

CHAPTER TWO

MASONRY

Syllabus.—Classification of stones and brief description of the quarrying, preparation and characteristics of limestones and sandstones. Surface finishes. Tools. Natural bed. Defects in stone. Classes of walling, including random rubble uncoursed, random rubble built to courses, squared rubble uncoursed, squared rubble built to courses, regular coursed squared rubble, polygonal, flint, Lake District and ashlar. Dressings to door and window openings, including inbands, outbands, lintels, arches, sills, mullions, transomes and steps. Plinths. Simple string courses, friezes, cornices, parapets and copings. Joints, dowels, cramps and plugs. Mortar jointing. Construction of walls. Lifting appliances.

THE art of construction in stone is called masonry.

CLASSIFICATION OF STONES

Rocks are divided into the following groups: (1) igneous, (2) sedimentary and (3) metamorphic.

(1) Igneous rocks have been formed by the agency of heat, the molten material subsequently becoming solidified. The chief building stone in this class is *granite*.

(2) Sedimentary rocks are those that have been formed chiefly through the agency of water. Most of them have been derived from the breaking up of igneous rocks, the particles, conveyed and deposited by streams, accumulated to form thick strata that have been hardened by pressure. The principal building stones in this group are *limestones* and *sandstones*.

(3) Metamorphic rocks form a group which embraces either igneous or sedimentary rocks which have been changed from their original form (metamorphosed) by either pressure, or heat, or both. *Slates* (see Chapter Five) and *marbles* come under this class.

Limestones and sandstones are those which are used chiefly for general building purposes.

LIMESTONES.—A limestone consists of particles of carbonate of lime cemented together by a similar material. Portland stone and Bath stone are in this class.

Portland Stone, obtained from the Isle of Portland (Dorset), is one of the best-known limestones, and stone from one of the beds or seams, known as *Whitbed* (see Fig. 18), is one of the best building stones used in this country for high-class work. Whitbed varies in colour from white to light brown, the latter being the best; it is durable, and, on account of its fine grain, is easily carved and moulded. The *Basebed*¹ is not so durable and should only be used

¹ The basebed is slightly whiter and the texture is somewhat finer than the whitbed; it is easily worked on account of its fine and even grain, and is suitable for internal work as for monuments and for purposes where carving or much fine detail is required.

for external purposes after careful selection. The *Roach bed* is not suitable for general building purposes on account of the large number of cavities which are present, but because of its great strength and good weathering properties it is used in the construction of sea walls and similar marine work.

Bath Stone, obtainable in the vicinity of Bath, is used for general building purposes. It varies in colour from white to light cream or yellow, it has a fine grain and, because of its relative softness, it can be easily worked.

SANDSTONES.—These are composed of consolidated sand and consist chiefly of grains of quartz (silica) united by a cementing material. The quartz grains are practically indestructible, and the quality of the stone therefore depends essentially upon the cementing material which may be silica (forming siliceous sandstones), oxides of iron (forming ferruginous sandstones), calcium carbonate (forming calcareous sandstones), etc.

Many excellent building sandstones are quarried in Derbyshire, Lancashire and Yorkshire. Stancliffe stone (Darley Dale, Derbyshire) is light brown or honey coloured, is very strong and durable, and, although relatively difficult to work on account of its hardness, it can be moulded to give fine arrises. Woolton (Lancashire) stone is being used in the construction of the Liverpool Anglican Cathedral. Some of the Yorkshire stones are exceedingly hard (especially those from the Bradford and Huddersfield districts) and are suitable for steps, landings, flags, as well as for general walling where fine mouldings are not required.

QUARRYING

The methods adopted in quarrying stone vary considerably, depending upon the type of stone to be quarried and its depth below the surface. Most stone is obtained from open quarries, but where the stone beds are very deep (such as Bath stone) it is obtained by underground mining.

Fig. 18 shows a section through the face of an open limestone (Portland) quarry. As much as possible of the overburden (which varies from a few feet