construction, and their application to practice, will be readily understood by the general reader. Demonstrations of propositions required in the solution of problems, and not found in any work accessible to the author, have been given in notes.

It did not form part of the original design to include the subject of the construction of stone arches, but it was thought that the work would be rendered more useful, complete, and generally acceptable, if a few pages were added containing a simple exposition of the principles of this important art.

Mathematicians have apparently exhausted their ingenuity in devising modes of distributing the weights so as to produce an equilibrated curve of suitable form for the intrados of an arch; but many of their speculations are far more curious than useful, whilst practical men have been disposed to reject the principle of equilibration as inapplicable to constructions. It was a long time before the fortunate discovery was made that the intrados might be of any form most pleasing to the eye, and that the conditions of equilibrium could, in general, be satisfied by making the joints of the voussoirs perpendicular to the line of direction of the pressures; a fact so simple and obvious, that there is reason for surprise that it was not suggested to the first mind in which originated the idea of an arch of equilibrium. This principle is important in its practical results, and an admirable application is made of it, by John Seaward, a British Engineer, in a work containing a proposed plan for the London Bridge. This