

## WATER SUPPLY.

Mr. T. B. Farrington, Water Engineer, reports as follows :—

Two additional Service Reservoirs have been built as follows :—

	Capacity.
Littleover Reservoir	3,000,000 galls.
Spondon Reservoir	500,000 galls.

and the following mains have been laid in connection with same :—

18"	4,533 yards.
12"	590 yards.
6"	2,570 yards.

In connection with the Housing Sites, the following lengths of main have been laid for the Derby Corporation, County Authorities and private enterprise in the Water Area :—

6"	1,900 yards.
4"	7,300 yards.

The Water Supply has been satisfactory both in quality and quantity. I also append copy of the last analysis of water made by the Borough Analyst :—

"The following are the results of analysis, expressed in parts per 100,000, of the three samples of water received from you on the 11th inst., described thus :—

1. (a) As a whole
2. (b) From the Collecting Tunnel.
3. (c) From the Derwent Valley Board.

	Parts per 1,00,000		
	No. 1.	No. 2.	No. 3.
Total solid matter	11.0	41.5	6.5
Free and Saline Ammonia	0.001	0.0	0.001
Albuminoid Ammonia	0.004	0.003	0.005
Nitrogen as Nitrates	0.0	0.11	0.0
Chlorine	1.2	2.4	1.0
Oxygen absorbed in four hours at 80° F	0.167	0.003	0.190
Temporary Hardness	0.43	0.11	0.39
Permanent Hardness	7.43	14.86	3.51
Total Hardness	7.86	32.54	3.90
Appearance in 2ft. tube	Clear, greenish yellow	Clear, bluish	Clear, greenish yellow
Metals	None	None	None

**Mineral Analysis:—**

	Parts per 1,00,000		
	No. 1.	No. 2.	No. 3.
Silica	0.45	1.0	0.30
Oxides of Iron and Alumina	0.10	0.2	0.10
Lime CaO	2.95	13.85	1.30
Magnesia MgO	0.70	2.63	0.42
Sulphuric Anhydride	2.35	7.42	1.54
<b>Calculated analysis :—The Acids and Bases may be combined as follows :—</b>			
Calcium Carbonate	4.40	22.6	1.50
Calcium Sulphate	1.19	2.92	1.12
Magnesium Sulphate	2.10	7.89	1.30
Sodium Sulphate	0.44	0.80	
Sodium Chloride	1.98	3.96	1.65

**Samples 1 and 3.**

The analytical results show these samples to be of similar character. They each contain organic matter; but this is of vegetable origin, possibly derived from peaty material, and there is no indication of the occurrence of pollution. The only difference of any note between these samples is the hardness, which is increased in sample No.1 by the admixture of the Derwent Valley Water with a small proportion of the Filter Tunnel Water.

As a result of chemical analysis, I am of the opinion that each of these waters is of entirely satisfactory quality for use for drinking and domestic purposes.

**Sample No. 2.**

The analytical results shew this water to contain only a small portion of organic matter, and there is no indication of the occurrence of pollution. As a result of chemical analysis, I am of opinion that this water is of satisfactory quality for use for drinking purposes. The hardness is high, rendering this water undesirable as a supply in the raw state.

**Plumbo solvency.**

The samples have been tested separately in order to ascertain the extent of their action upon lead. For this purpose I used Houston's method, which consists of the upward filtration of the water through Lead Shot, under standard conditions. As a result, I found that neither of the waters possessed the power of attacking Lead under the above conditions. These samples may, therefore, be pronounced to be negatively plumbo-solvent.

**Action on other Metals.**

I also made tests as to the action of these waters upon Copper and Iron.

### Copper.

Pieces of Copper foil were completely immersed in each of the waters at room temperature for a period of 72 hours. Samples were drawn from each at intervals of 24, 48, and 72 hours and tested for Copper in solution. In every case a negative result was obtained, showing that in the cold neither of the waters has a solvent action upon Copper.

### Iron.

When pieces of wrought Iron were completely immersed in each of the samples at room temperature for 24 hours, corrosion was visible in every case, Oxide of Iron being deposited as the result of the action of the waters. The Derwent Valley Water was more active than the others.

Yours faithfully, (Signed)

JOHN WHITE. "

### Supply.

Number of gallons of water supplied to Derby from Public Supply	1,660,778,000
Gallons per day per head of population	32.34
Percentage of total quantity from the Derwent Valley Supply	86.34%

### Used during the year.

	<i>Gallons.</i>
Sewer Flushing	2,250,345
Street Watering	1,252,779
Steam Rolling	10,692
Street Swilling (footways)	150,975

### Wells.

Two samples of water were submitted for analysis, both from farmsteads. One was polluted to a very considerable extent with organic matter. Notice was served, the well was closed, and town water laid on. In the other case there was no indication of any- serious pollution, but the enormous amount of hardness, due to the presence of a very large proportion of calcium sulphate, rendered the water highly undesirable as a source of domestic supply. The water main being a great distance away and the expense of laying on a supply being so great as to render this impossible, it was arranged for the supply for household purposes to be discontinued and supplies fetched in churns from the nearest stand pipes.

#### **Credit**

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OCR by John Simpson for st-reunited.org.uk May 2021