who would not, or could not, patronise a first-class hotel. So without doubt the popularity of these springs is in a great measure due to cheap transit fares and hotel tariffs. This is an important consideration for those who think that such accommodation close to the springs would be likely to pay. They must take into consideration, also, the rapid increasing popularity of the northern springs—their unlimited supply and superior efficacy—with the prospect of through railway-communication with Auckland in the near future. I believe that, even if the extension suggested by Mr. Malfroy were carried out, the success of such an hotel would be highly problematical.

We shall now consider the Hanmer Springs chemically and therapeutically. As we have already stated, although there are ten springs, there is only one water; they are virtually one and the same. Two analyses of this water have been made. The latest I have just received from Dr. Hector, who was kind enough to cause an analyses to be made of a sample of the water which I carried with me on my return journey from Hanmer Plains. It is as follows:—

Analysis of Water taken from No. 1 Spring at Hanmer Plains.

Chloride of sodium	62·09
Chloride of potassium	0·15
Chloride of lithium	Trace
Iodide of magnesium	Trace
Carbonate of lime	0·55
Carbonate of magnesia	1·77
Carbonate of iron	0·05
Sulphate of soda	7·48
Carbonate of soda	2·66
Phosphate of alumina	Trace
Silica	2·63
Total grains per gallon	77·38
Gas—Sulphuretted hydrogen	2·19

The other analysis alluded to was made ten years ago, long prior to the earthquake which occurred in 1888, by Mr. Bickerton, of Christchurch. It is interesting from the fact that it includes an examination of the sediment and organic matter contained in the water. The sample was taken from spring No. 8 before it was incorporated with No. 1. It is as follows:—

Sediment—silica and free sulphur			1·400
Nitrogen as free ammonia	0·092		
" as albuminoid ammonia	0·048		
" as nitric acid	0·047		
Total nitrogen	———		0·187
Sulphuretted hydrogen, free	...		3·430
Sulphate of lime	9·940		
" potash	1·960		
" soda	0·400		
Bicarbonate "	7·770		
Chloride "	56·230		
Bicarbonate of magnesia...	0·640		
Total fixed matter	———		76·940
Total grains per gallon			81·957

The total amount of fixed salts in the two analyses correspond very closely. The sulphates and carbonates in either case are so small that the fact of their varying in the two analyses is a matter of no importance. The fact of the discovery of traces of iodine and lithium in the recent analysis is interesting.

The first fact to be observed is that this water is outside the category of waters suitable for drinking. The free and albuminoid ammonia (although derived from a vegetable source) is far in excess of what is considered safe in a potable water. They are, therefore, suitable only for bathing. Professor Hutton, in his article on the earthquake at Hanmer Plains in 1888 (vol. lxxxviii., page 270, of the "Transactions of the New Zealand Institute"), remarks, that a layer of black peat some 6in. or 7in. thick, with tough clay above and below it, underlies these springs at a distance of from 10ft. to 15ft. from the surface; that the free and albuminoid ammonia are derived from this peaty matter which the waters pass through, and that this organic matter reduces part of the alkaline sulphates to the condition of sulphides, which in their turn are decomposed by the action of carbonic acid derived from the peat, and changed into alkaline carbonates, with the disengagement of sulphuretted hydrogen gas. He thinks the passage of the water through the peat-bed is too rapid to allow the whole of the sulphates to be changed into carbonates; but that in all probability no carbonates and no sulphuretted hydrogen, and certainly no ammonia, exists in these waters below the peat-bed. He remarks, further, that these reactions do not give rise to sufficient heat to heat the water, but that it must be heated before it reaches the peat-bed. Surely, *cela va sans dire*, the chemical theory of thermal heat is pretty well abandoned. The Professor's conclusion, however, with regard to the origin of thermal heat in this district rather startled me. He thinks that, because these springs have no connection with volcanic agency, their heat is due to the crushing of rocks under the mountains. He admits that in all probability they rise as natural artesians from an enormous depth (according to experiments made by the German Government, probably 4,000ft.), why, then, should he object to attribute the heat to the inherent high temperature at that great depth?—a far more plausible theory, in my opinion, than either that of friction or chemical action. The hot springs of Thermopylæ, in Greece, resemble those of Hanmer Plains in this: that their chief ingredient is chloride of sodium, or common salt. What they were twenty-three centuries ago