tion, and that it should rebound in some measure from the pendulum at the moment of contact.

Before any attempt was made to introduce any legisla­tive regulations upon the foundation of the various scien­tific experiments which had been so accurately and satis­factorily conducted, it was thought advisable by his majesty’s ministers that the subject at large should be submitted to the deliberate consideration of some competent persons, who might discuss it more minutely than could be done with convenience before a committee of either house of parliament ; and that a commission should be appointed for this purpose, by a writ of the privy seal. The commis­sioners thus nominated in 1818 were, Sir Joseph Banks, Sir George Clerk, Mr Davies Gilbert, Dr W. Hyde Wol­laston, Dr Thomas Young, and Captain Henry Kater Some further operations for the comparison of the existing standards of length were undertaken by Captain Kater. [Since this article was first published, Captain Kater has, in the Philosophical Transactions for 1826, given a de­tailed account of these operations ; and in the Philoso­phical Transactions for 1830 and 1831 he has pointed out a variety of nice adjustments and corrections to be made on them, which fortunately are too minute to affect any ordi­nary weights or measures. But Mr Sang has lately com­municated to the Edinburgh Society of Arts a notice of some defects in these last corrections of Captain Kater.] Dr Wollaston examined some of the authorized measures of capacity, and Dr Young offered his services as secretary to the committee, with the assistance of a clerk who had studied the law, while Sir George Clerk and Mr Gilbert were employed in preparations for carrying into effect, in their legislative capacity, such regulations as the com­missioners at large might agree to propose. The first oc­cupation of the clerk was to make copious extracts from the statutes at large, by means of which Dr Young drew up an abstract of the present state of the laws relating to weights and measures; and the next to select from the agricultural reports of the different counties such mate­rials as afforded a glossary of all the terms employed in any part of Great Britain for denominating the irregιdar weights or measures which have acquired a local currency in the agricultural or other commercial transactions.

After this sketch of the previous history of the subject, we may now proceed to extract from the Reports of the Commissioners, and from the bills founded on them, such statements as may either serve in the place of canons for the regulation of weights and measures in general, or as documents respecting the actual value of the various standards possessing the highest degree of authenticity ; and this article cannot be more properly concluded than by subjoining some further comparative tables of the stan­dards of measures and weights adopted by different coun­tries and at different periods.

*First Report.—*“ I. Upon a deliberate consideration of the whole of the system at present existing, we are impress­ed with a sense of the great difficulty of effecting any radi­cal changes, to so considerable an extent as might in some respects be desirable ; and we therefore wish to proceed with great caution in the suggestions which we shall ven­ture to propose.

“ II. With respect to the actual magnitude of the stan­dards of length, it does not appear to us that there can be any sufficient reason for altering those which are at present generally employed. There is no practical advantage in having a quantity commensurable to any original quantity existing or which may be imagined to exist in nature, ex­cept as affording some little encouragement to its common adoption by neighbouring nations. But it is scarcely pos­sible that the departure from a standard, once universally established in a great country, should not produce much more labour and inconvenience in its internal relations than it could ever be expected to save in the operations of fo­reign commerce and correspondence, which always are and always must be conducted by persons to whom the difficulty of calculation is comparatively inconsiderable, and who are also remunerated for their trouble, either by the profits of their commercial concerns, or by the credit of their scienti­fic acquirements.

“III. The subdivisions of weights and measures at pre­sent employed in this country appear to be far more con­venient for practical purposes than the decimal scale, which might perhaps be preferred by some persons for making calculations with quantities already determined. But the power of expressing a third, a fourth, and a sixth of a foot in inches without a fraction, is a peculiar advantage in the duodecimal scale ; and, for the operation of weighing and measuring capacities, the continual division by two renders it practicable to make up any given quantity with the smallest possible number of standard weights or measures, and is far preferable in this respect to any decimal scale. We would therefore recommend that all the multiples and subdivisions of the standard to be adopted should retain the same relative proportions to each other as are at present in general use.

“ IV. The most authentic standards of length which are now in existence being found, upon a minute examination, to vary in a very slight degree from each other, although either of them might be preferred, without any difference that would become sensible in common cases ; we beg leave to recommend for the legal determination of the standard yard that which was employed by General Roy in the measurement of a base on Hounslow Heath, as a founda­tion for the trigonometrical operations that have been carried on by the Ordnance throughout the country, and a duplicate of which will probably be laid down on a standard scale by the committee of the Royal Society appointed for assisting the astronomer royal in the determination of the length of the pendulum ; the temperature being supposed to be 62 degrees of Fahrenheit when the scale is employed.

“ V. We propose also, upon the authority of the experi­ments made by the committee of the Royal Society, that it should be declared, for the purpose of identifying or recovering the length of this standard, in case that it should ever be lost or impaired, that the length of a pen­dulum vibrating seconds of mean solar time in London, on the level of the sea, and in a vacuum, is 394372 inches of this scale ; and that the length of the metre employed in France, as the 10,000,000th part of the quadrantal arc of the meridian, has been found equal to 39∙3694 inches.

“ VI. The definitions of measures of capacity are obvi­ously capable of being immediately deduced from their re­lations to measures of length ; but since the readiest prac­tical method of ascertaining the magnitude of any measure of capacity is to weigh the quantity of water which it is capable of containing, it would, in our opinion, be advisable in this instance to invert the more natural order of proceed­ing, and to define the measures of capacity rather from the weight of the water they are capable of containing, than from their solid content in space. It will therefore be con­venient to begin with the definition of the standard of weight, by declaring that 'nineteen cubic inches of distilled water, at the temperature of 50°,’ must weigh exactly ten ounces troy, or 4800 grains, and that 7000 such grains make a pound avoirdupois ; supposing, however, the cubic inches to relate to the measure of a portion of brass, adjusted by a standard scale of brass. This definition is deduced from some very accurate experiments of the late Sir George Shuckburgh on the weights and measures of Great Britain ; but we propose at a future period to repeat such of them as appear to be the most important.

“VII. The definitions thus established are not calcu­lated to introduce any variation from the existing standards