The specimens, many of them, were obtained from the Commissariat Timber Depot ; some very fine ones from the Cossipore Gun-Carriage Agency, and others were the pro­duce of the Calcutta market. Those of three and two feet in length were, generally speaking, cut from the sound frag­ments of the larger specimens.

The central deflections of the seven and six feet speci­mens were usually noted immediately after the application of each fifty pounds of fresh load, at which time the set taken by each appeared more regular than after some inter­val had elapsed. The first deflections were commonly re­corded with 150 pounds weight, in some cases with only fifty pounds. Sometimes the specimen was turned upon the trestles and subjected to two or more trials ; and in a few instances the load was left suspended for many hours, deflections being noted at different intervals of time.

The depth of the neutral axis was occasionally observed, but this has been found to vary so little (being generally five eighths of the depth) as to render its insertion in the table of little practical utility.

The direct cohesive strength of the wood having also been subjected to experiment, the calculation of it from Mr Barlow’s formula has not been thought necessary ; but the curious in such investigations are here presented with abundant materials for pursuing the inquiry.

lt is much to be regretted, that from the circumstances under which most of the specimens were obtained, so little accurate information respecting the timber could be pro­cured. The age, size, time of felling, and circumstances under which the trees had been respectively placed subse­quently to their being cut down, would all have materially enhanced the value of this statement of results to the man of research ; but, unluckily, no such information was acces­sible. Indeed in few cases was it even precisely known from what part of the timber the specimen itself was cut out, or what number was off the same trunk. The year of importation, where known, has been however inserted.

The following were the woods experimented on. Saul@@1 *( Sharea Robusta Rox).* This timber is too well known to render a lengthened description of it requisite ; but its value for building purposes does not yet seem to have been fully appreciated. The great mechanical resistance it affords in cases of strain, however applied, renders it unquestionably the most valuable of Indian timber yet generally known for engineering purposes. The regularity of its deflec­tions is indeed such as to render calculations of the requisite scantling for any particular stress, at all times simple and sure.

The general appearance of its fracture beautifully illus­trates Mr Barlow’s theory of the axis of motion or rotation being centrically situated ; the upper or compressed fibres being smooth as though cut with a sharp knife, those in a state of tension so fine and intimately blended as to re­semble those of hemp rope when violently torn asunder.

The saul of the Calcutta market is seldom above thirty feet in length, but the trees grow to a much greater height. From the injudicious practice of squaring it after felling, its mean girth is only about six to seven feet, but must be naturally much greater.

Saul has lately been very successfully substituted for teak in many of the component parts of the gun-carriages, cheeks, beams, and transoms ; poles and framing of gun and ammunition boxes ; occasionally spokes, naves, and fellies. Its toughness in cases of percussion must obviously render it a much safer material than teak to be near in ac­tion. It has also been used for door and window panels. It however shrinks more, from its greater density.

To both the above woods, the teak ( *Tectona grandis),* in point of strength and elasticity, is decidedly inferior. Its brittleness renders it indeed rather hazardous to stand near the specimens when they are subjected to heavy strain, as the pieces, sometimes several of them, fly with considerable impetus in different directions.

A reference to the tables will show, that of a great num­ber of specimens tried, three only, 80, 81, 88, of which only the mean result is given in this abridged table, see ( 1 ), at all approximate in results to those of Mr Barlow. the mean of my experiments is about 2∙078, of Mr Barlow’s 2∙462, a number which exceeds that of the saul tried by me. Mr Barlow’s specimens must therefore have been vastly su­perior to any in common use throughout India, for the com­parative superiority of saul in point of strength is, I believe, indisputable.

The teak grows to a great height, seventy to eighty feet and more, but cannot be easily obtained good of that size, the heart being frequently very much decayed. It is a du­rable wood when exposed, and is not subject to the depreda­tions of white ants until it has been very long in use. The uses to which teak is applied are too generally known to render much remark necessary ; planking, boxes, panel­ling, doors, windows, venetians, furniture, beams of houses, are amongst the most common.

Sissooh *(Dalbergia Sissooh Box')* in structure somewhat resembles the fine species of teak, but it is tougher and more elastic. The sissooh grows to the height of about thirty feet, but it is generally rather crooked, and there­fore not so well adapted for beams. Sissooh is said to get harder with age.

It is by the natives employed for house-furniture, beams, cheeks ; spokes, naves, and fellies of wheels ; keels and frames of boats, blocks, printing presses ; and generally in all work where crooked timber is required.

Jarrol (red) is a fine even wood in structure, and grows to great size in the Chittagong district ; but that brought to the Calcutta market is too small to be of much use except for picture-frames and other similar purposes.

The Chittagong forests are said to be dearly cleared of the best or thorny species of jarrol ; the others are of little value. It is considered a treacherous wood in ship-build­ing.

In the following tables, it is necessary to bear in recol­lection that the letters represent the following qualities.

∕. The length in inches.

*a.* The breadth or thickness.

*d.* The depth.

W. The breaking weight.

Δ. The last deflection.

W. Greatest weight whilst the elasticity continued unim­paired.

*δ.* Deflection ditto ditto.

@@@, The saul and sissoo are obtained from the forests north of the Ganges line, between the 25th and 3lst degrees of north latitude, and 74th and 88th degrees of east longitude, but chiefly from the tract lying north of Purneah and Goruckpore.