raising their town to greater importance. Considerable bu­siness is done in the cotton trade. In addition to the estab­lished church, there are chapels belonging to the Relief and United Secession bodies of dissenters. The markets for agricultural and commercial produce are well supplied. The streets and shops are lighted with gas ; and in consequence of the Pomilion running through it, the supply of water has contributed greatly to its cleanliness and comfort. The population in 1821 amounted to 2866, and in 1831 it had increased to 3597, an increase caused principally by the flourishing state of its trade and manufactures.

STRATHMIGLO, a parish in Fifeshire, Scotland. In it is situated the borough of barony of the same name, erected into such in the year 1690, consisting principally of an irre­gular street, with lanes diverging from it at right angles, and having in the middle a town-house, with a neat tower and spire seventy feet in height. Besides a parish church, there is a place of worship belonging to the Secession body. The inhabitants are principally employed in weaving. In 1821 the population of the parish amounted to 1842, and in 1831 to 1940.

STRATHMORE, or the Great Strath, is that district of Scotland which stretches across from the town of Stone­haven in Kincardineshire, on the east coast, to the district of Cowal in Argyleshire, on the west coast. The chain of the Grampian Mountains bounds it on the north, and the Sidlaw, Ochill, and Menteith or Lennox range of hills on the south. There is also a vale of the same name in the parish of Durness, Sutherlandshire.

STRATHSPEY is the vale of the river Spey, which runs through part of the counties of Inverness and Elgin.

STRATO, a philosopher of Lampsacus, disciple and suc­cessor in the school of Theophrastus, about 248 years be­fore the Christian era He applied himself with uncom­mon industry to the study of nature ; and after the must ' mature investigations, he supported that nature was inani­mate, and that there was no god but nature. He was ap­pointed preceptor to Ptolemy Philadelphus, who revered his abilities and learning, and rewarded his labours with unbounded liberality. He wrote different treatises, none of which has been preserved.

STRATON, a town of Cornwall, in the hundred of its own name, 224 miles from London. It has a market on Tuesday and another on Saturday, though both are little frequented. The inhabitants amounted in 1801 to 960, in 1811 to 1094, in 1821 to 1580, and in 1831 to 1613.

STRAUBING, a town of the kingdom of Bavaria, in the circle of the Lower Danube, the capital of the baili­wick of the same name. It is finely situated on the bunks of the Danube, over which is a fine bridge. It contains seven churches, four hospitals, a gymnasium and several other schools, 760 houses, and 6800 inhabitants, who trade extensively by the river in corn and live cattle. Long. 11. 29. 28. E. Lat. 48. 52. 39. N.

STREATHAM, a town in the hundred of Brixton and county of Surrey, five miles from London, on the road to Croydon. The hamlet of Tooting is considered as a portion of it. Streatham is pleasantly situated, and con­tains many magnificent houses. Among others is one be­longing to the duke of Bedford. The church is very neat, and was almost rebuilt in the year 1833. Near to it is a mineral spring, of aperient quality. The inhabitants amount­ed in 1861 to 2357, in 1811 to 2729, in 1821 to 3616, and in 1831 to 5068.

STRENGTH OF MATERIALS,

In *Mechanics,* is a subject of so much importance, that in a nation so eminent as this for invention and ingenuity in every species of manufacture, and in particular so distinguished for its improvements in machinery of every kind, it is somewhat singular that no writer has treated it in the de­tail which its importance and difficulty demand. The man of science who visits our great manufactories is delighted with the ingenuity which he observes in every part, the innumerable inventions which come even from individual artisans, and the determined purpose of improvement and refinement which he sees in every workshop. Every cot­ton-mill appears an academy of mechanical science ; and mechanical invention is spreading from these fountains over the whole kingdom. But the philosopher is mortified to see this ardent spirit cramped by ignorance of prin­ciple, and many of those original and brilliant thoughts ob­scured and clogged with needless and even hurtful addi­tions, and a complication of machinery which checks im­provement even by its appearance of ingenuity. There is nothing in which this want of scientific education, this igno­rance of principle, is so frequently observed, as in the in­judicious proportion of the parts of machines and other me­chanical structures ; proportions and forms of parts in which the strength and position are nowise regulated by the strains to which they are exposed, and where repeated failures have been the only lessons.

The strength of materials arises immediately or ultimate­ly from the cohesion of the parts of bodies. Our examina­tion of this property of tangible matter has as yet been very partial and imperfect, and by no means enables us to ap­ply mathematical calculations with precision and success. The various modifications of cohesion, in its different ap­pearances of perfect softness, plasticity, ductility, elasticity, hardness, have a mighty influence on the strength of bodies, but are hardly susceptible of measuremerit. Their tex­ture, whether uniform like glass and ductile metals, crys­tallized or granulated like other metals and freestone, or fibrous like timber, is a circumstance no less important ; yet even here, although we derive some advantage from remarking to which of these forms of aggregation a sub­stance belongs, the aid is but small. All we can do in this want of general principles is, to make experiments on every class of bodies. Accordingly philosophers have endeavour­ed to instruct the public in this particular. The Royal Society of London, at its very first institution, made many experiments at their meetings, as may be seen in the first registers of the society ; and since then a vast multitude of experiments have been made by public bodies and pri­vate individuals. The best of these, perhaps, up to the date of the present edition, are those of Mr Barlow.

But to make use of any experiments, there must be em­ployed some general principle try which we can generalize their results. They will otherwise be only narrations of detached facts. We must have some notion of that inter­medium, by the intervention of which an external force ap­plied to one part of a lever, joist, or pillar, occasions a strain on a distant part. This can be nothing but the cohesion between the parts. It is this connecting force which is brought into action, or, as we more shortly express it, ex­cited. This action is modified in every part by the laws of mechanics. It is this action which we call the *strength* of that part, and its effect is the strain on the adjoining parts; and thus it is the same force, differently viewed, that constitutes both the strain and the strength. When we consider it in the light of a resistance to fracture, we call it *strength.*