

MEMOIRS

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**ANALYSIS OF SPRING, STREAM AND RIVER WATERS FROM THE
BUCKDEN - CRAY - HUBBERHOLME AREA, YORKSHIRE.**

D.T. Richardson A.R.I.C.

The accompanying table gives the chemical analyses of seven samples of water collected on the 5th. May 1963 and one sample of water collected 23rd. June 1963 - the latter being included in the table for comparison purposes.

Omitting for the moment the water taken from the small stream near the entrance to Buckden Gavel Mine (Sample A).

The River Wharfe water (Sample B) has a much lower hardness than the remainder of the waters but shows a high alkalinity (p.H.8.2). The lower hardness is probably due to dilution effect as it must be remembered the water has travelled some considerable distance before reaching Hubberholme. The remaining waters have remarkably similar compositions considering that they come from vastly different zones in the area - all are slightly hard waters and all show a relatively high degree of alkalinity the p.H., except in one case, being above 8.0.

It is interesting to note the difference in composition of the water from the small stream near the entrance of Buckden Gavel Mine (Sample A) which originates as a spring some 300 yards above the mine at an altitude of 2025 t ft. O.D.

Whereas it is true to say that this spring originates on a different face of Buckden Pike to the springs represented by samples, C, D, and E it is considered that this difference may be explained as follows: that this water does not travel as far underground before appearing on the surface, whereas the remainder of the waters have had to penetrate a greater depth of limestone before surfacing.

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The biologists amongst our ranks may well find that these alkaline springs will prove to be successful hunting grounds, there is little doubt that plankton nets placed in these risings would soon show whether or not the time was being well spent.

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ANALYSIS OF WATERS FROM THE BUCKDEN – CRAY – HUBBERHOLME AREA.									
Source	Stream	River	Spring	Spring	Stream	Spring	Stream	Spring	Stream
Sample Number	A	B	C	D	E	D	F	G	H
N.G.R. SD	9554. 7816	9268. 7829	9562. 8045	9530. 8041	9543. 7943	9530. 8041	9337. 7851	9321. 7838	9437. 7736
Altitude O.D.	1700'	765'	1500'	1450'	1725'	1450'	775'	750'	750'
Total Hard's (CaCO ₃)	38.3	79.2	127.0	167.0	116.8	167.0	130.4	148.0	108.8
Temp. Hardn's (CaCO ₃)	30.0	60.0	103.0	143.0	96.0	143.0	112.0	122.0	88.0
Perm. Hardn's (CaCO ₃)	8.3	19.2	24.0	24.0	20.8	24.0	18.4	26.0	20.8
Calcium (as CaCO ₃)	30.2	67.9	97.6	121.5	78.8	121.5	103.0	128.0	92.0
Magnesium (as MgCO ₃)	6.7	9.0	23.8	36.7	30.9	36.7	21.9	16.1	13.5
Manganese (as Mn)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Chlorides (as NaCl)	17.0	S.Tr.	S.Tr.	S.Tr.	S.Tr.	S.Tr.	Tr.	Tr.	S.Tr.
Free CO ₂	Nil	Nil	1.5	Nil	Nil	Nil	Nil	1.5	Nil.
p.H.	8.2	8.2	8.0	8.3	8.4	8.3	8.4	7.6	8.4
Temperature °C.		10.6°	5.5°	5.5°	5.5°	5.5°	9.4°	7.2°	10.0°

Results in milligrammes per litre (parts per million)

Analyses by D.T. Richardson, A.R.I.C.

A.Stream Near Entrance to Buckden Gavel Mine. Originates at 2025' O.D.

B.River Wharfe at Hubberholme.

C.Spring Rising on Dale Head Scar.

D.Spring Rising on Dale Head Scar.

SYMBOLS: S. Tr. = Slight Trace. Tr. = Trace.

E.Chew Close Gill. 650ft. from source of rising.

F.Combined waters of Crook Gill and Cray Gill Stream.

G.Spring at Haw Ings.

H.Buckden Beck immediately behind Inn.