\( \frac{p}{v} \) and \( \frac{p'}{v} \) factors in expressions of stresses of those classes of members respectively, and for convenience, we will substitute \( m \) for \( \frac{p}{v} \) and \( n \) for \( \frac{p'}{v} \). Then, stress of \( ig \) and \( gr \), in case of full load upon both arms, equals \( Wm \), for each; That of \( fs \) and \( et \) equals \( 2Wm \), that of \( du \) an \( cx \) equals \( 3Wm \), and that of \( bx \) equals \( 4Wn \).

CLXXXIV. As to the stress of chords, half the horizontal action of \( gr \), being taken by the excess of thrust of \( mr \) over hor. action of \( ig \),* the other half, \( (=W\frac{h}{v}) \), is opposed by tension of \( rs \), and compression of \( gf \). This added to \( 4Wp \) for hor. action of \( fs \)† (making \( \frac{h}{v} = p \)), makes \( 5Wp \) = tension of \( st \), = comp. of \( fe \). Add \( 4Wp \) for action of \( et \), and it makes \( 9Wp \) = tension of \( tu \), = comp. of \( et \). Adding again \( 6Wp \) for hor. action of \( du \), gives \( 15Wp \) = tension of \( ux \), = comp. of \( de \). Then, adding \( 6Wp \) for action of \( ex \), gives \( 21Wp \) = comp. of \( be \), and lastly, adding \( 4Wp \) for action of \( bx \), we have \( 25Wp \) = comp. of \( bax \), = horizontal action of \( xy \) and \( xz \). This all falls upon \( xy \) in case of equal arms.

In one or other of the three cases above considered (namely: first, arm swung clear and without load; second, arm \( xl \) fully loaded; third, both arms fully loaded), every part of the arm \( xl \) undergoes its greatest strain, which may be determined by comparing the results obtained by computing the strains produced in

* The \( 2W \) upon \( ml \), and \( 1W \) upon \( jm \), produce thrust equal to \( 3W\frac{h}{v} \) upon \( mq \), which equals the horizontal action of \( ig \), + half that of \( gr \) in the opposite direction, leaving \( W\frac{h}{v} \) to be opposed by tension of \( rs \).

† \( fs \) sustaining \( 2W \), its horizontal action = \( 4W\frac{h}{v} \).