to which they may be exposed, to see that the forms of diagonals liable to compressive action, be made capable of withstanding such action, according to the table of negative resistances [xciii]; and, that those liable to a change of action from tension to compression, and the contrary, be formed and connected in such manner as to enable them to act in both directions.

CXXVII. In the concrete, or rivet work plan of construction, the Trapezoid without verticals may, it is thought, be generally adopted with advantage. Upon this branch of the subject, however, but little of detail will be attempted at this time, the author having had very little direct practical experience in the premises.

The first point to be attended to, of course, as in all cases of bridge construction, is, to arrange the general outline and proportions of the truss; that is, the number of panels, and depth of truss suitable for the particular case in hand. This being done, the amount and kind of force, whether thrust or tension, to which each part is liable, should be determined; for which purpose, the value of \( w \), and of \( w' \) (the variable and constant panel load for the truss), must be assumed, or estimated according to the best data at command; when the stresses of the several parts are readily obtained by process already explained; [xlv, &c.].

We are then prepared to assign the requisite cross-section to each part, and to adopt a suitable form of bar, or combination of bars and plates, for each member. Thrust members will usually (if long), be formed of several parts, mostly flat plates, angle iron, \( \mathbf{T} \) iron, and channel iron, united by riveting in such form of cross-section as may give the largest diameter prac-