proceeded to Tauranga on the evening of Thursday, the 10th instant, in the colonial gunboat *Hinemoa*, and arrived there on Saturday afternoon. At Tauranga I engaged the services of Mr. Spencer, a skilful landscape photographer, and on Sunday our party, seven in number, drove to Rotorua by the Oripi Road, the ordinary route by Te Puke being blocked On Monday I proceeded to Wairoa with Captain Mair, who joined the boat expedition which had been organised to search the Native settlements on Tarawera Lake. On the same day I sent my assistant, Mr. Park, to the south of the disturbed area by way of Kaiteriria; and on Tuesday, following the same route, I examined the vicinity of Rotomahana. Mr. Spencer, with his camera, accompanied me everywhere, so that a series of well-selected views of the eruption and its effects was obtained. On Wednesday we started for Taupo, feeling anxious to complete the general view of the whole line of volcanic activity from Ruapehu to White Island, as alarming rumours were in circulation as to the extent of country that had been affected. By this route we also obtained a distant but interesting view of the newly-raised cones of Tarawera from the eastward. The incidents of the eruption have been so fully described by the Press that it is unnecessary for me to refer to them in this preliminary report, the chief object of my rapid inspection having been to ascertain the exact locality, nature, and extent of the outbreak, and its probable consequences to the district. A complete geological examination of the district has therefore been deferred until a more favourable season for field-work, and until the volcanic activity has sufficiently subsided to admit of accurate observation.

"The focus of the disturbance was ascertained to be in a line extending from seven to ten miles in a north-east to south-west direction from the north end of the Tarawera Range to Okaro Lake (see plan.) The northern part of this line is occupied by the Tarawera Range. This range has three summits, the northernmost being Wahanga; the central, Ruawahia, 3606 feet alt.; and the southernmost, Tarawera Mountain proper. The southern part of the line previous to the outburst was a depression occupied by Rotomahana Lake, surrounded by low undulating country composed of pumice-sands and overspreading deposits of siliceous sinter, most of which were connected with active geysers, amongst which the most famous were those at the Pink and White Terraces.

"From the most reliable evidence it appears that the outbreak commenced at ten minutes past two on the morning of the 10th, by an eruption from the top of Wahanga, attended by a loud roaring noise, and slight earth-shocks. In a few minutes this was followed by a similar but more violent outburst from the top of Ruawahia—the middle peak of the range, and after a short interval this phase of the eruption culminated in a terrific explosion from the south end of Tarawera Range, north-east of Lake Rotomahana. For nearly two hours this was the only phase of the eruption, and was accompanied by the ejection of vast quantities of steam, pumice-dust, and hot stones, forming huge towering clouds, illuminated by lightning flashes.

"It was at this time also that a great crack or fissure (A C on plan) was formed along the east face of the Tarawera Range. I only had a distant view of this fissure from the eastward, but Mr. Percy Smith, the Assistant Surveyor-General, who had a near view from the sides, reports that the whole east end of the mountain