## THE GREAT DOMES AT PARIS AND VIENNA.

The proper performance of a large telescope is so much affected by the character of the dome in which it is placed, that the latter may be regarded as of equal importance with the mounting of the telescope. All my experience, however, leads me to the conclusion that there is no decided superiority in any special form of dome, but that the principal difference in the working arises from the quality of the workmanship. In choosing among a number of proposed forms we can only say that that which is best constructed is the best.

The Vienna dome was constructed by Mr. Grubb. It is built of iron, is 45 feet in external diameter, and weighs fifteen tons. Its working leaves nothing to be desired, except that its great weight renders its motion somewhat cumbrous. By moving it a short distance it appeared that one man could turn it in eight minutes. Mr. Grubb says that when first mounted a weight of seven pounds on the rope was sufficient to start it. I did not test this by actual trial, but cannot resist the conclusion that much more than seven pounds is now required.

The drum of the dome is of thick massive brick-work. I cannot but regard this sort of base as objectionable, even when pierced with numerous openings, as in the present case, owing to the difficulty of securing equable temperatures inside and outside.

Heretofore three methods of supporting a turning dome have been proposed:

I. On wheels, fixed either to the dome or to the base on which the dome rolls.

II. On a system of rollers connected by a live ring.

III. On cannon balls.

I conceive that the choice should lie between the last two. The cannon-ball system works the best of all so far as ease of motion is concerned; its drawback is the difficulty of keeping the balls at anything like equal distances apart. The system of rollers in a live ring was invented by Mr. Grubb, and is employed at Washington as well as at Vienna. It has the advantage of always working well, but is more troublesome in construction and requires more force than cannon balls.

To these three systems the French astronomers propose, in their new great dome, to add a fourth, by floating the dome in an annular trough forming the top of the drum. The base of the dome will then be a floating annular caisson. It would be hazardous to predict in advance how