

about  $\frac{1}{6}$ ,—exclusive of Indian corn about one-sixth. Of rice, Canada has none, neither has Ohio,—the whole Union produces 215,312,710 lbs., which at three pence per pound would be £2,091,408 in favour of the Union.

Even at present, Canada compares most favourably in proportion to her population with the States, and, when the railroads now in course of formation shall have united the whole British possessions in North America, the increased facilities and aroused and invigorated energies, and improving climate and more rapidly increasing population, and interminable water communication, and extensive fisheries will, in a few years, enable the British North American possessions to make no unfavourable comparison with the Union, flourish as she may.

The whole area of the United States and territories is 3,230,572 square miles which multiplied by 640 gives the number of acres 2,057,566,080, certainly a prodigious territory, but the British possessions in North America far exceed this.

The exact amount according to Allison, is 4,109,630 square geographical miles, and the water in British America is 1,340,000 square miles. The whole terrestrial globe embraces about 37,000,000 square miles, so that British America contains nearly a ninth part of the whole terrestrial surface of the globe—the number of acres is 2,630,103,200. Allison remarks that a very large portion is, perhaps, doomed to everlasting sterility, owing to the severity of the climate—such is no doubt the case; but it should be recollected that as the country becomes cleared up, the climate improves, and that there are at present twenty or thirty millions of acres, to the successful cultivation of which the climate presents no insuperable barrier.

Two or three centuries ago the Rhine used to be frozen, and the animals, the natives of the northern regions, were abundant on its banks—how different is the case now? It will be so in British North America, with this difference, that the improving climate will keep pace with the vastly accelerated movements, and more rapidly increasing numbers of the New World settlers.

#### Standards of Length and Weight.

It will be remembered that the destruction of the Houses of Parliament by fire, in 1834, proved fatal to the standard Yard and Pound. A commission was subsequently appointed to consider the steps to be taken for the restoration of those standards,—the members of which were all Fellows of the Royal Society.

The late Mr. Baily took an active part in the preparation of a standard yard; which, however, though constructed most carefully, deteriorated in such a manner as to be altogether unworthy of confidence. Since Mr. Baily's death, the late Mr. Sheepshanks has been engaged in the very difficult and delicate task of constructing a standard yard,—while Professor Miller, of Cambridge, undertook to make a standard avoirdupois pound. The liberality of Government placed at Mr. Sheepshanks' command apparatus for his purpose far superior to that possessed by his predecessors. His labours were carried on in the lower tiers of cellars in Somerset House,—which are very favourable to the work, on account of their slow-changing temperature.

After an infinite number of experiments and comparisons, two standards have been constructed. The originals have been inclosed in one of the walls of the New Houses of Parliament; and perfectly accurate copies were placed by Mr. Airy in the custody of the Royal Society on Thursday last.

The standard yard measure is defined by the interval between two lines upon a bar of gun metal. The bar is about 38 inches long and 1 inch square; it is supported in a horizontal position upon eight brass rollers, which are carried by levers so arranged that the pressure upon the eight rollers are necessarily equal.

The lever frame, with the bar resting upon it, is placed in a box of mahogany wood. The bar is prevented from moving endways by weak brass springs attached inside to the ends of the box, and is prevented from moving upwards by wedges of paper placed under three inverted stirrups. Near to each end of the bar, a cylindrical hole is sunk from the upper surface of the bar to the depth of half an inch, and at the bottom of each cylindrical hole is a gold pin, upon which are cut three fine lines in the direction transversal to the bar, and two fine lines parallel to the axis of the bar. The limiting points of the yard measure are those points of the middle transversal lines which are midway between the longitudinal lines. On the upper surface of the bar, the following inscription is engraved,—

Copper.....	16 oz.
Tin .....	2½
Zinc .....	1

Mr. Baily's metal.

Standard Yard at 62.10° Fahrenheit, cast in 1845.  
Troughton & Simms, London.

—It is necessary to observe that, although the bar was cast so long ago as 1845, the standard yard has been completed only very lately.

The standard pound weight is made of platinum, representing, when weighed *in vacuo* against the last Troy pound, 6,999.9975 grains,—of which the last standard contained 5,760 grains. The form of the weight is a cylinder, with a groove surrounding it a little above the middle of its height for the insertion of the fork which is used in lifting it. On the upper end of the cylinder is engraved the following inscription:—

No. 2  
P. C. 1831.  
1 lb.

—The box containing the weight is mahogany,—and when its portions are screwed together, the weight is fixed immovably. This mahogany box is placed in a second mahogany box, the lid of which bears the inscription—

Standard Pound, 1853.

—The mahogany boxes of the yard and the pound are inclosed in an oak box, upon whose lid is cut and painted the inscription—  
British Standards of Length and Weight, 1853.

\* This means Parliamentary Copy.



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The Canadian Institute.

The proceedings of the Session of the Institute for the year 1853-4, will have commenced before the issue of the December number of the *Canadian Journal*. We therefore proceed to