rough, but in the latter case a drafted margin is generally run around them to insure accuracy in fitting the stones.

Now it is on this point relating to the size of the joints, and the regularity of the courses, that differences of opinion have arisen as to whether disputed work comes under the denomination of superior rubble, or ashlar masonry.

We will first, however, state that when rubble masonry is mentioned in a specification, without any description given of any particular kind of rubble work, it is presumed always to mean the irregular or uncoursed rubble of the country, built in walls with fair average size stones, and laid in mortar or cement, and thoroughly bonded, and the face of the wall neatly pointed up after the work is completed. If any other kind is intended, it should always be particularly described in the specification, since between regular coursed rubble with dressed bed, vertical joints and picked face, and coarse boucharded ashlar stone, there is very little difference in the cost. But the question has arisen, can stones that have been wrought, as if not for ashlar work, although not laid with close joints, be called rubble work? We think not. Wrought stones are, of course, ashlar stones, and the masonry built with them, whether in regular and equal courses, or in random courses, must still come under the term ashlar, although a question may arise as to inferior workmanship if the ashlar stones are laid on thick beds of mortar or cement, and not according to the usual custom; but this will much depend upon circumstances. It might so happen that the description of work may render it necessary, and even advantageous, to depart from fixed rules, as, for instance, when it becomes necessary to build in cold weather, when the thermometer registers below freezing point; in that case if the cold stones were laid on a thin bed of mortar or cement, one-eighth of an inch in thickness, or even a quarter of an inch thick, the mortar would at once become frozen, and if cement was used, its setting property would be completely destroyed, and be of no more use than sand; therefore, in order to give it time to harden, in the case of cement being employed, thick beds of it would be necessary, and so, when it becomes important to build in cement in very cold weather, a certain amount of extra thickness of the joints would be quite admissible, and ashlar masonry so laid could not be called rubble, on account of its having been so built. Besides, in some kinds of rough ashlar when the stones are bedded in cement, and when no fair external face is exposed to view, as in culverts, tunnels, &c., it would be absurd to confine the builder to the rigid rule of architecture, as if the face work was intended for a villa or public building.

No stones that have been wrought with tools fair on the face, or with radiated joints, as for drains and similar work, can be classed as rubble work. In the construction of large arches over vaults, in country bridges, tanks, and similar rough work, rubble masonry may be used, when stones can be obtained that are flat and thin, and do not require to be radiated, but simply dressed into shape and size with a mason's hammer; and good rough work can be made with them; but rubble masonry is never used in the construction of small circular or elliptical work unless the stones are of a description that requires but little working and particularly suited for the purpose. We are of opinion, therefore, that any work built with wrought ashlar stones, however rough, is still *ashlar work* of some description, and that no deviation from the rule respecting the thickness of the joints can cause it to be classed as rubble masonry, unless rubble masonry of a superior order.

For further information on this subject we refer the reader to the illustrations on page 149.

Fig. 1. RANDOM RUBBLE (uncoursed), beds and joints not dressed.—This description is the most inferior description of waliing.

Fig. 2. RANDOM RUBBLE (built in courses.)—In work of this kind each course is built random, and may consist of two, three, or more stones in depth, pinned in with spalls. The courses are from 12 to 14 inches in height.

Fig. 3. SQUARED RUBBLE (uncoursed.)—Has the joints and the angles of the faces neatly squared with *tools locally used*. The beds are horizontal and the side joints vertical, but the beds are not dressed back from the face as for ashlar work. This description of work is only used when the stones have a fine cleavage, affording beds and joints which require little working. When this kind of work is allowed to run in short lengths, broken by high stones, it is called "*irregular coursed rubble*."

Fig. 4. SQUARE RUBBLE (built in courses.)—The courses are 10 to 14 inches in height. It is sometimes called "*irregular coursed rubble brought up to level courses*."

Fig. 5. Is COURSED RUBBLE, or *Regular Coursed Rubble*, and consists of stones laid in courses, every course being of the same height; the height of the courses vary from 4 to 8 inches, but the beds are not hammered-dressed back from the face, as in ashlar work.

BLOCK IN COURSE.—This is a name given to a class of masonry which occupies an intermediate place between ashlar and rubble; the stones are larger, but the beds and joints are only roughly dressed, so the work cannot be described as ashlar, unless when worked as such. It is sometimes called "hammer-dressed ashlar," and is used chiefly in engineering work.

Fig. 6. COURSED ASHLAR.—This is the most usual form in which ashlar is built; it is shown with chamfered and rusticated quoins and plinth. The stones are dressed on the face, sides and bed; the courses horizontal and of equal height, and the joints vertical.

Fig. 7. Small-rock face ashlar, with plane ashlar quoins.

Fig. 8. Plane ashlar, with rusticated quoins and plinth.

Fig. 9. Is a section of *ashlar masonry* in *small* culverts and drains, with joints radiated.

Fig. 10. Is a section of *rubble masonry*, in the same class of work, but which seldom makes good work, owing to the filling in behind to bring the face joints in line with the radiating point.

Fig. 11. Is a section of *rubble masonry* in large arches over *10 feet radius*; it is used in tanks, vaults, and similar course work, but only used when suitable stones can be obtained, which are broad and thin.

NEW METHOD OF HORSESHOEING TO SUPERSEDE "ROUGHING."—A new horseshoe has been invented by Mr. A. B. Fleming, of Hillwood, Corstorphine. The shoe is of the ordinary shape, but has three holes punched in it,—one at the toe and one at either side of the heel,—and into these holes a set of keyed studs are inserted. The studs are of cast steel, and pointed so as to give the horse a firm grip of the frozen ground without slipping. Presuming that the horse is furnished with Mr. Fleming's new shoes in the beginning of winter, and the holes filled up with a plug of hard wood, or with a blunt stud if thought desirable, when a frosty day occurs, the groom or coachman has simply to take out the blunt stud, or extract the wooden plug with a brogue. The studs are then inserted in the holes,—the key of the spike fitting into a slit in the hole. A small wrench or pair of pliers is then used to give a half-turn to the stud, which is prevented falling out by the key. Into a slit in an angle of the stud corresponding with the slit in the keyhole of the shoe a small wedge of wood is driven home to keep the stud firmly in position. When frost disappears, or the stud is worn down so as to be ineffective, the small wedge of wood is taken out by a brogue, the stud is turned round till its key is opposite the slit in the shoe-hole, and then it is easily withdrawn. Mr. Fleming has not patented his invention.—*Builder*.