

TABLE VII  
CHEMICAL COMPOSITION OF SANDSTONES

Reference No. (see Fig. 33).	Name of Stone.	Silica.	Alumina.	Oxides of Iron.	Carbonate of Lime.	Carbonate of Magnesia.	Titanium Oxide, Potash, etc.	Soda, etc.	Water and Loss.
30	Appleton	92.22	2.16	2.96	0.30	0.71	...	...	1.65
32	Appley Bridge Blue	78.83	9.30	3.36	0.99	1.08	2.03	2.42	1.99
36	Berristall	87.00	5.20	3.10	0.68	1.00	...	1.80	1.22
25	Bramley Fall	96.58	1.10	0.34	0.49	...	...	...	1.49
10	Corsehill, Red	95.33	0.59	1.28	1.49	1.31	...	...	...
28	Crosland Hill	87.85	4.65	2.36	0.09	0.29	0.42	2.86	1.48
42	Dungeons	96.40	1.30	...	0.36	...	...	...	...
17	Dunn House	97.30	0.85	...	0.30	0.25	...	...	1.30
13	Heworth Burn	86.50	5.93	2.49	1.22	0.91	...	1.95	1.00
49	Hollington	86.64	8.78	1.02	0.72	0.44	...	0.40	2.00
9	Locharbriggs	97.88	0.38	0.80	0.25	0.10	...	...	0.59
48	Mansfield, White	51.62	1.58	26.58	18.16	...	...	...	2.06
12	Springwell	86.04	8.80	0.67	0.19	...	...	2.30	2.00
15	St. Bees Red	85.20	2.00	7.00	0.10	0.30	...	3.30	2.10
46	Stancliffe	96.40	1.30	0.36	...	...	...	...	1.94
29	Wellfield	85.78	6.98	1.73	0.73	...	...	1.57	3.21
26	Woodkirk Blue	82.72	6.88	3.86	1.00	0.30	0.70	0.19	4.35
27	Woodkirk Brown	83.00	8.02	3.43	0.12	0.07	0.55	0.65	4.16

TABLE VIII  
CHEMICAL COMPOSITION OF LIMESTONES

Reference No. (see Fig. 33).	Name of Stone.	Carbonate of Lime.	Carbonate of Magnesia.	Alumina and Oxide of Iron.	Silica.	Water and Loss.	Remarks.
52	Ancaster Freestone	93.59	2.90	0.80	...	2.71	A magnesian lime- stone.
41	Anston	54.88	43.08	0.73	0.56	0.75	
67	Beer	96.60	0.50	0.45	2.25	0.20	Referred to as a marble
54	Clipsham Old Quarry	97.56	0.54	0.83	0.84	0.23	
60	Corsham Down	94.95	2.26	0.98	...	1.81	
47	Hopton-Wood	98.40	0.32	0.31	0.77	0.20	
61	Monk's Park	95.56	0.40	1.52	1.20	1.32	
40	Park Nook	56.10	42.20	0.50	...	1.20	A magnesian lime- stone.
68	Portland	95.16	1.20	0.50	1.20	1.94	
65	Radford	98.50	0.37	0.20	0.90	0.03	
58	St. Aldhelm Ground	94.52	2.50	1.20	...	1.78	
55	Weldon	93.43	3.55	1.09	0.80	1.13	

movement of the earth's crust) or a combination of both. As a result of this metamorphism, the original structure of the rocks has been destroyed, the arrangement of the particles (or stratification) being changed. The chief metamorphic rocks used for building purposes are (a) marbles, (b) slates and (c) quartzite.

(a) *Marbles*.—True marbles are metamorphosed limestones consisting of aggregates of granular crystals of calcium carbonate (calcite). The composition varies, but some marbles comprise approximately 98 per cent. of calcium carbonate with traces of magnesium carbonate, silica and oxide of iron. Many hard, compact limestones, capable of taking a good polish, are referred to in the trade as marbles, although the metamorphosis has been only partial; examples of these so-called marbles are obtained from Derbyshire and Devonshire (see below). Marbles are obtained in a great variety of colours, some of them being richly marked or veined (due to the presence of iron oxides) and others are richly fossilized; many are finely grained and can be elaborately carved. Because of their delicacy of colouring and capacity of taking a high polish (p. 104), marbles are chiefly used for decorative purposes; they are thus employed as wall linings (the slabs being usually  $\frac{3}{4}$ -in. thick), pavement or floor coverings (of  $\frac{3}{4}$  to 1-in. thick slabs), staircase treads, risers and balustrades, internal columns, shop fronts, fireplaces, etc.; they are also in demand for ecclesiastical work, such as altars, screens, fonts and statues.

The best known so-called marbles quarried in this country (and known as "English marbles") are Ancaster Brown Weather Bed (Lincolnshire), Hopton-Wood (Derbyshire) and Ashburton (Devonshire), although none of these are true marbles.

*Ancaster Brown Weather Bed* is of the Lower Oolites series (Jurassic system). It is brown with grey and buff mottling. It is coarse grained, free working and takes a high polish.

*Hopton-Wood Marble*.—This Derbyshire marble is marketed under five classifications, i.e., (1) Light Hopton-Wood (cream-coloured ground spotted with small light brown crystals; suitable for both internal and external—if in clean atmosphere—purposes); (2) *Dark Hopton-Wood*<sup>1</sup> (similar to (1) but more densely marked with slightly darker patches); (3) *Black Bird's-eye* (black with slight brown cast having light coloured fossil spot markings, hence the name; only suitable for internal work); (4) *Grey Bird's-eye* (similar to (3) but of grey-brown colour); and (5) *Derbyshire Fossil* (deep grey colour, richly fossilized, some of the fossils being 2-in. long; only suitable for internal work).

*Ashburton Marble*.—This Devonshire marble has a most attractive appearance, it being dark grey in colour, verging on black, with bright red and white crystalline veins, together with fossils.

*Irish Marbles* in demand in this country include: *Black* (quarried in Kilkenny and Carlow); *Connemara Irish Green* (quarried in Galway, green ground

<sup>1</sup> Both Light and Dark Hopton-Wood stone were used after the Great War by the Imperial War Graves Commission for 120,000 headstones.