“ In Riga fir the adhesion was on an average about one third of that in oak, and in good sound Canada elm it was about three fourths of that in oak.

*“ Table of the Strength of clenches and of Forelocks, as se­curities to Iron and copper Bolts, driven six inches, with­out Drift, into sound Oak, either clenched or forelocked on Hings, and subjected to* *a* *direct Strain, as in fig.* 57.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Diameter of the Bolt.** | **Number of the**  **Experiment.** | **Iron.** | | | | **Copper.** | | | |
| **Clench.** | | **Forelock.** | | **Clench.** | | **Forelock.** | |
| **Inch.** |  | **Tons.** | **Cwt.** | **Tons.** | Cwt. | **Tons.** | **Cwt.** | **Tons.** | **Cwt.** |
| ¼...{ | 1 | 1 | 16 | 0 | 16 | 1 | 0 | 0 | 8 |
| 2 | 1 | 13 | 0 | 14 | 0 | 19 | 0 | 8 |
| 3 | 1 | 9 | 0 | 20 | 1 | 0 | 0 | 7 |
| 4 | 1 | 9 | 0 | 18 | 1 | 0 | 0 | 6 |
| 3/8...{ | 1 | 3 | 0 | 1 | 15 | 2 | 10 | 1 | 4 |
| 2 | 3 | 0 | 1 | 8 | 2 | 10 | 1 | 0 |
| 3 | 2 | 16 | 1 | 9 | 2 | 6 | 1 | **2** |
| 4 | 2 | 16 | 1 | 14 | 2 | 9 | 1 | 4 |
| ½... | 1 | 4 | 15 | 2 | 11 | 3 | 10 | 1 | 18 |
| 2 | 4 | 10 | 2 | 15 | 3 | 15 | 1 | 18 |
| 3 | 4 | 5 | 2 | 10 | 4 | 0 | 2 | 4 |
| 4 | 4 | 12 | 2 | 12 | **4** | 10 | 1 | 16 |
| 5/8...{ | 1 | 5 | 18 | **3** | 15 | 6 | 0 | 2 | 13 |
| 2 | 6 | 8 | 3 | 6 | 5 | 16 | 2 | 10 |
| 3 | 6 | 8 | 3 | 0 | 6 | 6 | 2 | 16 |
| 4 | 6 | 0 | 3 | 7 | 5 | 10 | 2 | 10 |
| ¾...{ | 1 | 7 | 10 | 3 | 10 | 7 | 0 | **...** | |
| 2 | 7 | 10 | 3 | 15 | 7 | 0 | **...** | |
| 3 | 8 | 0 | 3 | 10 | 7 | 5 | **...** | |
| **4** | 8 | 15 | 3 | 15 | 7 | 8 | **...** | |
| 7/8...{ | 1 | 11 | 11 | 5 | 1 | 7 | 16 | **...** | |
| 2 | 11 | 15 | 5 | 10 | 7 | 16 | **...** | |
| 3 | 8 | 11 | 4 | 6 | 7 | 12 | **...** | |
| 4 | 8 | 6 | 4 | 15 | 7 | 5 | **...** | |
| **1...{** | 1 | 12 | 0 | 5 | 18 | 7 | 1 | **...** | |
| 2 | 12 | 3 | 6 | 18 | 7 | 1 | **...** | |
| 3 | 11 | 3 | 5 | 12 | 7 | 14 | **...** | |
| **4** | 11 | 1 | 5 | 2 | 8 | 14 | **...** | |

“ In the experiments on the clenches, the clenches always gave way ; but with the forelocks it as frequently occurred that the forelock was cut off as that the bolt broke ; and in the cases of the bolt breaking, it was invariably across the forelock hole. According to the tables, the security of a forelock is about half that of a clench.

“ It appears an anomaly that the strength of a clench on copper should be equal to that of one on iron. But, in con­sequence of the greater ductility of copper, a better clench is formed on it than on iron. Generally the thickness of the fractured clench in the copper was double that in the iron. With rings of the usual width for the clenches, the wood will break away under the ring, and the ring be imbedded for two or more inches before the clench will give way.

“With the inch copper bolts, all the rings under the clenches turned up into the shape of the frustum of a cone, and allow­ed the clench to slip through at the weights specified.

“ Experiments with ring-bolts were made to ascertain the strength of the rings in comparison with the clenches. The rings were of the usual size, viz. the iron of the ring one eighth inch less in diameter than that of the bolt. It was found that the rings always carried away the clenches, but that they were drawn into the form of a link with per­fectly straight sides. The rings bore, before any change of form took place, not quite one half the weight which tore off the clenches. It appears that the rings are well pro­portioned to the strength of the clenches.

*“ Table of the Transverse Strength of Treenails of English Ooh used as fastening for Plonks of three and of six inches in thickness, and subjected to a Strain, as shown to be applied in fig.* 58.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Number of the Experiment.** | **Diameter of the Treenails.** | | | | | | | | | | | | | | | |
| **1 Inch.** | | | | **1¼ Inch.** | | | | **1½ Inch.** | | | | **1¾ Inch.** | | | |
| **Thickness of the Plank.** | | | | | | | | | | | | | | | |
| **3 In.** | | **6 In.** | | **3 in.** | | **6 In.** | | **3 In.** | | **6 In.** | | **3 In.** | | **6 In.** | |
|  | **T.** | C. | T. | C. | T. | C. | T | C*.* | T. | C. | T. | C. | **T.** | C. | T. | C. |
| 1 | 1 | 8 | **1** | **7** | 1 | 14 | 2 | 8 | 2 | 0 | 3 | 12 | 3 | 0 | 6 | 10 |
| 2 | 1 | 7 | **1** | 15 | 2 | 2 | 2 | *2* | 2 | 6 | 2 | 10 | **2** | 10 | 3 | 13 |
| 3 | 1 | 2 | 1 | 8 | 1 | 17 | 2 | 19 | 2 | 15 | 2 | 10 | **4** | 0 | 4 | 0 |
| 4 | 1 | 5**½** | 1 | 8 | 2 | 2 | 2 | 2 | 2 | 4 | 3 | 12 | 2 | 8 | 3 | 8 |
| 5 | 2 | 12 | 1 | 3 | 2 | 2 | 1 | 15 | 2 | 18 | 2 | 5 | 3 | 10 | 4 | 0 |
| 6 | 2 | 2 | 1 | 7 | 2 | 9 | 2 | 10 | 2 | 6 | 2 | 5 | 3 | 10 | 5 | 8 |
| 7 | 2 | 4 | 1 | 10 | 2 | 8 | 2 | 10 | 3 | 7 | 2 | 5 | 3 | 6 | 3 | 12 |
| 8 | 1 | 6 | 2 | 3 | 2 | 7 | 2 | 0 | 2 | 5 | 3 | 0 | 3 | 5 | 3 | 13 |
| 9 | 1 | 8 | 1 | 8 | 2 | 12 | 2 | 10 | 3 | 0 | 4 | 0 | 4 | 6 | **4** | 13 |
| 10 | 1 | 2 | 2 | 3 | 2 | 10 | 2 | 15 | 3 | 0 | 4 | 10 | 3 | 8 | 4 | 0 |
| 11 | 2 | 0 | 2 | 0 | 2 | 7 | 2 | 0 | 3 | 9 | *2* | 18 | 4 | o | 3 | 8 |
| 12 | 2 | 8 | 1 | 7 | 2 | 10 | 2 | 0 | 4 | 2 | 3 | 0 | 4 | 10 | 5 | 0 |
| 13 | 1 | 16 | 2 | 8 | 2 | 17 | 2 | 0 | 3 | 2 | 3 | 18 | 4 | 2 | 6 | 5 |
| Average | 1 | 11 | 1 | 13 | 2 | 6 | *2* | 6 | 2 | 16 | 3 | 2 | 3 | 10 | 4 | 6 |

“ In all these experiments on treenails, when the tree­nails were evidently good, they gave way gradually. In some of the rejected experiments, however, the treenails certainly did break off suddenly, but then they were evi­dently on examination either had or over-seasoned tree­nails. It is no uncommon remark in caulking down the bottom of a vessel, that the caulkers break off the treenails by caulking, and that they hear them crack or break off suddenly. Now I do not believe that this cracking of the treenails takes place so frequently as it is supposed. What the men hear is the starting of the plank on the different fastenings. It has been asserted that the treenails made from the Sussex oak are much stronger than those made from the New Forest timber, or any other English oak. To ascertain the truth of this assertion, some experiments were made with Sussex and New Forest treenails of all sizes ; and the result was, that there was not the least difference in them, the New Forest were on experiment quite as strong as the Sussex.

“ In the experiments on treenails, the plank generally moved about half an inch previous to the fracture of the treenail.” (b. z.)

SHIPSTON-on-Stour, a town of the hundred of Oswaldslow, in the county of Worcester, but detached from it, and surrounded by Gloucestershire. It is eighty-three miles from London, lias little trade except what arises from its great sheep-fairs. It has a large market on Friday. The population amounted in 1801 to 1293, in 1811 to 1377, in 1821 to 1562, and in 1831 to 1632.

*Ship-Money* was an imposition charged upon the ports, towns, cities, boroughs, and counties of England, in the reign of King Charles I., by writs, commonly called ship­writs, under the great seal of England, in the years 1635 and 1636, for the providing and furnishing of certain ships for the king’s service, which was declared to be contrary to the laws and statutes of this realm, the petition of right, and the liberty of the subject, by statute 17 Car. I. c. 14.

SHIRAZ, or Shirauz, a large city of Persia, the capital of the province of Fars, and, at different periods, of the whole kingdom. According to Fraser, the city of Shiraz is situat­ed in the midst of a brown, barren plain, without a village, or any living thing, to relieve it. There were, when he vi­sited the place, only one or two gardens on the wide ex­panse, which resembled black spots in the desert. He adds, that a nearer view does not present any more favourable impression, the aspect of its mud-walls, surrounded with ruins and broken ground, impressing the most gloomy ideas. Kinneir, on the other hand, gives a different account of its