

# RAINFALL AT Hunworth (Burn Res.)

Lat. ....

Lon. ....

 County of Durham.

Rain Gauge, by .....

 Observer Hartlepool Gas & Water Co.

Diameter. ....											
Height. ....											
Altitude. ....											
Year .....	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	MEANS.
January .....								5.78	2.79	1.39	
February .....								.89	1.05	2.50	
March .....								2.24	1.36	2.40	
April .....								2.14	3.46	1.35	
May .....								2.37	1.36	3.27	
June .....								1.33	.39	1.32	
July .....								2.73	.85	1.20	
August .....								2.98	3.20	1.88	
September .....								2.07	5.07	4.29	
October .....								1.38	2.53	4.37	
November .....								.83	2.35	3.43	
December .....								2.93	5.22	4.93	
TOTALS .....								27.67	29.63	32.33	

Using an average of 26.3 ins., these seem reasonable on % maps for 1868 and 1869. (Rainfall Atlas).

Maps for 1867 not available but relation of '67 to '68 & '69 seem about right.

H. Russell 1862B. 17. 3.49

RAINFALL AT *Hartlepool Hurworth Burn*Lat. *54.41.5.*Lon. *1.22.0. W.*County of *Durham*Rain Gauge, by..... Observer *Wm. Hurwath Esq. C. E.*

Diameter.....	8											
Height.....	7											
Altitude.....	360.		360 <sup>W</sup>									
YEAR.....	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	MEANS.	
January.....	1.46	1.39	4.12	1.39	1.09	1.64	.85	3.37	1.86	2.28	1.945	
February.....	1.60	2.39	2.52	2.12	.70	.88	2.08	1.52	.79	3.15	1.775	
March.....	2.03	1.03	4.39	2.33	.86	.68	2.00	2.54	.86	.95	1.767	
April.....	.64	3.20	4.30	1.82	.88	.53	2.01	3.95	1.79	1.87	2.099	
May.....	1.93	1.87	1.70	2.83	2.57	.85	1.30	2.22	2.74	1.55	1.956	
June.....	2.19	4.02	2.52	2.01	.80	1.66	2.75	.88	3.58	3.25	2.366	
July.....	.70	6.61	3.72	2.31	.94	4.34	2.15	2.39	.34	3.47	2.697	
August.....	2.71	.87	2.99	2.11	1.60	2.96	2.39	4.83	5.24	3.04	2.874	
September.....	.87	6.10	4.14	1.60	1.98	1.43	3.15	2.12	1.06	1.06	2.351	
October.....	<sup>+</sup> 5.48	2.26	4.02	2.40	1.32	4.63	3.07	2.24	1.22	.63	2.727	
November.....	4.13	2.24	5.10	1.81	1.91	6.94	2.66	.99	6.58	2.74	3.510	
December.....	5.10	2.53	4.09	.13	4.35	.92	7.11	1.49	6.55	1.21	3.348	
TOTALS.....	28.84	34.51	43.61	22.86	19.00	27.46	31.52	28.54	32.61	25.20	29.415	

1871 by placed in an open field on ground sloping gradually down towards the E

# RAINFALL AT *Hartlepool Harworth Burn*

80

Lat. ....

Lon. ....

County of *Durham*

Rain Gauge, by .....

Observer

*T. Fenwick Esq. C.E.*

*Dec 1*

Diameter ....	5										
Height .....	0.7										
Altitude ....	360										
Year .....	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	MEANS.
January ....	.42	1.64	.78	1.60	2.67	2.41	3.66	1.54	1.02	1.41	1.715
February ....	1.29	3.46	3.4	1.04	.92	1.28	1.25	.66	1.51	1.13	1.288
March .....	.63	3.32	2.06	2.62	1.78	1.70	2.60	2.07	4.31	3.28	2.437
April .....	2.89	1.08	4.00	1.39	2.05	1.86	1.62	1.10	2.92	2.17	2.108
May .....	1.39	1.20	2.54	1.76	.87	4.53	3.38	2.06	.62	2.28	2.068
June .....	1.75	1.33	3.35	1.86	.76	1.92	.63	.27	1.57	.31	1.375
July .....	4.45	3.53	2.84	4.89	2.82	.95	6.07	1.03	6.26	2.44	3.528
August .....	2.02	5.46	2.39	.99	1.26	2.29	1.63	2.26	1.88	2.68	2.286
September ....	3.84	3.49	2.20	4.47	1.18	2.21	1.43	3.91	1.44	.82	2.499
October ....	4.82	3.13	4.77	1.61	1.62	4.32	3.45	3.16	.58	5.40	3.286
November ....	2.61	1.15	2.94	1.01	1.47	1.39	4.15	3.69	3.64	1.10	2.315
December ....	3.29	2.69	4.38	1.79	1.36	1.38	3.73	3.12	.92	1.21	2.407
TOTALS ....	29.40	31.48	32.59	25.03	18.96	26.29	33.60	24.87	26.67	24.23	27.312



# RAINFALL AT

*Hartlepool Hurworth Burn*

Lat. \_\_\_\_\_

Lon. \_\_\_\_\_

County of \_\_\_\_\_

*Durham*

Rain Gauge, by \_\_\_\_\_

Observer \_\_\_\_\_

*J Fenwick Esq C.E.*

*Tees 1*

Diameter ....	5		5									
Height .....	0	7										
Altitude ....	360											
Year .....	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	MEANS.	
January ....	2.01	2.20	1.75	1.71	2.58	5.31	.70	2.19	1.01	2.62	2.208	
February ....	1.42	.10	1.69	2.02	1.83	1.88	.42	1.77	1.05	1.49	1.367	
March .....	1.38	3.04	1.00	1.18	1.38	2.28	1.55	2.63	2.50	2.53	1.947	
April .....	.84	2.95	2.01	1.02	1.53	1.38	.52	1.49	2.19	2.77	1.670	
May .....	1.34	2.85	1.81	2.70	2.12	.66	.82	1.38	2.27	3.15	1.910	
June .....	1.82	.48	1.75	1.72	2.53	3.44	2.74	2.40	1.80	1.61	2.029	
July .....	2.15	3.31	1.40	3.02	2.37	5.96	2.28	.90	.37	2.36	2.412	
August .....	2.23	4.90	3.90	1.31	1.95	2.61	1.73	3.34	2.05	.37	2.1139	
September....	2.31	2.05	2.81	.97	1.05	.62	3.41	2.50	.80	2.42	1.894	
October .....	2.76	1.88	6.77	1.26	5.15	5.67	6.96	1.33	4.81	2.81	3.940	
November....	4.96	1.99	1.17	3.62	.73	2.23	1.78	2.14	2.23	1.36	2.221	
December ....	2.40	2.96	1.18	2.27	1.39	1.23	4.18	1.50	1.94	2.98	2.203	
TOTALS . . .	25.62	28.71	27.24	22.80	24.61	33.27	27.09	23.57	23.02	26.47	26.240	

*1890*

# RAINFALL AT Hartlepool Hurworth Burn

Lat. 54° 41' 35" N Lon. 1° 22' W County of Durham

Rain Gauge, by Cassella ☐ Observer J. Fenwick Esq C.E. Head

See to - 1.

2. Brown Esq C.E.

Diameter ..	5					10	<input type="checkbox"/>					
Height ....	0.7			1.2		1.0						
Altitude ..	360				357							
Year ....	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	MEANS.	
January ..	3.36	1.41	.83	2.05	1.59	.33	3.09	.79	1.10	.71	1526	
February ..	6.50	2.20	1.07	.82	3.09	.78	1.02	1.57	1.13	1.42	1965	
March ....	2.23	2.33	.80	1.73	1.91	1.76	1.15	.83	4.13	4.95	2182	
April .....	1.00	1.13	1.60	1.38	1.29	2.57	.75	1.89	2.98	2.23	1682	
May .....	.96	1.64	2.22	1.85	2.94	.85	3.37	3.17	1.33	1.63	1996	
June .....	3.29	1.57	2.17	2.97	1.93	.72	1.13	3.74	.82	2.24	2058	
July .....	1.85	3.21	2.43	4.19	1.27	1.41	.61	1.50	2.88	2.57	2192	
August ....	5.70	2.16	1.93	2.06	2.97	3.55	3.54	2.24	1.41	3.84	2940	
September..	.62	1.10	.97	2.76	1.97	2.89	.43	.49	2.59	2.45	1627	
October....	6.37	2.06	3.52	8.76	.76	2.64	5.02	5.45	1.68	2.21	3847	
November..	2.95	4.76	1.47	1.84	2.37	4.99	3.06	2.66	1.62	1.17	2689	
December..	2.83	3.13	2.60	2.10	2.49	.66	1.97	3.38	.88	3.00	2304	
TOTALS ..	37.66	26.70	21.61	32.51	24.58	23.15	25.14	27.71	22.60	28.42	27008	552

1905 Jordon Church 2 3/4 miles W

Hurworth Burn Station 100 yards E

1906 Embleton Church 2 1/4 miles SSE

1909 Corrected for wrong day

Huk

RAINFALL at Hurworth Burn ReservoirCounty of DurhamObserver J. Bowler Esq. C.E.River Basin Fees & Caw Branson Esq. C.E.Square Rain Gauge, by Cavilla

Diameter ...	10										
Height .....	1.0										
Altitude ...	357 ft										
Year ...	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	Total MEANS 1916-19
January ...	3.10	1.43	2.88	2.85	1.28	2.46	.44	3.17	1.91	2.98	8.50
February ...	1.55	1.07	1.67	.41	.50	2.04	2.66	.92	1.15	1.93	6.66
March .....	.43	2.80	1.48	1.42	1.62	1.38	3.64	1.93	1.35	2.13	9.75
April .....	2.48	1.35	.09	2.68	.34	.63	1.51	2.00	1.28	1.47	6.26
May .....	1.91	.65	2.39	1.18	1.38	1.93	2.09	1.67	1.27	.75	5.78
June .....	1.97	4.57	5.50	1.21	3.91	.41	2.25	1.25	.43	.89	4.82
July .....	2.88	.88	3.41	.66	3.63	3.85	2.55	.78	4.41	1.62	9.36
August .....	2.73	2.14	4.99	1.80	.99	2.06	3.09	5.84	1.87	2.52	13.12
September ..	.54	1.91	1.47	2.12	2.12	1.67	2.01	.93	4.62	.66	8.22
October ...	2.64	2.95	2.80	3.28	2.05	1.96	2.23	1.93	1.95	6.14	12.25
November ..	2.97	4.37	2.18	1.10	3.46	2.11	1.99	1.33	.66	3.86	7.84
December ...	1.99	2.39	.88	1.28	3.09	6.39	2.40	2.61	2.82	2.74	10.57
TOTALS ...	25.19	26.51	29.74	19.99	24.37	26.89	26.86	24.36	23.72	28.19	103.13

1910 Corrected for wrong day  
 1911 "  
 etc. seq.

Date.	Lat. N.	Long.	Railway Station.	Distance.	Direction.	Church.	Distance.	Direction.
1911	54.41.35 <sup>N</sup>	1.22.44 <sup>W</sup>	Hurworth Burn	100 yds	E	Embleton	2 1/2 mi	SSE.



RAINFALL at Hunworth Burn ReservoirCounty of DurhamObserver A. W. Braddon Esq. C.E.River Basin Fees & C. 1J.R. Bradshaw Esq.Square Rain Gauge, by CasellaWest-Staffordshire Gas & Water Co.

Diameter ...	10												
Height .....	10												
Altitude ...	557												
Year .....	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930. MEANS.	1920-30 TOTALS	
January ...	2.50	3.72	2.44	1.05	1.62	1.27	2.09	0.96	2.30	3.13	3.50	24.58	
February ...	.75	.29	2.05	3.66	1.29	2.42	1.73	0.64	1.05	.96	2.27	17.11	
March .....	2.03	.62	1.23	1.63	1.10	1.39	.66	1.85	2.02	.16	3.12	15.86	
April .....	3.32	.88	1.60	1.79	1.89	2.60	.88	1.32	1.00	1.24	2.48	19.00	
May .....	3.13	1.35	1.17	2.52	4.80	2.26	1.96	1.57	1.29	1.30	1.26	22.61	
June .....	.76	.53	1.47	.81	1.75	.06	3.04	2.99	4.77	1.85	1.03	19.06	
July .....	4.30	1.67	4.30	1.80	4.92	2.13	3.22	3.99	1.29	2.10	5.03	34.75	
August .....	1.42	4.74	2.20	3.31	2.56	4.45	2.35	5.33	2.99	1.93	3.86	35.14	
September...	1.32	.50	4.18	1.44	2.13	3.16	1.91	2.92	.75	.90	3.84	23.05	
October .....	2.32	1.68	1.82	2.15	3.47	1.90	2.65	1.48	2.70	2.12	1.83	24.62	
November...	.78	2.66	.83	3.83	1.03	2.44	3.40	2.72	2.27	2.39	3.47	25.82	
December...	3.17	1.56	3.96	2.51	2.17	3.15	1.39	2.31	1.47	2.40	1.80	26.39	
TOTALS...	26.30	20.20	27.25	26.55	28.73	27.23	25.28	28.58	23.90	20.48	33.49	287.99	

1926. Rainfall entered to day of reading up to 20<sup>th</sup> Sept., after that date credited to previous day.

Position of Station on reduced Ordnance Survey  
Map, 2 miles to 1 inch Series

No. of Map

Reference No.

Date.	Lat. N.	Long. W.	Railway Station.	Distance from gauge	Direction from gauge	Parish Church.	Distance from gauge	Direction from gauge
1920	54° 41' 35"	1° 22'	Hunworth Burn	100 yds	E	Embleton	2 1/4 mi	SS E

RAINFALL at Hurworth Burn Reservoir,County of DurhamObserver J. R. Bradshaw, Esq.,River Basin Tees & C. - 1.Type of Gauge M.O.Annual Average 26.5 in. based on 35 years obs. un-weighted. Period of average 1881-1915 Ref. S

917819/29

Diameter	10 in.										
Height	1.0.										
Altitude	357.										
Year	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	Means Totals
January	2.07	1.16	1.93	1.09	2.30	3.22	2.27	1.72	4.62	1.89	2227
February	1.16	1.32	2.01	.46	2.81	3.30	2.42	1.46	.59	2.51	1804
March	1.32	2.41	1.44	2.19	.60	1.83	3.16	.14	2.67	2.12	1788
April	3.21	1.09	.85	3.34	2.19	1.45	2.10	.11	1.57	1.29	1720
May	2.46	4.22	1.57	.85	.76	2.14	2.62	3.04	1.67	.97	2030
June	3.47	1.05	1.05	2.49	2.64	3.69	0.92	2.48	2.42	1.18	2139
July	4.44	2.61	1.78	1.69	.63	3.34	1.49	2.68	2.12	5.82	2660
August	2.65	3.24	.38	2.83	1.56	1.99	1.18	2.09	1.70	1.30	1892
September	4.80	2.04	1.87	1.21	4.87	2.39	1.48	1.74	1.29	1.54	2328
October	1.12	3.31	3.43	2.69	4.06	1.09	1.90	2.77	5.61	3.00	2892
November	2.17	1.05	3.53	2.75	4.16	2.59	2.88	1.72	2.45	3.43	2673
December	.96	1.03	1.86	4.05	2.42	1.52	3.35	3.48	1.12	2.67	2446
TOTALS	29.83	24.63	21.70	25.64	29.00	28.65	27.77	23.43	27.83	27.72	26600
	D.	D.	D.	D.	D.	D.	D.	D.	D.	D.	

1935. Farm buildings 30' high 100 yards N.E.

1937. Exposed high level ground.

Position of Station on reduced Ordnance Survey Map, } No. of Map..... Reference No.....  
1 mile to 1 inch Series

Date.	Lat. N.	Long.	Railway Station.	Distance from gauge	Direction from gauge	Parish Church.	Distance from gauge	Direction from gauge
1931.			Hurworth Burn	100 yds.	E.	Embleton	2 1/4 m.	S.S.E.



Station No. T.F. 3526

RAINFALL at Hamworth Burn Reservoir

41

County of DurhamObserver J.R. Bradshaw Esq.River Basin Tees & C-1F.J. WEAVER Esq. (1929)Type of Gauge Caella 10" square PDAdam Hobb Esq. (1931)Annual Average 26.5 in. based on 35 years obs. ~~un~~-weighted. Period of average 1881-1915 Ref. SFile No. 917819/29

Diameter	10"		0.29	6.68		8"						
Height	1'0"			1								
Altitude	354'			41								
Year	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1941-50 Means	Totals
January	3.51	2.71	2.71	.84	3.81	1.17	1.52	7.89	.78	1.57	26.51	
February	6.39	2.06	.49	1.76	1.20	.42	(3.59)	1.43	.39	3.14	20.87	
March	2.10	.70	.53	.61	.33	1.52	3.65	.72	.90	.71	11.77	
April	1.16	.94	.61	2.09	.99	2.04	2.85	1.82	1.62	1.88	15.50	
May	1.23	1.13	2.09	1.36	2.15	2.44	1.68	1.41	.75	1.99	16.23	
June	1.33	.99	1.23	1.97	2.26	2.45	2.35	3.47	.54	1.16	17.75	
July	.73	3.66	1.21	2.40	1.97	4.28	2.01	.68	1.62	2.78	21.34	
August	2.68	2.03	3.92	1.70	3.57	3.53	.25	4.11	1.77	4.57	28.13	
September	.56	3.41	3.28	4.32	1.31	4.04	1.78	2.65	.65	2.70	24.70	
October	3.42	2.47	1.59	2.07	3.52	2.25	.80	1.67	2.54	1.06	21.49	
November	3.13	.76	2.10	4.33	1.34	5.77	1.88	1.87	3.71	6.60	30.99	
December	.41	2.06	1.29	1.06	1.20	2.98	1.76	1.65	2.22	2.37	16.40	
TOTALS	26.65	22.92	21.05	24.51	23.65	32.39	24.12	28.37	17.49	30.53	251.68	10

1941 Exposed high level ground

23.11.45 square gauge replaced; oval no. pattern. Rain gauge at 1/4 lb. ground

20004

221.15

Position of Station on reduced Ordnance Survey Map,  
1 mile to 1 inch Series

No. of Map.....

Reference No.....

Date.	Lat. N.	Long.	Railway Station.	Distance from gauge	Direction from gauge	Parish Church.	Distance from gauge.	Direction from gauge.
1941			Hamworth Burn L.N.E.R.	100 yds	E	Embleton	2 1/2 miles	S.S.E.

BRITISH RAINFALL ORGANIZATION

3526 T.F. 47

51

County of Durham

Observer

Adam Hope Esq.

River Basin..... Lees & C-1

J. Chomera, Eng. BSc (1952)

Type of Gauge..... *M.D.*

Annual Average 26.5 in, based on 35 years obs. un-weighted.

Period of average

Ref. 5

25.97 " " " " " 1916-1950

File No. 917819/29

Diameter ...	8"											
Height ...	1' 0"											
Altitude ...	357'											
Year ...	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	Means Total	
January ...	1.25	1.82	.79	2.16	1.96	3.08	1.46	1.36	2.52	4.58	21.00	
February ...	2.32	.55	1.82	1.59	2.26	1.45	2.13	3.68	.54	1.89	18.13	
March ...	4.40	1.81	.11	1.19	1.37	.85	.96	2.40	.60	1.71	15.40	
April ...	1.34	1.58	2.06	.30	1.00	.83	.35	1.51	1.76	0.61	11.34	
May ...	5.72	1.53	1.97	2.40	1.39	.38	1.53	3.01	.49	1.48	19.90	
June ...	1.20	1.28	1.94	1.56	2.60	3.51	1.99	2.71	1.19	0.29	18.27	
July ...	1.91	.81	3.12	1.98	1.14	2.50	3.66	2.56	2.04	4.08	29.80	
August ...	4.90	1.94	4.28	4.55	.56	8.84	2.54	2.87	.18	2.19	32.85	
September ...	.88	5.50	1.09	1.69	1.51	1.90	3.15	1.53	.75	2.02	20.02	
October ...	1.38	2.57	1.40	4.18	1.19	1.18	1.61	1.32	1.20	8.91	24.94	
November ...	5.11	3.93	1.42	3.78	1.92	.70	1.60	.56	3.77	2.85	25.64	
December ...	3.16	2.01	.76	1.89	2.48	1.76	1.11	3.09	2.84	2.32	21.42	
TOTALS ...	33.57	25.33	20.76	27.27	19.38	26.98	22.09	26.52	17.88	32.93	252.71	

1955. "Exposed ground" - no obstructions.

*Position of Station on Ordnance One-Inch map :*

No. of Map.....

National Grid Reference **NZ(45) 409333**

Date.	Lat. N.	Long.	Railway Station.	Distance Direction from gauge		Parish Church.	Distance Direction from gauge.	
1952			Hansworth Burn	100*	E	Embleton	2¼ mi	SSE

*Summary of Earlier Records from 10-year Sheets :*

1916-1950, P - accepted

		1910-19	1920-30	1931-40	1941-50	1951-60
Record D, or d	C1867	C1910 ✓ Aug-11	✓ ✓	✓ ✓	✓ ✓	