

of July, 1787, and by the law of the United States, passed on the 26th of May, 1790, it appears that the citizens of that part of the United States which has been called the territory of the United States south of the river Ohio, and which is now formed into a State, under a republican form of Government, by the name of Tennessee, are entitled to all the rights and privileges to which the citizens of the other States in the Union are entitled under the constitution of the United States; and that the State of Tennessee is hereby declared to be one of the sixteen United States of America.

4th CONGRESS.]

No. 84.

[1st SESSION.]

WEIGHTS AND MEASURES.

COMMUNICATED TO THE HOUSE OF REPRESENTATIVES, APRIL 12, 1796.

Mr. HARRISON, from the committee to whom were referred the report of the Secretary of State, made the 13th of July, 1790, and so much of the message of the President of the United States of the 8th of January, 1795, as relates to weights and measures,* made the following report:

That they have examined into the subject referred to them, and are of opinion that the following principles ought to be assumed in regulating the standards of weights and measures in the United States:

1. That all measures of surface, capacity, and weight, ought to be regulated by measures in length.
2. That the unit of measures in length, and the unit of weights to be adopted as standards, ought not to vary in any very sensible degree from the present foot now in use, and the present pound avoirdupois.
3. That the objections against assumed standards, on account of their being arbitrary, and always liable to be injured or lost, make it a matter worthy the attention of an enlightened Legislature to refer to some certain measure in length, derived from a uniform principle in nature, more especially if it can be made to appear that reference may be had to such a measure with sufficient certainty of uniformity, in the result of different experiments, and without much time, trouble, or expense, in making them.

In order to carry into effect the first and second of these principles, reference need only to be had to a very remarkable correspondence which is said to exist between the avoirdupois pound and the English standard foot; it having been ascertained that one thousand ounces avoirdupois of rain water will fill a cubic foot, of English standard measure, with great exactness; and, for carrying into effect the third principle, little doubt can be entertained but that recourse ought to be had to the pendulum rod, vibrating seconds of mean time in any given place, and in any known temperature of the atmosphere, because this will, without doubt, furnish a standard, derived from a uniform principle in nature, more certain and easy to be obtained than any that hath hitherto been discovered; by which a measure in length may be ascertained, differing very insensibly in the result of different experiments, and by which the unit in measures of length, to be adopted as a standard in the United States, may, therefore, at all times be regulated. The committee are, therefore, of opinion that one or more experiments ought to be made in the city of Philadelphia, to ascertain the length of the pendulum rod, vibrating seconds of mean time, and that, after such length shall be obtained, the present foot ought to be compared with it; and if it appears not to bear any even proportion to it, then such a standard foot ought to be assumed as shall bear an even proportion to it, and which will not vary, in any sensible degree, from the length of the foot now in use; and that, after such a standard foot shall be obtained, one or more experiments ought to be made to ascertain the weight of a cube of rain water, which shall be equal to the one-thousandth part of a cube whose side shall be the aforesaid standard foot; and that sixteen times the weight of such a cube of water ought to be the unit of weights, or pound avoirdupois; and that after this unit of weights or pound shall be so obtained, experiments ought to be made to ascertain the weights of such divisions of this unit or pound as shall be most convenient for the purpose of weighing all substances that require exactness in the weight, such as the precious metals, and the like; and, in making these, the four following methods of dividing the pound have been contemplated by the committee:

1. The division of the pound in a decimal ratio, until it shall be divided into one thousand parts, and the division of each of these into seven parts, which will divide the pound into seven thousand parts.
2. The division of the pound in a decimal ratio; the smallest weight in common use to be the one ten-thousandth part.
3. The division of the ounce into eighteen parts, and each of these again into twenty-four, which will divide the pound into six thousand nine hundred and twelve parts.
4. The division of the ounce in a decimal ratio; the least weight in common use to be the one-thousandth part, which will divide the pound into sixteen thousand parts.

The least weight in the first of these divisions will be the present troy grain, and the remaining will bear the following proportions to it: that is, the second will be to the present troy grain as seven is to ten; the third as seven thousand to six thousand nine hundred and twelve; the fourth as seven to sixteen. Of these respective divisions, the committee are of opinion that the second and last are preferable, because they may be more easily introduced, will better accommodate themselves to decimal arithmetic, and, in the least divisions before mentioned, will produce weights less than the present troy grain, and which must, therefore, be sufficiently exact for most purposes. The committee have conceived it unnecessary to come to any particular determination about the divisions of the feet, or respecting the contents of the gallon and bushel, until it shall be determined whether experiments shall be made relative to this subject; and they would, therefore, submit the following resolutions:

Resolved, That the President of the United States shall be authorized to employ such persons, of sufficient mathematical and philosophical skill, as he shall think most proper for the purpose of making the following experiments, the result of which shall be reported to Congress at their next session:

1. To ascertain the length of a pendulum rod of iron, of a cylindrical form, whose diameter shall not exceed the one hundred and twentieth part of its length, which shall perform its vibrations in one second of mean time, in

* For the report and message, see Nos. 15 and 60.

an arc not exceeding four degrees, and in the latitude of the city of Philadelphia, at any place between the rivers Delaware and Schuylkill, and at a known height above the level of common high water in the river Delaware, and in a known temperature of the atmosphere, according to Fahrenheit's thermometer, both to be ascertained when the experiment shall be made; and, after its length shall be ascertained by one or more experiments for that purpose, a standard foot, to be the unit of all measures in length for the United States, shall be derived from it, which shall be equal to, or shall not sensibly vary from, the present foot now in use, and which shall bear an even proportion to the length of such pendulum rod.

2. To ascertain the weight of a cube of rain water, of a known degree of heat, according to Fahrenheit's thermometer, to be ascertained at the time when the experiment shall be made, which shall be equal in quantity to the one-thousandth part of a cube whose side shall be equal to the standard foot ascertained by the pendulum rod, in manner as above directed; which weight of water, when so obtained, shall be the standard ounce avoirdupois, sixteen of which shall make the pound avoirdupois; and the pound, when so determined on, shall be the unit of weights for the United States.

3. To ascertain the respective weights of the following divisions of the pound and the ounce:

First. The division of the pound, in a decimal ratio, into one thousand parts, and the least of these again into seven parts.

Second. The division of the pound, in a decimal ratio, into ten thousand parts.

Third. The division of the ounce into eighteen parts, and each of these into twenty-four parts.

Fourth. The division of the ounce, in a decimal ratio, into one thousand parts.

Resolved, That a sum, not exceeding one thousand dollars, ought to be appropriated for the purpose of defraying the expenses that may arise in making the foregoing experiments.

4th CONGRESS.]

No. 85.

[1st SESSION.]

GEORGE WASHINGTON MOTIER LAFAYETTE.

COMMUNICATED TO THE HOUSE OF REPRESENTATIVES, APRIL 26, 1796.

Mr. LIVINGSTON, from the committee appointed to inquire into the truth of the information that a son of General Lafayette is now within the United States, and also what measures it will be proper to take, if the same be true, to evince the grateful sense entertained by this country for the services of his father, made the following report:

That, pursuant to order, they made the inquiry directed by the House, and find that the son of General Lafayette arrived some time in the last autumn in the United States, and is now with the President of the United States in the city of Philadelphia; and they further report that no measures are necessary to be taken relative to the other object of their inquiry, as will appear from the letter, hereunto annexed, addressed to the chairman of your committee, in answer to one written by him, enclosing a copy of the resolutions of the House on this subject.

[TRANSLATION.]

Sir:

RAMAPAGE, NEW JERSEY, *March* 28, 1796.

I have just received the honorable resolution which the merits of my father have procured for me. Deign to express to the representatives of the people of America *his* gratitude—my youth forbids me yet to speak of mine. Every day recalls to me what he taught me, at every period of his life, so full of vicissitude, and what he has repeated in a letter, written from the depth of his prison: "I am convinced," he says, "that the goodness of the United States, and the tenderness of my paternal friend, will need nothing to excite them."

Arrived in America some months since, I live in the country, in New Jersey, occupied in the pursuits of my education. I have no wants; if I had felt any, I should have answered to the paternal solicitude of the President of the United States, either by confiding them to him, or by accepting his offers. I shall hereafter consider it a duty to impart them to the House of Representatives, which deigns to inquire into my situation.

I am as happy as a continual inquietude, relative to the object of my first affections, will permit. I have found benevolence wherever I have been known, and have often had the satisfaction of hearing those who were ignorant of my connexions, speak of their interest in the fate of my father, express their admiration of, and partake the gratitude I feel for, the generous Doctor Bollman, who has done so much to break his chains.

It is amid all these motives of emulation that I shall continue my studies; every day more convinced of the duties which are imposed by the goodness of Congress, and the names I have the honor to bear.

GEORGE WASHINGTON MOTIER LAFAYETTE.

Hon. EDWARD LIVINGSTON, *Chairman*, &c.