the weight at \( f \) being equal to \( 2w \), it follows that \( f'g' \) makes twice the deflection from \( e'e' \) that the latter makes from \( d'e' \), that is, equal to \( 2D \) in the horizontal distance of \( 1v \), or \( 1 \), or \( 10D \) (= .5173), in the distance \( aC \), or 5. Hence, \( f'g' \) produced, cuts the vertical at \( a \), twice as high as \( e'e' \) cuts it, or, at a point 1.0346 above \( a \); being just as high as the point \( f' \); except a small difference resulting probably from omitted fractions. This shows that \( f'g' \) is horizontal, and tangent to the curve at its vertex.

It follows that all the weight at \( f' \), and at the left of that point, is brought to bear at \( a \), and all that at \( g' \), and on the right thereof; bears at \( k \). This affords a check upon our work thus far, as we already knew that the bearing at \( a \) was equal to \( 6w \), and we now see that this is made up of \( 1w \) at each of the four points \( b', c', d', e' \), and \( 2w \) at \( f' \). If \( f'g' \) were not horizontal the arch could not be in equilibrio under the assumed condition of load.

Now, as we manifestly have for the 4 remaining segments, a vertical reach for each, as the weights they respectively sustain; i.e., equal respectively to \( 2D, 4D, 6D \), and \( 8D \); making \( 20D \) (= \( Cf' \)); altogether, we have only to subtract these quantities successively from \( Cf' \) (= 1.0346), to obtain the lengths of verticals at \( h' \), \( i' \), \( j' \); as follows:

\[
\begin{align*}
1.0346 - 2 \times .05173 &= .93114 = \text{vert. at } h' \\
.93114 - 4 \times .05173 &= .72422 = \text{" } i' \\
.72422 - 6 \times .05173 &= .41384 = \text{" } j' \\
.41384 - 8 \times .05173 &= 0 = \text{" } k
\end{align*}
\]

The differences between these lengths of verticals, and those of the normal curve at the same points, show