t follows, that the horizontal distance between the extremities of any joint will be proportional to the weight of the portion of the arch between it and the crown. \( p' \) being the point of application of the resultant of the pressures upon all parts of the joint \( A \ p \), and \( p' \) s its line of direction, \( p' \) s must be tangent to the curve of equilibrium. By finding the point \( p' \) for other joints between \( A \) and \( D \), the curve traced through them will be the line of direction of the pressures.

The manner of finding the point \( p' \) for any joint \( A \ p \) is obvious; it is the intersection of the line \( A \ p \) with the diagonal of the rectangle, one of whose sides \( e' \ m \) is proportional to the horizontal pressure, and is constant at every point of the arch; the other, \( m \ r \), represents the weight of the portion \( A \ d \) of the arch, acting through \( G \) its centre of gravity. The position of \( G \) can be readily found for any joint, as \((u \ u')\) by making a drawing of the arch on pasteboard, cutting it out and balancing the portion, of which the centre of gravity is to be ascertained. The weight can be found either by weighing the pasteboard, or by calculation, and thus we are furnished with an extremely simple and practical method of describing the curve of equilibrium.

The method usually recommended for determining practically the direction of this curve, is to mark off on a wall, or other vertical surface, the span and rise of the arch, then suspend a flexible chain between these points, and load it at short intervals with weights proportional to the superincumbent portions of the arch. As the addition of these weights will change the figure of the curve, the length of the chain and the magnitudes and distribution of the weights must be varied, until by successive trials the proper proportion and distribution are discovered. This, which is recommended as a very simple method, and easy of application by any practical builder, we conceive to be exceedingly troublesome, and such as no practical builder would be likely to undertake; and after the curve has been found in this way, we know nothing of the position of the centres of pressure: in fact, it is evident, from the method which has been pursued, that they have been assumed at the springing lines and at the lowest points of the key-joint, as these