

lying rock. The following table of analyses of waters from different kinds of rocks gives a summary of results obtained:

	No. of Analyses	Mean amount of Solid Contents in 10,000 Parts of Water
1. Fluviomarine, Drift and Gravel.....	10	6.132
2. Chalk.....	30	2.984
3. Hastings Sand and Greensands.....	19	3.005
4. Oolites.....	35	3.033
5. Lias.....	7	3.641
6. New Red Sandstone.....	15	2.869
7. Magnesian Limestone.....	1	6.652
8. Coal-Measures.....	14	2.430
9. Yoredale Beds and Millstone-Grit.....	8	1.773
10. Mountain Limestone.....	13	3.206
11. Devonian and Old Red Sandstone.....	32	2.506
12. Silurian.....	15	1.233
13. Granite and Gneiss.....	8	0.594

From this table it is evident how greatly the proportion of dissolved mineral substance augments in those waters which rise in calcareous tracts, and how it correspondingly sinks in those where the rocks are mainly siliceous. The maximum percentage in group No. 13 was less than 1 part in every 10,000 of water, the minimum being 0.140 from granite. In No. 1, on the contrary, the maximum was 22.524, in No. 6 it was 7.426, and in No. 10 it was 9.850.<sup>84</sup>

2. Mineral Springs are in some instances cold, in others warm, or even boiling. Thermal springs are more usually mineral waters than cold springs, but there does not appear to be any necessary relation between temperature and chemical composition. Mineral springs may be roughly classified for geological purposes according to the prevailing mineral substance contained in them, which may range in amount from 1 to 300 grammes per litre.<sup>85</sup>

*Calcareous Springs* contain calcium-carbonate in such quantity as to be deposited in the form of a white crust round objects over which the water flows. Calcium-carbonate, according to Fresenius, is dissolved by 10,600 of cold and by 8834 parts of warm water.<sup>86</sup> But in nature, the pro-

<sup>84</sup> Rivers Pollution Commission, 6th Report, 1874, pp. 107-131. See also Reports of Brit. Assoc. Committee on underground circulation of water, beginning in 1876, and R. Warrington's Report on experiments at the Rothamsted Laboratory, Journ. Chem. Soc. 1887.

<sup>85</sup> Paul, Watts' "Dict. Chem." v. p. 1016.

<sup>86</sup> Roth, "Chem. Geol." i. p. 48. "One litre of water, either cold or boiling, dissolves about 18 milligrammes." Roscoe and Schorlemmer, "Chemistry," ii. p. 202.