Drift Bolt.—A round or square piece of iron, usually from one to three feet long; without head or nut, used to connect timbers.

Drift Pin.—A slightly tapering rod of hard steel, used for making rivet holes coincide. Its use is more convenient than advisable.

Effective Area.—The gross area of a section, less that lost by rivet or pin holes; the net area.

Elastic Limit.—That intensity of stress at which the ratio of stress over strain commences to show a decided change. For wrought-iron it is from twelve to fifteen tons.

Erecting-Bill.—A bill of material for a bridge, so arranged as to facilitate the finding and placing of members during erection.

Expansion Joint.—The connection of pedestal to bed-plate, shown on Plate III.

Expansion Rollers.—A set of half a dozen or more turned rods of exactly the same diameter, placed under the shoe plate at one end of a truss to permit of expansion and contraction. (Plate II., Fig. 9.)

Extension Plate.—A plate riveted to the end of a strut channel, and projecting beyond it, to permit of the passage of a pin. (Plate II., Fig. 12.)

Eye.—A hole in the end of a member to permit of the passage of a pin.

Eye Bar.—A bar with an eye at each or one end.

Factor, or Factor of Safety.—The ratio of ultimate load to greatest allowable working-load. This term is getting out of favor among engineers, as its use has been somewhat abused. There is no such thing as a factor of safety for a well-proportioned bridge, for each member should have an intensity of working-stress proportionate to the character and amount of work which it has to perform.

Fall Line.—A rope used in erection for raising and lowering weights.

Falsework.—Temporary timber work to support a bridge during erection.

Felly Plank.—A guard rail so placed as to catch the felly of a wheel, and thus prevent the vehicle from striking the truss. (Plate II., Fig. 13.) In wide bridges a felly plank is often placed midway between the trusses, to prevent vehicles passing from one side of the bridge to the other.

Field Riveting.—Riveting done in the field, or during erection. It is the poorest and most expensive kind of riveting.

Fixed End.—An end of a strut so firmly connected as to prevent all motion of the strut in the neighborhood of the end.

Filling-Plate.—A plate the function of which is to make flush two surfaces (Plate II., Fig. 12.)

Filler.—A small ring of iron or piece of pipe placed on a pin in order to keep in place the members coupled thereon.

Fixed Load.—A load remaining permanently, or for a considerable length of time, upon a structure or portion of a structure.

Flange.—The upper or lower chord of a beam. It is the principal part for resisting either compression or tension.

Flexure.—Bending.