ing toward c, act by tension. The tension diagonals are represented by single, and the thrust diagonals, by double lines.

But the action changes more or less with every change in the position of the load, and if the load were reversed upon the two halves of the arch, each diagonal here represented as acting by thrust, would then act by tension, and vice versa.

Now, assuming that $dc = \frac{1}{2} ee$, and that the action upon the inner member at this point equals twice that of the outer one, it follows, since the action should become equal upon the two at $\alpha$, that $\frac{1}{2}$ of the whole thrust of the rib must be transferred from the inner to the outer member between $c$ and $\alpha$, by the thrust and pull of diagonals, exerted in the direction of the normal curve; the action accumulating and increasing upon successive diagonals each way from $\alpha$, and in like manner from $h$.

The action of diagonals is still further affected by the transfer of the action of load, from the outer to the inner member; the load being first applied directly to the outer curved member. Hence it becomes a somewhat complicated problem to determine the maximum action of diagonals; especially as the complication becomes increased by taking into account the

**Effects of Temperature.**

LXXVIII. The expansion and contraction of metallic arches without chords, the ends remaining fixed as to position and distance asunder, must obviously cause the intermediate portions to rise and fall with the increase and decrease of temperature.

The outer and inner members, if parallel, being similar concentric arcs, will rise and fall, by the same