

SOME YORKSHIRE WELL SECTIONS. BY WM. WHITAKER, B.A., F.R.S., F.G.S.,  
ASSOC. INST. C.E.

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[Words in square brackets inserted by the writer.]

Perhaps the following small collection of well-sections, which are believed to be unpublished, may serve as a nucleus for the gathering together of a greater quantity of like material. The writer will be glad to place any further notes at the disposal of the Society.

Many Yorkshire well-sections have already been described in various Geological Survey Memoirs and elsewhere.

ARMLEY, LEEDS. The Brewery (Mr. J. W. Wright).

Made and communicated by Messrs. ISLER and Co.

Yield, 12 gallons a minute.

		Thickness.		Depth.		
		Ft.	In.	Ft.	In.	
Dug Well (the rest bored, 6 inches diameter)						
	...	—		98	0	
[Coal Measures]	{	Slate and Coloured Stones	12	0	110	0
		Shale and Rock	22	0	132	0
		Rock	5	6	137	6

BARNSELY. Old Brewery (Messrs. Clarkson). 1881.

Made and communicated by Messrs. LEGRAND and SUTCLIFF.

No supply.

		Thickness.		Depth.		
		Ft.	In.	Ft.	In.	
Filled in Earth [made ground]						
	...	4	6	4	6	
[Coal Measures]	{	Yellow Sand and Stone	3	0	7	6
		Sandy Clay	3	0	10	6
		Light [-coloured] and Blue Clay	13	6	24	0
		Grey Stone	3	6	27	6
		Mixed Clay 6 in, and Dark Mixed Bind	8	6	36	0

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		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
	Black Bind .. ..	7	6	43	6
	<i>Coal</i> .. ..	3	0	46	6
	Fire Clay ... ..	14	0	60	6
	Grey Stone ... ..	1	6	62	0
	Fire Clay ... ..	4	0	66	0
	Grey Stone .. ..	4	0	70	0
	Light [-coloured] 2 ft., and very dark Mixed Bind ...	6	0	76	0
	Black Bind ... ..	6	0	82	0
	Black Bind and Stone ...	3	0	85	0
[Coal Measures]	Light [-coloured] Bind ...	3	6	88	6
	Dark and Mixed Bind ...	2	6	91	0
	Light [-coloured] and Stony Bind .. ..	6	6	97	6
	Black Bind, very dry, 1 ft.; and Bind ... ..	17	6	115	0
	Mixed ... ..	1	0	116	0
	<i>Coal</i> .. ..	0	6	116	6
	Bind ... ..	29	0	145	6
	Grey Stone ... ..	4	0	149	6
	Bind ... ..	3	6	153	0

BRADFORD. Messrs. Grandage and Co. 1876.

Bored and communicated by Messrs. LEGRAND and SUTCLIFF.

Water-level, 33 feet down.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
	Hard Stone ... ..	14	0	14	0
	Black Shale ... ..	12	0	26	0
	Blue Rag ... ..	5	6	31	6
	Blue Rag, Bind, and Shale ...	2	6	34	0
[Coal Measures]	Light [-coloured] Stone and Shale ... ..	2	6	36	6
	Hard Stone ... ..	21	6	58	0
	Black Shale ... ..	2	6	60	6
	Blue Rag ... ..	4	6	65	0
	Light [-coloured] Stone ...	5	6	70	6

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
[Coal Measures]	Black Shale ...	2	6	73	0
	Dark Hard Stone ...	3	4	76	4
	Black Shale ..	10	5	86	9
	Blue Rag ...	6	6	93	3
	Black Shale ...	6	8	99	11
	Black Shale Granite [?meaning]	5	9	105	8
	Blue Rag Stone...	4	3	109	11
	Hard Black Shale	9	6	119	5
	Hard Stone ...	2	6	121	11
	Hard Black Shale ..	19	6	141	5
	Brown Stone ...	3	0	144	5
	Black Shale ...	15	0	159	5
	Coal ...	3	0	162	5
	Blue Rag ...	7	9	170	2
Soft Brown Stone ..	1	3	171	5	
Hard Stone ...	10	7	182	0	

BRADFORD. Rosse Street Brewery (Spinks). 1876.

Made and communicated by Messrs. LEGRAND and SUTCLIFF.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
[Coal Measures]	Dug Well (the rest bored) ...	—	—	60	0
	Black Stone ...	10	6	70	6
	Hard Light [-coloured] Stone	10	3	80	9
	Blue Stone and Clay ...	3	3	84	0
	Hard Stone ...	8	6	92	6
	Dark Soft Stone ..	2	0	94	6
Hard Stone ...	5	6	100	0	

BRADFORD. Messrs. C. Taylor and Son. 1876.

Made and communicated by Messrs. LEGRAND and SUTCLIFF.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
[Coal Measures]	Dug Well (the rest bored)...	—	—	37	0
	Stone ..	3	9	40	9
	Sand and Iron [-stone]	1	0	41	9
	Dark Stone ...	8	0	49	9
	Sand ...	0	9	50	6
Stone ...	24	6	75	0	

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## ELLAND. Spa Field Mills.

Made and communicated by Messrs. ISLER and Co.

Good supply. Yield, 23 gallons a minute.

		Thickness.		Depth.	
		Ft. In.		Ft. In.	
Pit (the rest a boring, of 6 inches diameter					
	...	—	—	5	0
[Coal Measures]	{ Clay and Rock ...	..	11 0	...	16 0
	{ Blue Clay and Shale ..	..	5 6	...	21 6
	{ Shale and Coal ...	...	6 0	...	27 6
	{ White Clay ...	...	7 6	...	35 0
	{ Rock ...	...	17 9	...	52 9
	{ Blue Rag ...	...	1 0	...	53 9
	{ Rock ...	...	117 3	...	171 0
	{ Shale ...	...	8 10	...	179 10

## ESHOLT. For Mr. I. Barker.

Made and communicated by Messrs. ISLER and Co.

Yield, 20 gallons a minute.

		Thickness.		Depth.	
		Ft. In.		Ft. In.	
Pit (the rest bored, 5 inches diameter)					
	...	—	...	8	0
Gravel and Stones					
	...	18	0	...	26 0
[Coal Measures]	{ Sand and Stone...	...	17 0	...	43 0
	{ Rock ...	...	18 6	...	61 6
	{ Limestone ...	...	7 6	...	69 0
	{ Light [-coloured] Shaly Rock	...	11 0	...	80 0
	{ Rock ...	..	22 4	...	102 4
	{ Sandstone Rock	...	3 0	...	105 4
	{ Rock ..	...	18 0	...	123 4

## HOLFIELD (near Doncaster). Mr. W. Winder.

From Mr. CRAWFORD.

Water-level, 4 feet 6 inches down. Yield, 13½ gallons a minute.

		Thickness.		Depth.	
		Ft.		Ft.	
Dug Well (the rest bored)					
	...	—	...	12	
Already bored					
	...	—	...	25	
Red Sandstone					
	...	51	...	76	

## KEIGHLEY. The Keighley Fleece Mills Co.

Made and communicated by Messrs. ISLER and Co.

Water-level, 47 feet down. Water tapped at 72 feet rose 5 feet from surface ; over-flowed at 100 feet at the rate of 200 gallons an hour ; at 123 feet at the rate of 420 gallons an hour ; at 133 feet at the rate of 720 gallons an hour. At 218 feet fresh springs tapped, water lowered to 43 feet down.

		Thickness.		Depth.	
		Ft. In.		Ft. In.	
	Well (the rest bored) ...	...	—	...	5 0
[Drift]	{ Ballast [Gravel] ...	...	7 0	...	12 0
	{ Sand and Ballast ...	...	14 0	...	26 0
	{ Blowing Sand ...	...	12 0	...	38 0
	{ Large Boulders and Clay ...	...	32 0	...	70 0
	{ Shale and Clay ...	...	5 0	...	75 0
	Clay and Stones ...	...	—	...	—
	Shale ...	...	22 0	...	97 0
	Rocky Shale ...	...	3 0	...	100 0
	Rock ...	...	4 0	...	104 0
	Millstone Grit ...	...	3 0	...	107 0
	Rock ...	...	22 0	...	129 0
[Coal Measures]	{ Blue Rock ...	...	4 0	...	133 0
	{ Rock ...	...	50 6	...	183 6
	{ Millstone Grit ...	...	9 6	...	193 0
	{ Blue Rock ...	...	6 0	...	199 0
	{ Millstone Grit ...	...	28 3	...	227 3
	{ Rock ...	...	64 4	...	291 7
	{ Rocky Shale ...	...	46 8	...	338 3
	{ Rock ...	...	1 3	...	339 6
	{ Rocky Shale ...	...	15 9	...	355 3
	{ Rock ...	...	2 9	...	358 0

## KIRKSTALL. The Kirkstall Brewery Co.

Made and communicated by Messrs. ISLER and Co.

Water-level, 43 feet down. Yield, 72 gallons a minute.

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		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
Pit (the rest a boring, of 6 inches diameter)					
	...	—	...	49	0
[Coal Measures]	Shale and Slate..	11	0	60	0
	Shale	15	0	75	0
	Rock	5	0	80	0
	Shale	9	0	89	0
	Fire Clay	1	6	90	6
	Rock	9	6	100	0
	Shale	29	0	129	0
	Rock	1	0	130	0
	Shale	4	0	134	0
	Rock	2	0	136	0
	Shale	20	0	156	0
	Rock	1	0	157	0
	Shale	5	0	162	2

LEEDS. 26, Kirkstall Road. (Mr. A. Wright). 1880.

Made and communicated by Messrs. LEGRAND and SUTCLIFF.

Yield, 36 gallons a minute.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
Gravel	...	8	6	8	6
[Coal Measures]	Sandstone	1	2	9	8
	Blue Stone	8	6	18	2
	Hard Light-coloured Stone	5	7	23	9
	Coal	1	0	24	9
	Blue Rag	6	9	31	6
	Black Shale	5	4	36	10
	Hard Blue Rag	8	2	45	0
	Black Shale	10	6	55	6
	Blue Rag	5	8	61	2
	Black Shale	5	11	67	1
	Brown Rag	1	2	68	3
Black Shale	1	4	69	7	
Blue Rag	2	0	71	7	

MIDDLESBOROUGH. The Middlesborough and District Mineral Water Co.

Bored and communicated by Messrs. ISLER and Co.

Water-level in the well 31 feet down, in the bore-hole 38 feet. Supply, about 1000 gallons an hour.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
Dug Well (the rest bored)		...	—	...	33 0
Sand and Gravel		...	27 0	...	60 0
[Trias]	Dark Blue Clay...	...	9 0	...	69 0
	Blue Marl and Gypsum	...	7 0	...	76 0
	Red Marl with beds of Rock	...	22 6	...	98 6
	Hard Marl and Rock	...	2 0	...	100 6
	Hard Rock	...	5 0	..	105 6
	Red Marl and Rock	...	36 6	...	142 0
Red Sandstone		...	23 0	...	165 0

ROTHERHAM. Alum Co. From Mr. CRAWFORD.

		Thickness.		Depth.	
		Ft.	In.	Ft.	In.
Loose Rock		...	7 0	...	7 0
Solid Rock		...	12 0	...	19 0
[Coal Measures]	Coal	...	1 0	...	20 0
	White Clay	...	20 0	...	40 0
	Hard Blue Clay...	nearly	16 6	..	56 6