**Splicing.**

This is an important operation, and may properly claim consideration in this place.

Fig. 29, Pl. 6, is a form of splicing in which \( \frac{1}{3} \) of the fibres are made available; the depth of the locking being equal to \( \frac{1}{4} \) the thickness of the stick. The length of the lap should be 10 times the depth of locking each way, or \( 20 \div 3 = 6\frac{2}{3} \) of the thickness of the stick.*

By two lockings, as in Fig. 30, Pl. 6, one-half the fibres are available, with a lap of 10 times the thickness of the stick.

With three lockings, on the same principle, \( \frac{2}{3} \) of the fibres are available, with of a lap of 12 times the thickness, and by lapping \( 13\frac{1}{3} \) times the thickness, we make \( \frac{3}{3} \) of the fibres available. Finally, by a lap of 20 times the thickness, and an infinite number of lockings, the whole amount of fibres would be available.

But this, of course, is a limit not attainable in practice. From \( \frac{1}{3} \) to \( \frac{2}{3} \), say \( \frac{1}{2} \), on an average, is as much as can be reckoned on, and this is as much as can usually be made available at the end connections.

Splicing may be done by lapping with a plain scarf, as in Fig. 31, Pl. 6, and bolting, pinning and spiking the parts together. If the pins and spikes be properly arranged and proportioned, a strong splice may be formed in this way, with a less lap than on the preceding plan. But the expense will usually be greater, and on the whole, the locked splice is generally entitled to a preference.

Timbers may also be connected by iron straps and bolts, either with or without a lap. The aggregate cross section of straps should be about 1 inch for every 10 to 15,000 lbs. strain which the splice is intended to bear.

The diameter of the bolts fastening the straps, should

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*In this splice, the power being applied at the reversed shoulder, out of the line of the unbroken fibres which resist the power, the tendency is to throw the ends outward, and produce a degree of lateral action, which somewhat weakens the timber beyond the proportion to the fibres cut.*