THE

DECIMAL SYSTEM,

AS A WHOLE,

IN ITS RELATION TO

TIME, MEASURE, WEIGHT, CAPACITY, AND MONEY,

IN UNISON WITH EACH OTHER.

BY

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THE author of this little pamphlet wrote a letter on the Decimal System on the 1st of November, 1855, to the editor of the Liverpool *Albion*, which was inserted in that paper on the 19th of the same month, the substance of which is the base of the present.

The Decimal System has been considered lately in relation to money matters solely, without any other contemplation whatever, some beginning with the present sovereign, and others again with the present penny, as a base for a decimal system. Now, neither of these, as we shall presently see, has a *definite* base for a system to rest upon; in fact, a base so fixed would mean anything or nothing, and we might as well fix a base from a piece of coal or a lump of anything for a standard, as the present sovereign or penny piece.

As there are other transactions in daily use equally as important as money, even commercially speaking, it will be as well to contemplate the question as a whole system, in its relation to Time, Measure, Weight, Capacity, and Money, and all, if possible, to be in unison with each other. This is what we want, then—a base for a decimal system in relation to more than the one commodity, money; but also in relation to the daily transactions, to time, weight, measure, capacity, and money, all in unison with each other; and this is far more preferable than the absurd one of beginning a system from a base that has no meaning.

From what, then, shall we commence? Where take our standard, so as to have *a base, a true base, one that will always remain so,* whereon to raise the superstructure of the whole?

As I have proposed to compute Time decimally, I shall take this first, as it embraces the system as a whole.

Time is, first of all, absolute—no beginning—no ending, and immeasurable in space; therefore of this state we can form no conception; but the Creator has placed planets in the universe, governed by an universal law of gravitation and motion, and by the latter we can measure time in relation to their respective motions through space.

I need not go beyond the solar system for illustration, as the ordinary planets will suffice. Mercury, Venus, the Earth, Mars, Jupiter, Herschel, &c., have each, according to their respective distances from the sun, a different period of time to complete their annual revolution round the sun, and, consequently, they have different lengths to their respective years, compared with each other.

The diurnal rotation of each likewise will differ according to their velocity of motion, so that the day of one planet will not agree with that of another; nevertheless, they are all compared with each other in relation to the motion of our own planet—the earth.

The earth, like the other planets, has two motions—an annual motion round the sun, and a diurnal motion on its own axis. The revolution of the earth round the sun is elliptical, and as its axis is also oblique to the plane of the equator, the angle formed by the plane of the ecliptic and the plane of the equator produces the seasons, and the inequality of the length of the days—these varying regularly, however, when the different days of one year are compared with another.

The diurnal motion of the earth divides time into two periods —day and night; but as these are seldom equal periods of time, it is considered as a whole, and not as a part. The diurnal motion being considered one period, it has been subdivided by the art of man by time-pieces into twenty-four equal periods, called hours, and each of these again into periods of sixty, called minutes, and these again into sixty, called seconds, for the purposes of civil life: thus—

Hours.		Minutes.		Seconds.
24	=	1,440	=	86,440
1	=	60	=	3,600
		1	=	60
				1

I have said that man has divided the diurnal motion into twenty-four hours; but he has divided it into two parts of twelve hours each, or two revolutions of time for one of the earth, the one beginning at midnight and terminating at noon, the other beginning at noon and terminating at midnight. Now, as this does not exist in nature, why should we have two revolutions of time to one of our globe? Does it not frequently lead to confusion? Of this we shall presently see.

Again, it would not do to begin the day at noon, because if we did, it would have to be called one date before noon, and another date after noon, while the sun had been above the horison all the time; and as it had been all the one day, it is, after all, the best to begin the day when the sun is at the antipodes.

We should, therefore, make time of *one period* correspond to the revolution of the earth on its own axis, or diurnal motion, and keep time by a clock—call it an astronomical clock, if you like—and it would indicate time as follows. But as I have had a time-piece constructed for myself by my brother, I shall now describe it.

The external circle of the dial is divided (as the annexed diagram shows) into 100° or parts, and commencing at 0 when the sun is in the nadir, at every 10° there are the 10 hours to correspond to the diurnal revolution of the earth.

The hour hand moves from east to west, like the sun when we are looking to the north, (as this is considered the chief cardinal point of the compass, the magnetic needle always pointing there,) and the dial faces the south. The clock works the reverse of the present one, as well as the reverse of the earth's diurnal motion, *when so fixed;* but by doing so, it nearly follows and points out the sun's locality above and below the horison, and it is noon at five o'clock, when the sun is in the zenith, and it completes the ten hours, or the whole day, when the hour hand again arrives at nadir, showing that the sun is below our feet, or, rather, that we are on the far-off surface of the earth from the sun.

The time-piece on the mantel-piece now going works as follows:—The hour hand moves 1°, while the minute hand moves 10° or minutes, and while the seconds hand goes round 10 times, indicating 1,000 seconds; or, the hour hand goes 10° or one hour, while the minute hand goes *once* round, or 100 minutes, and the seconds hand goes 100 times round, indicating 10,000 seconds; or, the hour hand goes *once* round, indicating 10 hours for the whole day, the minute hand goes ten times round, indicating 1,000 minutes, and the seconds hand goes 1,000 times round, indicating 100,000 seconds. It is constructed on the most approved principles of the best clocks, and beats dead decimal seconds. I will tabulate its working thus—

10 decimal	hours	=	1 day	=	24 hours old time.
1 „	hour	=	100 minutes	=	144 minutes „
1 „	minute	=	100 seconds	=	1·44 min. „
			1 second	=	0·864 sec. „

It chimes quarters as follows:—

1st quarter		=	25 decimal minutes			=	36 minutes old time.			
2nd	"	=	50	"	"	=	72	"	"	
3rd	"	=	75	"	"	=	108	"	"	
4th	"	=	100	"	"	=	144	"	"	

Thus, if time was kept decimally as above, a quarter of an hour being allowed for breakfast and half an hour for dinner to artisans, &c., they would gain six minutes more time to their former repast, and twelve minutes more to the latter, than they have at present.

The day begins at midnight, and the time-piece strikes the 10 hours throughout the whole day until midnight again, without any repetition, and it also chimes the quarters, so that there is no confusion of 2 a. m. or 2 p. m., 3 a. m. or 3 p. m., and this would prevent mistakes in travelling; and as there are two circles, the external for the decimal, and the internal for the present mode of computing time, the hour hand points to both at once, so that those who prefer the one to the other can do so, until use would conquer time-honoured usage and prejudice.

But, to show that the present method has its drawbacks, I will relate two anecdotes, and similar incidents are, no doubt, of daily occurrence.

Two sailors, among others, after a long cruise, were paid off, and they determined to go and see their relatives in the country. As the railway was the only available way by which they could accomplish their intended journey, they proceeded to the station to ascertain the time of departure of the trains, and on being referred to the time-tables, they examined them and fixed upon one of the departures, and were about to leave the station to enjoy themselves until the time arrived, when one said to the other, "I say, mate, what does p. m. mean at the end of the time for starting?" "I don't know," replied his companion; and now, sailor-like, they both began to scratch their heads, as is usual when some knotty point is to be solved. At last one exclaimed, "I have it, you lubber; p. m. means *punctual to a minute.*" So they departed; but whether they arrived again at the station in time for the train, deponent sayeth not.

Nevertheless, there are many more persons mistaken than poor Jack, who cannot be called ignorant of the fact of ante- and post-meridian, as the following case will illustrate, and it shows also the inconvenience and annoyance the mistake involves a person in sometimes. A friend of the author's was staying some time ago in Paris, and being desirous of returning to London by a given time, he deferred it until the last favourable opportunity of so doing, so as just to be in time for his engagements. On referring to the published time-tables, he found the train to leave Paris at 12.15 p. m. It was plain enough. P. M. in a moment flashed across his mind, was equivalent to evening, and proceeded forthwith to put the book in his pocket without another moment's reflection, and not even troubling his mind more about it. He went and saw all his friends that day, dined and took tea with some, and even took supper with others, returned to his hotel, ordered a coach at eleven o'clock, paid his bills, &c., and departed for the station to start per rail, and just be in time to meet the steamer for England. Off he drove to the station pell-mell, and arrived at the station at ten minutes to twelve. Oh! lots of time, thought he; but, by-and-by, seeing no signs of a train leaving, he inquired if a train would soon be leaving. He was then informed that the train left at fifteen minutes past noon, not past midnight, which would be morning. Of course he was greatly annoyed at his own want of thought. He had to go back again to the hotel, and re-engage lodgings. He missed the steamer, and was consequently behind all his engagements in England. So much for a. m. and p. m. not being always attended to, and its inevitable results—confusion.

Now, as I have been measuring time according to the period of the earth's rotation on its own axis, I will compare the decimal with the present time. The earth's whole circumference has passed once before the sun during this period; therefore, I make the measurement of time correspond to the measure of its circumference. But the circle has hitherto been divided into 360° or parts; nevertheless, it is quite arbitrary, and as I am going to propose a complete decimal system in relation to time, measure, weight, capacity, and money, I shall take the circle and divide it into one hundred parts. This is quite as feasible as the present 360° or parts, although the change would upset all trigonometrical tables; nevertheless, all those who are adepts at this branch of mathematical science would find no great difficulty in substituting one series for the other. Changes, likewise, would always be slow in coming into operation. The only thing is to let the change come in gradually; but, also, when it does commence, let it be on a right base, as this is the great desideratum, and all the rest will follow.

The Circle, equal to . .	100 degrees	=	360 degrees old.
Difference	1 new degree	=	3·6 „
The Earth's rotation,	10 hours	=	24 hours old.
Difference . .	1 hour	=	$2\frac{2}{5}$ „ or 144 min. old.

NEW.

C.		D.		H.		M.		S.
1	=	100	=	10	=	1,000	=	100,000
		10	=	1	=	100	=	10,000
		1	=	0	=	10	=	1,000
						1	=	100
								1

OLD.

C.		D.		H.		M.		S.
1	=	360	=	24	=	1,440	=	86,400
		15	=	1	=	60	=	3,600
		1	=	0	=	4	=	240
						1	=	60
								1

DIFFERENCE.

10	decimal	hours	=	24 hours old.
1	„	„	=	$2\frac{2}{5}$ „ „
10	„	minutes	=	$14\frac{2}{5}$ min. „
1	„	„	=	1·44 „ „
1	„	second	=	0·864 sec. „

Thus we see that the decimal second denotes a much less period of time than the present clock does, and it is, therefore, better adapted for astronomical calculation.

Now, if there were public astronomical clocks of this description, the public would become as well accustomed to them as to the present clock. A person will say, "He arrived at five o'clock." "Which five?" is the demand, "a.m. or p.m.?" There would be no such necessity in the astronomical clock, but a more simple and definite answer at once.

It may be asked, How would you introduce the new decimal timepiece? As it would prevent mistakes in travelling, first of all let the railway companies erect decimal clocks at all the stations, with dials on, similar to the lithographed diagram accompanying this, so as to indicate both the decimal and the present time at once; and on their monthly time-tables let them append a card dial with a moveable central index, so that, if they gave decimal time for starting, the index would have only to be turned round and it would tell the present time also. This would answer very well until decimal watches, time-pieces, and public clocks came more into vogue.

After twenty years or so, the central circle of old time might be omitted as unnecessary, and the new decimal time dial left alone in all its simplicity of arrangement.

It has been remarked by those in the trade that there are not near the amount of watches in use as there might be for a civilised people; and it will hold good of other civilised countries also. This shows that even the civilised portion of humanity have very few time-pieces, and a change like this would create a demand, as the new piece of mechanism would gradually supplant the old, and so trade would flourish; in fact, all these changes would do so, and the mutual prosperity would be great: instead of doing harm, the change would do good.

We will proceed with time in relation to the measurement of the earth.

Bessel, the astronomer, has given, from all the geodetical observations combined, the equatorial radius of the earth as 20,923,600 feet, and as the equatorial circumference is the greatest measurement that we can have on our globe, I have taken this as a standard. It produces 131,466,856 feet, so that all nations might take it also; and from the late geodetical operations, the length of any degree of latitude or longitude can by mathematical calculation readily be obtained and tabulated, in proportion to the earth's greatest measurement.

But we would divide the circle, as before, into 100 degrees, which at the equator would give 1,314,668·56 feet to each degree; and each degree we would divide into 100 miles, equal to 13,146·68 feet each; and each mile into 100 hectometres, equal to 131·46 feet each; and each hectometre into 100 metres, equal to 1·31 feet, or more exactly 1 foot 3·776 inches each. The unit standard measure and this could be divided into 10ths, 100ths, and 1000ths for practical or philosophical purposes:—

THE PROPOSED METRE.

1	Metre	=	15·77602272	inches.
$\frac{1}{2}$	"	=	7·88801136	"
$\frac{1}{4}$	"	=	3·94400568	"
$\frac{1}{10}$	"	=	1·57760227	"
$\frac{1}{100}$	"	=	0·15776022	"
$\frac{1}{1000}$	"	=	0·01577602	"

We will tabulate it a little more thus:—

NEW MEASURE AND TIME.										OLD TIME AND MEASUREMENT.	
C.	Deca.	Deg.	Min.	Miles.	Seconds.	Hectometres.	Decametres.	Metres.	Time.	Time.	Feet.
1	10	100	1,000	10,000	100,000	1,000,000	10,000,000	100,000,000	10 hours.	24 hours.	131,466,856·00
	1	10	100	1,000	10,000	100,000	1,000,000	10,000,000	1 "	$2\frac{2}{5}$ "	13,146,685·60
		1	10	100	1,000	10,000	100,000	1,000,000	10 minutes.	$14\frac{2}{5}$ "	1,314,668·56
			1	10	100	1,000	10,000	100,000	1 "	86·4000 sec.	131,466·85
				1	10	100	1,000	10,000	10 seconds	8·6400 "	13,146·68
					1	10	100	1,000	1 "	0·8640 "	1,314·66
						1	10	100	0·1 "	0·0864 "	131·46
							1	10	0·01 "	0·0086 "	13·14
								1	0·001 "	0·0008 "	1·31

By the above table we keep angular measure in unison with time, as it will be seen that there are 1,000 minutes of time to the earth's diurnal revolution, and 1,000 minutes of angular measure to the circle; likewise, 100,000 seconds of time to the earth's diurnal revolution, and 100,000 seconds of angular measure to the circle, so that they correspond, which is better than the present time of angular measure, compared thus:—

				TIME.								ANGULAR MEASURE.				
C.		H.		Min.		Sec.		C.		Deg.		Min.		Sec.
1	=	24	=	1,440	=	86,400	......	1	=	360	=	21,600	=	1,296,000
		1	=	60	=	3,600	......			1	=	60	=	3,600
				1	=	60	......					1	=	60
						1	......							1

These look more in unison, however, than they really are; for, as there are 24 hours to 360°, 360 ÷ 24 = 15° to 1 hour; and as 1 hour equals 60 minutes, and as 15° = 900′, therefore 900 ÷ 60 = 15′ to 1 minute of time; and as 3,600 seconds equals 1 hour of time, there are 900′ × 60″ = 54,000″ of angular measurement, and 54,000″ ÷ 3,600 = 15″ to 1 second of time.

Now, if we put the decimal angular measure and the present together, they will stand thus:—

C.		Deg.		Min.		Sec.		C.		Deg.		Min.		Sec.
1	=	100	=	1,000	=	100,000	=	Old 1	=	360	=	21,600	=	1,296,000
		1		100	=	10,000	=	"		1	=	60	=	3,600
				1	=	1,000	=	"				1	=	60
						1	=	"						1

As there are	360°	old to	100°	decimal,	1°	decimal	= 3·6° old.
"	21,600′	"	1,000′	"	1′	"	= 21·6′ "
"	1,296,000″	"	100,000″	"	1″	"	= 12·96″ "

The present second of angular measure at the equator is equal to 101·440 feet; but a second of decimal angular measure would be equal to 1,314·668 feet—THE SAME AS TIME—and the 10th or decimal second would approach the angular second now in use, 131·466 feet = 1 decimal second (0″·1) (as will be seen above, there are 12″·96 old to 1″ decimal); and the 0·01″ would express 13·146 feet, and the 0·001″ = 1·314 feet, or the length of the proposed metre. By so doing we keep angular and time measure in unison.

TIME AND ANGULAR SECONDS COMPARED.

1314·668	feet represent	a decimal second of time	at the equator.	
1521·607	" "	an old "	"	"
101·440	" "	an old ″ of angular measure		"
131·466	" "	a dec. deci ″	"	"

Decimal chronometers, therefore, would measure in less proportion of time and length, and consequently they would be more valuable both as regards navigation and astronomical calculation, inasmuch as time and measure coincide with each other.

The present angular second would be somewhat less than the decimal deci-second; but the latter could be reduced into its 10ths, 100ths, or 1000ths for minuter calculation.

DECIMAL TIME AND DECIMAL ANGULAR MEASURE COMPARED.

$$1 \text{ circle} = \left\{ \begin{array}{l} 100 \text{ degrees} = 1{,}000' = 100{,}000'' \\ 10 \text{ hours} = 1{,}000\text{m.} = 100{,}000 \text{ s.} \end{array} \right\} = 100{,}000{,}000 \text{ metres.}$$

$$1 \text{ degree} = \left\{ \begin{array}{l} 10' = 1{,}000'' \\ 10\text{m.} = 1{,}000 \text{ s.} \end{array} \right\} = 1{,}000{,}000 \text{ "}$$

$$\left. \begin{array}{l} 1' = 100'' \\ 1\text{m.} = 100 \text{ s.} \end{array} \right\} = 100{,}000 \text{ "}$$

$$\left. \begin{array}{l} 1'' \\ 1 \text{ s.} \end{array} \right\} = 1{,}000 \text{ "}$$

As they are alike—minutes and seconds—we will represent an angular measure table :—

C.		Deg.		Min.		Sec.		Metres.
1	=	100	=	1,000	=	100,000	=	100,000,000
		1	=	10	=	1,000	=	1,000,000
				1	=	100	=	100,000
						1	=	1,000

When I express lengths, I always refer to the equator for a standard, as degrees, &c., vary in length on account of the oblate spheroidal figure of the earth ; and when I express *diurnal* revolution, the *nocturnal* is included in that term ; both are included in the term daily—once, or one revolution of the earth on its axis.

For the purposes of navigation, the quadrant would be divided thus :—

THE DECIMAL QUADRANT.

25°	=	250′	=	25,000″	=	25,000,000	metres.
1°	=	10′	=	1,000″	=	1,000,000	"
		1′	=	100″	=	100,000	"
				1″	=	1,000	"
On the vernier	. . .			0·1″	=	100	"
				0·01″	=	10	"
				0·001″	=	1	"

Supposing that the officers of a ship are about taking an observation at noon for the longitude, &c. The chronometer, by having a centre second pointer, is much more exact than one which has none; for while one officer is taking the angle of the sun, &c., by the quadrant, the other could give him warning—say thus: at ten seconds to noon, "Be steady;" at one second to noon, "Steady;" and at noon, "Now," the moment the three pointers come in line. At the latter signal, he has the instrument fixed, and then notes the angle obtained, &c., and this method would give a more correct definition of locality than the present *about noon* observations. As they are several seconds out of time, this leads to *wide* reckoning. Now, if two officers of the ship took observations in the above method, the locality of the ship might be defined within its own length, because at the equator a second of decimal time is equal to 1,314·66 feet, and the deci second of angular measure 131·46 feet, its greatest range; but in the higher latitudes the distance of course would be less, as before stated, and almost the exact spot on the ocean, within the length of their own ship, would be indicated.

As the charts, maps, &c., in use represent portions of the 360° to the circle, they could be remarked, until, in process of time, decimal scaled maps came in use.

As 1° dec. = 3·6° old, 5° dec. = 18° old (5 × 3·6 = 18), and as there are 20 × 18 = 360 in every circle, the decimal degrees will coincide with the present 20 times in every circle --thus:

FIRST QUADRANT.

	1.	2.	3.	4.	5.
Decimal . .	5	10	15	20	25
Old . . .	18	36	54	72	90

SECOND QUADRANT.

	6.	7.	8.	9.	10.
Decimal	30	35	40	45	50
Old . .	108	126	144	162	180

THIRD QUADRANT.

	11.	12.	13.	14.	15.
Decimal	55	60	65	70	75
Old . .	198	216	234	252	270

FOURTH QUADRANT.

	16.	17.	18.	19.	20.
Decimal	80	85	90	95	100
Old . .	288	306	324	342	360

These all correspond, the one series being equivalent to the other. Now, if between every 18° old, five red lines were marked, they would represent decimal degrees on any map at present in use; and if the chart was on a large scale, mark 10′ between each decimal degree; and if on a very large scale, mark 100″ between every decimal minute, and it would do the same.

Again, the intermediate angles to the twenty corresponding equivalents would be expressed in these terms; and it need only be shown in the first quadrant, as they will follow the same throughout the four—thus:

9°	0′	0″	old	=	2°	5′	0″	decimal		
27°	0′	0″	″	=	7°	5′	0″	″		
45°	0′	0″	″	=	12°	5′	0″	″		are equal terms.
63°	0′	0″	″	=	17°	5′	0″	″		
81°	0′	0″	″	=	22°	5′	0″	″		

and so on. Thus, again, irregularly:

4°	30′	0″	old	=	1°	2′	50″	decimal	
2°	15′	0″	″	=	0°	6′	25″	″	
6°	45′	0″	″	=	1°	8′	75″	″	are equal terms.
15°	45′	0″	″	=	4°	3′	75″	″	
51°	45′	0″	″	=	14°	3′	75″	″	

But it is of no use going through all the equivalent terms: suffice it to say, that if the decimal system was adopted, theold method of computing would be given up, and there would be no necessity of knowing the equivalents. The difference being known, the one series can readily be computed for the other, when the numerical value is wanted, as they are frequently expressed algebraically.

As we would prefer taking measure in relation to time, or the earth's rotation in one sidereal day, we, of course, take the degrees of longitude at the equator as its greatest circumference for our standard, in opposition to an arc of the meridian, which does not so much relate to time.

Moreover, the polar diameter of the earth is less than the equatorial by more than twenty-six miles, and we take the whole circle instead of the quadrant; but as the latter is adopted by the French from an arc of the meridian by actual measurement, and divided into 10,000,000 parts, it will agree, commercially speaking, as the difference is so little, with the proposed decametre divided by four, as the latter takes the whole circle; or two and a half proposed metres nearly equals the French metre, as the latter equals 39·37 English inches; and one-fourth of a proposed decametre would equal 39·44 inches—a difference only of a seventh part more when the inch is divided into hundredths, scarcely a recognised commercial difference.

Again, the tenth part of the French metre or decimetre is equal to 3 inches and 937 decimals, agreeing almost with the proposed quarter metre, equalling 3 inches and 944 decimals.—*(Vide the rude comparison in the Diagram.)* Philosophically speaking, the difference is great; but commercially, it is not recognisable. What, then, is to prevent a metre measure being introduced *at once?* as it is a convenient length—15·776 inches—and very applicable to the measurement of any article in daily use.

Again, land could be sold by this decimal square measure, as can be seen—thus:

1 hectom.	=	100	decam.	=	10,000	met.	=	4,382·228 sq. yds.
		1	"	=	100	"	=	43·822 "
					1	"	=	0·438 "

Suppose, for instance, a piece of land is going to be sold, measuring 7 acres, 1 rood, and 38 perches: this measure can be reduced to the decimal; but we will first give the respective proportions of the present land measure:

1 acre	=	4,840	square yards	=	1
1 rood	=	1,210	"	=	¼
1 perch	=	30¼	"	=	$\frac{1}{160}$

Therefore, 7 a. 1 r. and 38 p. are equal to 36,248·5 square yards, and this reduced decimally would equal 8 hectometres, 26 decametres, and 94·30 metres; so that the hectometre would stand in the place of the acre, although less in extent:

1 acre	=	4840·000	square yards.
1 hectom.	=	4382·228	"
Difference .	.	477·772	"

and as the above is simple enough, any quantity (great or small) of land could be reduced to the decimal scale in the same manner.

If, for instance, the Messrs. Traughton, or any other philosophical instrument maker, were commanded by authority to make a standard metre of 15·776 inches long, divided into 10ths, 100ths, and 1,000ths for common purposes, and a copy of this standard sent to all the mayors in the United Kingdom, to be used by them officially as a standard for comparison with those sent by the various makers of the district, and when found correct, all metres to be stamped with the crown mark as correct, none others to be legal; this part of the decimal system could be accomplished in twelve months, and it would be an instalment in the right direction; and it would particularly encourage the Birmingham trade for a considerable period.

Now, if every nation adopted the length of the seconds pendulum from the locality of their chief town as their standard of length, every nation would have a different standard, as the length of the pendulum depends on the force of gravity, it being less at the equator and greater at the poles, on account of the oblate spheroidal form of the globe. Its length, then, would vary every latitude, and this would lead to nothing but confusion, especially in the now frequent intercourse of nations.

Let, then, a portion of the earth's greatest circumference be taken as a standard, and other nations may take it as their standard also. We have it in relation to time without the confusion of four minutes $= 1^\circ$, or $15''$ equals 1 second of time, &c. So far so good; but all things will not coincide with this arrangement. For instance, the moon's rotation round the earth is 29 days, 12 hours, $44'$ $2''\cdot 9$ sec. mean; consequently, there are neither twelve nor thirteen months exactly in the year, so that we cannot so divide the year into equal parts as to follow her rotation.

Neither the year or earth's revolution, nor the moon's, will adapt themselves to the decimal system; but we may divide the year into ten months, thus:—

183 days	1st month,	Unus-ber	37	days.	Months and days	odd numbers.
	2nd „	Duo-ber	36	„	„	even „
	3rd „	Tres ber	37	„	„	odd „
	4th „	Quatuo-ber	36	„	„	even „
	5th „	Quinque-ber	37	„	„	odd „
182 days	6th „	Sex-ber	36	„	„	even „
	7th „	Septem-ber	37	„	„	odd „
	8th „	Octo-ber	36	„	„	even „
	9th „	Novem-ber	37	„	„	odd „
	10th „	Decem-ber	36	„	„	even „
365		Ten months =	365	„		

Every leap year, the tenth or last month to add one day, so that each half year would contain 183 days, or 366 days in the year. As it is not spring, summer, autumn, or winter everywhere at the same time, we have no right to call the months after the seasons; but the simple enumeration of them will be sufficient for the whole world, as the seasons vary according to locality in each period.

It is high time to drop off calling the months or the days of the week after Roman emperors, Saxon gods, or planets, &c., as they bear no relation to the time. The present four last months are misnomers, for they are *not* the seventh, eighth, ninth, and tenth months. They may have been, but they are not now. Then why call them so? The seventh day, or Sabbath, according to Holy Writ, is the end of the week, and we ought to adopt the first, second, third, fourth, fifth, sixth, and seventh days accordingly. The Christian world has adopted the first day as its Sabbath, in commemoration of Christ's resurrection on that day, the six following being those of labour.

Thus, we would have newspapers dated, say "Liverpool, 1st November, 1862, (4th day, 43rd week,)" meaning Wednesday of the forty-third week in the year. This would be better than the present foolish names—Sunday, or the Sun's day; Monday, or the Moon's day; Tuesday, after Tuesco, the Saxon god of war; Wednesday, or Woden's day; Thursday, from Thor, the Scandinavian god of thunder; Friday, from Friga, the Saxon goddess; and Saturday, or Saturn's day. As if the sun shone only on a Sunday, or the moon on Monday, &c. Dedications with a vengeance!

Again, as we are known to be *in error four years* since the birth of Christ, as that era is adopted, why should we not call 1858 1862, as that would give the true period? Why stick so tenaciously to error? for, in rectifying this, it would not create any more difficulty than the old and new styles did in reforming the calendar, last century, from the Julian to the Gregorian reckoning of time.

So the creation of Adam is computed to be 4000 years B. C. (4004 years, computing from the vulgar era); but how long the earth was in existence before we cannot tell, as geological enquiry has proved it to have been in existence long before it was in a fit state to receive man as an inhabitant.

As it is, we should prefer taking the *true Christian era* as our standard, since that is more definite. Now, the commencement of the year is not known by any natural phenomena, and is purely arbitrary. We would, therefore, begin the new year at the anniversary of the birth of Christ, as we adopt that era. This has been an unsettled day, for the day of Annunciation, the 25th of March, now called Lady-day, was, before the alteration of style—3rd September, 1752—the official commencement of the new year; but, as the birth of Christ happened on the 25th of December—the day of his appearance on earth—we, as part of the Christian world, ought to compute our years from this day. Moreover, the English did do so before the Norman invasion; but William the Conqueror was crowned on the 1st of January, and he began the year afterwards on that day.

Commencing the new year, then, on Christmas-day, say of the vulgar era 1857, that day would be 1858,—or, more correctly, it would be the new year's day in the year of our Lord 1862,—1st Unusber, 1862, the true Christian period since the birth of Christ; and A. M., or from the creation of Adam, would be 5862.

We will tabulate the true Christian year 1862 thus: first, as it would appear arranged in an almanac, with the number of days of the year, week, and month respectively; and, secondly, weekly, under the seven days of the week, and the ten decimal months.

Christmas-day, 1857, falls on a Friday, or the sixth day of the week, consequently, the year would begin on that day: this year we shall call 1862.

THE YEAR OF

*** The figures in the first column denote the days of the month; those in the

Unusber.				Duober.				Tresber.				Quatuober.				Quinqueber.			
M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.
1	6	1	Chr. Day	1	1	38	6th Sab.	1	2	74		1	4	111		1	5	147	
2	7	2		2	2	39		2	3	75		2	5	112		2	6	148	
3	1	3	1st Sab.	3	3	40		3	4	76		3	6	113		3	7	149	
4	2	4		4	4	41		4	5	77		4	7	114		4	1	150	22nd Sab
5	3	5		5	5	42		5	6	78		5	1	115	17th Sab	5	2	151	
6	4	6		6	6	43		6	7	79		6	2	116		6	3	152	
7	5	7		7	7	44		7	1	80	12th Sab.	7	3	117		7	4	153	
8	6	8		8	1	45	7th Sab.	8	2	81		8	4	118		8	5	154	
9	7	9		9	2	46		9	3	82		9	5	119		9	6	155	
10	1	10	2nd Sab.	10	3	47		10	4	83		10	6	120		10	7	156	
11	2	11		11	4	48		11	5	84		11	7	121		11	1	157	23rd Sab
12	3	12		12	5	49		12	6	85		12	1	122	18th Sab	12	2	158	
13	4	13		13	6	50		13	7	86		13	2	123		13	3	159	
14	5	14		14	7	51		14	1	87	13th Sab.	14	3	124		14	4	160	
15	6	15		15	1	52	8th Sab.	15	2	88		15	4	125		15	5	161	
16	7	16		16	2	53		16	3	89		16	5	126		16	6	162	
17	1	17	3rd Sab.	17	3	54		17	4	90		17	6	127		17	7	163	
18	2	18		18	4	55		18	5	91		18	7	128		18	1	164	24th Sab
19	3	19		19	5	56		19	6	92		19	1	129	19th Sab	19	2	165	
20	4	20		20	6	57		20	7	93		20	2	130		20	3	166	
21	5	21		21	7	58		21	1	94	14th Sab.	21	3	131		21	4	167	
22	6	22		22	1	59	9th Sab.	22	2	95		22	4	132		22	5	168	
23	7	23		23	2	60		23	3	96		23	5	133		23	6	169	
24	1	24	4th Sab.	24	3	61		24	4	97		24	6	134		24	7	170	
25	2	25		25	4	62		25	5	98		25	7	135		25	1	171	25th Sab
26	3	26		26	5	63		26	6	99		26	1	136	20th Sab	26	2	172	
27	4	27		27	6	64		27	7	100		27	2	137		27	3	173	
28	5	28		28	7	65		28	1	101	15th Sab.	28	3	138		28	4	174	
29	6	29		29	1	66	10th Sab.	29	2	102		29	4	139		29	5	175	
30	7	30		30	2	67		30	3	103		30	5	140		30	6	176	
31	1	31	5th Sab.	31	3	68		31	4	104		31	6	141		31	7	177	
32	2	32		32	4	69		32	5	105		32	7	142		32	1	178	26th Sab
33	3	33		33	5	70		33	6	106		33	1	143	21st Sab.	33	2	179	
34	4	34		34	6	71		34	7	107		34	2	144		34	3	180	
35	5	35		35	7	72		35	1	108	16th Sab.	35	3	145		35	4	181	
36	6	36		36	1	73	11th Sab.	36	2	109		36	4	146		26	5	182	
37	7	37						37	3	110						37	6	183	

	Day of the Year.	
22d Duober . .	59	Lent, 1st Sunday,
26th Tuesber . .	99	Good Friday.
4th Quinqueber . .	150 . . .	Whit Sunday.
10th December . .	339	Advent, 1st Sunday.

OUR LORD 1862.

second column, the days of the week; and those in the third, the days of the year.

Sexber.				September.				October.				November.				December.			
M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.	M.	W	Y.	Days, &c.
1	7	184		1	1	220	32nd Sab	1	3	257		1	4	293		1	6	330	
2	1	185	27th Sab	2	2	221		2	4	258		2	5	294		2	7	331	
3	2	186		3	3	222		3	5	259		3	6	295		3	1	332	48th Sab
4	3	187		4	4	223		4	6	260		4	7	296		4	2	333	
5	4	188		5	5	224		5	7	261		5	1	297	43rd Sab	5	3	334	
6	5	189		6	6	225		6	1	262	38th Sab	6	2	298		6	4	335	
7	6	190		7	7	226		7	2	263		7	3	299		7	5	336	
8	7	191		8	1	227	33rd Sab	8	3	264		8	4	300		8	6	337	
9	1	192	28th Sab	9	2	228		9	4	265		9	5	301		9	7	338	
10	2	193		10	3	229		10	5	266		10	6	302		10	1	339	49th Sab
11	3	194		11	4	230		11	6	267		11	7	303		11	2	340	
12	4	195		12	5	231		12	7	268		12	1	304	44th Sab	12	3	341	
13	5	196		13	6	232		13	1	269	39th Sab	13	2	305		13	4	342	
14	6	197		14	7	231		14	2	270		14	3	306		14	5	343	
15	7	198		15	1	234	34th Sab	15	3	271		15	4	307		15	6	344	
16	1	199	29th Sab	16	2	235		16	4	272		16	5	308		16	7	345	
17	2	200		17	3	236		17	5	273		17	6	309		17	1	346	50th Sab
18	3	201		18	4	237		18	6	274		18	7	310		18	2	347	
19	4	202		19	5	238		19	7	275		19	1	311	45th Sab	19	3	348	
20	5	203		20	6	239		20	1	276	40th Sab	20	2	312		20	4	349	
21	6	304		21	7	240		21	2	277		21	3	313		21	5	350	
22	7	205		22	1	241	35th Sab	22	3	278		22	4	314		22	6	351	
23	1	206	30th Sab	23	2	242		23	4	279		23	5	315		33	7	352	
24	2	207		24	3	243		24	5	280		24	6	316		24	1	353	51st Sab
25	3	208		25	4	244		25	6	281		25	7	317		25	2	354	
26	4	209		26	5	245		26	7	282		26	1	318	46th Sab	26	3	355	
27	5	210		27	6	246		27	1	283	41st Sab	27	2	319		27	4	356	
28	6	211		28	7	247		28	2	284		28	3	320		28	5	357	
29	7	212		29	1	248	36th Sab	29	3	285		29	4	321		29	6	358	
30	1	213	31st Sab	30	2	249		30	4	286		30	5	322		30	7	359	
31	2	214		31	3	350		31	5	287		31	6	323		31	1	360	52nd Sab
32	3	215		32	4	251		32	6	288		32	7	324		32	2	361	
33	4	216		33	5	252		33	7	289		33	1	325	47th Sab	33	3	362	
34	5	717		34	6	253		34	1	290	42nd Sab	34	2	326		34	4	363	
35	6	218		35	7	254		35	2	291		35	3	827		35	5	364	
36	7	219		36	1	255	37th Sab	36	3	292		36	4	328		36	6	365	
				37	2	256						37	5	329					

BIRTHDAYS.

	Days of the Year.	
5th Quinquebor.	151	The Queen.
26th September.	245	Prince Albert.
28th November.	320	Prince of Wales.

1862.

*** The days in the front column are the Sabbaths of the year, and the following six columns are the six days of labour in each week of the ten decimal months.

Months.	Days of the Week.							Months.	Days of the Week.						
	1.	2.	3	4.	5.	6.	7.		1.	2.	3.	4.	5	6.	7.
Unusber ..						1	2	Sexber							1
	3	4	5	6	7	8	9		2	3	4	5	6	7	8
	10	11	12	13	14	15	16		9	10	11	12	13	14	15
	17	18	19	20	21	22	23		16	17	18	19	20	21	22
	24	25	26	27	28	29	30		23	24	25	26	27	28	29
	31	32	33	34	35	36	37		30	31	32	33	34	35	36
Duober	1	2	3	4	5	6	7	September..	1	2	3	4	5	6	7
	8	9	10	11	12	13	14		8	9	10	11	12	13	14
	15	16	17	18	19	20	21		15	16	17	18	19	20	21
	22	23	24	25	26	27	28		22	23	24	25	26	27	28
	29	30	31	32	33	34	35		29	30	31	32	33	34	35
	36								36	37					
Tresber....		1	2	3	4	5	6	October....			1	2	3	4	5
	7	8	9	10	11	12	13		6	7	8	9	10	11	12
	14	15	16	17	18	19	20		13	14	15	16	17	18	19
	21	22	23	24	25	26	27		20	21	22	23	24	25	26
	28	29	30	31	32	33	34		27	28	29	30	31	32	33
	35	36	37						34	35	36				
Quatuober .				1	2	3	4	November..				1	2	3	4
	5	6	7	8	9	10	11		5	6	7	8	9	10	11
	12	13	14	15	16	17	18		12	13	14	15	16	17	18
	19	20	21	22	23	24	25		19	20	21	22	23	24	25
	26	27	28	29	30	31	32		26	27	28	29	30	31	32
	33	34	35	36					33	34	35	36	37		
Quinqueber					1	2	3	December..						1	2
	4	5	6	7	8	9	10		3	4	5	6	7	8	9
	11	12	13	14	15	16	17		10	11	12	13	14	15	16
	18	19	20	21	22	23	24		17	18	19	20	21	22	23
	25	26	27	28	29	30	31		24	25	26	27	28	29	30
	32	33	34	35	36	37			31	32	33	34	35	36	

The anniversary of the battle of Waterloo is on the 18th of June, or the 169th day of the year; but as we propose to begin the year at the anniversary of the birth of Christ, instead of at the Circumcision, it will be seven days later, viz., on the 176th day of the year, or the 30th Quinqueber of the decimal months, and so on with any other anniversary; and to make former dates agree with the true Christian era, add four years also to the present vulgar era. Thus, again, the battle of Waterloo took place in 1815 of the vulgar era: this could be written thus:—

18th June, 1815.
30th Quinqueber, 1819.

The same as the old and new styles are when referring to dates historically anterior to the 3rd of September, 1752.

In this way all historical events would be referred to the true Christian era. It was first introduced in the sixth century; but as there crept in an error of four years *after the time* at the date of its first computation, this addition now requires to be made.

Accounts could be kept daily, weekly, monthly, bi-monthly, half-yearly, and yearly. The bi-monthly period of time would be similar to the present quarterly, there being five instead of four to the year. This would be a very convenient period of time for public companies, such as water, gas, &c., to keep their accounts current with the public.

I shall now proceed to the consideration of Weight, &c.

We ought to have a standard from some known quantity, and as we at the present moment have no standard weight or measure in existence, it would be as well to look for one.

The lost standards were copies of the old Saxon, the pound weight being taken from the weight of the grains of wheat, and the measure from the length of barley corns, neither always true. But Henry VII. increased the pound weight 1-16th. Why? The reason is not obvious, and therefore grain weights no longer represented their namesake—the wheat. This is our standard Troy weight, containing 5,760 parts, called grains, with which the precious metals are weighed. But Henry VIII., in order to make the butchers give good weight, ordered that 7,000 such parts should be a pound. This latter is the Avoirdupois weight, as its name implies, "to have good weight." It is now our commercial pound, and from its subdivisions creates great confusion, as will be seen thus:—

		Grs.		Grs.		Grs.
Avoirdupois .	1 ℔ =	7,000	1 oz. =	437·50	1 dr. =	27·34 Troy.
Troy	1 ℔ =	5,760	1 oz. =	480·00	1 dr. =	60·00
Difference . . .		1,240		42·50		32·66

Can confusion be worse than this? Yet these are the weights that have been taken originally from the weight of grain. Do they all grow the same size or weight? Surely, on good soil the wheat will be larger and richer than that grown on poor soil. As it is, we have no true standard at all.

A few facts, then. Sir Isaac Newton first demonstrated that *weight is the force of gravity*, and not gravity itself. It follows, therefore, that *gravity is the force acting* on each of the particles of an elementary body *downwards*, and the weight of a body is the product of the gravity of a single particle, by the number of particles combined by molecular attraction which it contains. The weight of two bodies are to each other as the quantity of matter in them, and they are of equal weight when they balance each other. As weight is the force of gravity, bodies will not weigh so much on the top of mountains, or at the equator (where gravity is less, in consequence of the centrifugal force counteracting it), as they will do at the level of the sea in other places. The atmosphere, again, takes off a portion of the weight of a body, and according to its density or pressure will a body be more or less heavy; and temperature also increases or diminishes the bulk of a body.

Therefore, in all standards there should be fixed points settled for the temperature, weight of atmosphere, and level, &c., as these facts, being unnoticed, will lead to different estimates.

Air and water are the most universal fluids in nature; but we would take our standard from the latter, as it is more readily measured than air as a comparison. It is a beautiful provision in nature that water is at its greatest density at 40° Fahrenheit (variously estimated at 39°·2 up to 40° Fah.), and expands again when approaching its solid form—ice. It expands again when heated above 40° Fah., and reaches its boiling point at 212° Fah.; barometer, 30 inches. It undergoes very little density by pressure, and we would, therefore, take our standard at its greatest density: this we should call 0°, and its boiling point 100°. Water, in a state of nature, contains many salts; but we might begin by calling the weight of distilled drops equal to grain weights. They vary, however, according to the vessel's shape from which they are poured, &c., and 120 drops of water occupy as much bulk as 280 drops of spirit do.

As this is the case, it will be better to know the weight of a given cubic measure, and this latter a definite portion of the earth's measure.

From the well-known and oft-repeated experiments of Dalton, a cubic inch of distilled water weighs at 62° Fah. 252·458 grains; but as we prefer water at its greatest density for a standard, 1 cubic inch at 40° Fah., the barometer 30 in., equal to 253·051 grains troy. This is the greatest density of the most universal fluid in nature, and this, then, is our standard.

The weight of a cubic inch being 253·051 grains troy, the proposed cubic metre of 15·776 inches would give 3926·382 cubic inches, and its weight would be 993,576 grains and 911·903 decimals, or 172 lbs. 5 oz. 19 dwts. 0·9 grs. troy: this is 141 lbs. 15 oz. 1·989 drs. avoirdupois.

This cubic weight we should call our 100 lb. weight, and one pound would be equal to 1 lb. 8 oz. 13 dwts. 23·76 grs., or 9935·76 grs. We would divide it accordingly, and, as will be seen, it very nearly approaches the grain troy.

Weights should *not* have loose rings for handles, as the wear and tear between the two lessens the weight while in use; but they should be solid with the body of the weight, and of brass, if practicable, because iron weights oxidise (rust) so rapidly in the open atmosphere, as is the case with the Customs' weights on the quays, &c., so that they gain, and the merchants pay for more weight than they have really obtained. The larger weights and measures of liquids and capacity would be for commerce; the smaller for trade, gold, silver, &c., and all commodities to be sold by weight when practicable, with the exception of liquids.

WEIGHT.

	T.	C.	St.	Lb.	Oz.	Drachm.	Scruples.	Grains.	Troy Grains.
Ton . . .	1	10	100	1,000	10,000	100,000	1,000,000	10,000,000	9,935,769
Cwt. . . .		1	10	100	1,000	10,000	100,000	1,000,000	993,576
Stone . .			1	10	100	1,000	10,000	100,000	99,357
Pound . .				1	10	100	1,000	10,000	9,935
Ounce . .					1	10	100	1,000	993
Drachm .						1	10	100	99
Scruple . .							1	10	9
Grain . .								1	0·9

From weight we would take our measures of liquids and capacity, one cubic metre equalling (14 gallons, 0 quart, 1 pint, 0·570 gill, imperial measure) 10 gallons. Thus:—

LIQUID MEASURE AND CAPACITY.

	C.T.	C.M.	Gal.	Pint.	Oz.	Drachm.	Scruple.	Minim.	Troy Grains.	Cubic Inches.
Cub. T.	1	10	100	1,000	10,000	100,000	1,000,000	10,000,000	9,935,769	39,263·821
C. Met.		1	10	100	1,000	10,000	100,000	1,000,000	993,576	3,926·382
Gallon			1	10	100	1,000	10,000	100,000	99,357	392·638
Pint .				1	10	100	1,000	10,000	9,935	39·263
Ounce					1	10	100	1,000	993	3·926
Drachm						1	10	100	99	0·392
Scruple							1	10	9	0·039
Minim								1	0·9	0·003

DECIMAL WEIGHTS AND MEASURES, COMPARED WITH THE PRESENT.

				T.	Cwts.	Qrs.	Lbs.	Oz.	Drs.	
1	Decimal	Ton	=	0	12	2	19	6	3·894	Avoirdupois.
1	„	Cwt.	=	0	1	1	1	15	1·989	„
1	„	Stone	=	0	0	0	14	3	1·798	„
1	„	Pound	=	0	0	0	1	6	11·379	„
1	„	Ounce	=	0	0	0	0	2	4·337	„
1	„	Drachm	=	0	0	0	0	0	3·633	„
1	„	Scruple	=	0	0	0	0	0	0.363	„
1	„	Grain	=	0	0	0	0	0	0·036	„

				Lbs.	Oz.	Dwts.	Grs.	
1	Decimal	Ton	=	1724	11	10	9·119	Troy.
1	„	Cwt.	=	172	5	19	0·911	„
1	„	Stone	=	17	2	19	21·691	„
1	„	Pound	=	1	8	13	23·769	„
1	„	Ounce	=	0	2	1	9·576	„
1	„	Drachm	=	0	0	4	3·337	„
1	„	Scruple	=	0	0	0	9·935	„
1	„	Grain	=	0	0	0	0·993	„

				Gall.	Qt.	Pt.	Gill.	
1	Decimal Cubic	Ton	=	141	2	0	1·705	Imperial.
1	„	Metre	=	14	0	1	0·570	„
1	„	Gallon	=	1	1	1	0·657	„
1	„	Pint	=	0	0	1	0·265	„
1	„	Ounce	=	0	0	0	0·226	„
1	„	Drachm	=	0	0	0	0·022	„

As regards the manner of introducing these decimal weights and measures, Government might, through the Customs, begin the initiative by just contracting for the supply of brass weights for all the principal ports of the kingdom, and selling off the old iron weights, to be used for other purposes. There would be plenty of firms ready and willing to contract, in the same manner as they did during the late war for the supply of cannon balls. Other firms would supply the trade for the public. The chief magistrate of each district to have a copy of all measures, and stamp those made by private individuals before they are recognised as legal.

After the Act of Parliament came into force, coopers, glass and measure manufacturers, &c. would conform to the legal size indicated in the decimal measures, &c., and the old would gradually become obsolete articles, and used for other purposes. Tubs, barrels, &c., would be made to hold decimal portions: those now in use would be used up or sent abroad. As regards bottles, we never get a proper measure now, and it would be as well to order a proper legal decimal standard at once. Bottles, moreover, get broken fast enough, and are now shipped abroad, so that the trade could supply the public very soon with decimal bottles, all the present being used as fast as made.

So much for weights and measures, &c.

We next come to Money. The precious metals have been chosen for coins, as more convenient for circulation, and less liable to alter in value, than any other commodity. The metals chosen are gold, silver, and copper, and their specific gravities are (water as unity)—gold, 19·361; silver, 10·510; copper, 8·900. But these metals of themselves are too soft for the wear and tear that they have to undergo, and if money was coined out of the pure metals it would soon lose its value from loss of weight, but by adding a definite proportion of alloy they are made durable.

The English standard has been found to wear well, and is as follows:—

Gold, pure		113·001	grains.	
Alloy		10·273	"	
Standard	=	123·274	"	Value 20s.

Silver, pure	5,328	grains.	
Alloy	432	"	
1 ℔ made into shillings	5,760	"	66 = 87·27 grs. = 1s.

Copper and $\frac{1}{12}$ tin, 291·66 grains, = 1d.

As standard gold of 123·274 grains troy equals 20 shillings, the drachm, or the 100th part of our proposed pound weight, would equal 99·357 grs. troy, or 16s. 1·436d., &c. Government might claim 0·563d., &c., in the pound as seignorage for re-coinage, making the new decimal sovereign equalling 16s. 2d.

DECIMAL COINS AND VALUES.

No	Name.	Value.		Metal.	Eq.	S.	A.	D. Fl	Fl	Fr	H. Fr	D. C.	C.	P.	Mill.	French.
1	Sovereign..	16	2	Gold ..	1	1	2	5	10	20	40	50	100	200	1000	20 francs.
2	Angel	8	1	"	2		1	..	5	10	20	25	50	100	500	10 "
3	Dble. Florin	3	$2\frac{4}{5}$	Silver .	5			1	2	4	8	10	20	40	200	4 "
4	Florin	1	$7\frac{2}{5}$	"	10				1	2	4	8	10	20	100	2 "
5	Franc	0	$9\frac{14}{20}$	"	20					1	2	..	5	10	50	1 "
6	Half Franc.	0	$4\frac{34}{40}$	"	40						1	..	..	5	25	50 centimes.
7	Dble. Cent .	0	$3\frac{44}{50}$	"	50							1	2	4	20	40 "
8	Cent	0	$1\frac{94}{100}$	"	100								1	2	10	20 "
9	Penny	0	$\frac{3}{4}\frac{176}{200}$	Copper ..	200									1	5	10 "
10	Mill	0	$\frac{776}{1000}$	"	1000										1	2 "

Accounts to be kept by sovereigns, florins, cents, and mills, thus :—

$$
\begin{array}{ccccccc}
\text{S.} & & \text{F.} & & \text{C.} & & \text{M.} \\
1 & = & 10 & = & 100 & = & 1{,}000 \\
 & & 1 & = & 10 & = & 100 \\
 & & & & 1 & = & 10 \\
 & & & & & & 1
\end{array}
$$

It will be observed in the above tables that all the coins suggested have their doubles or halves, with the exception of the coppers, the penny having five mills to it; and also that the values coincide with the French system of money, only we make the florin into 100 mills, instead of the franc. This keeps the coins of a convenient size for circulation.

The above comes from—1st, the measurement of the earth at its greatest circumference; 2nd, the unit of that measure taken for its standard of weight; and, 3rd, the 10,000th part of that weight the unit of our money system. Such would be the system that we would propose, and, if once adopted, would remain for ever true.

Binary quantities will always be required; so, if a man wants 2, 4, 6, 8, &c., ounces of tobacco or tea, it will not affect 10 ounces = 1 lb.; or if a person wants 1, 3, 5, 7, or 9 metres of cloth, it will not cause any detriment, because 10 metres are = 1 decametre, &c.

The introduction of the decimal system, founded on *a true basis*, as above indicated, would involve the recoinage of all the moneys in circulation; and we will now indicate the least inconvenient and most practical method of introducing the decimal coinage.

But, first of all, we will look to the *present* powers of the Mint. There are eight coiners' presses, each capable of stamping *any coin* once in a second of time. Now, 10½ hours is full time to a working day, and the eight presses would complete thus 302,400 coins per day; and as there are 313 working days in the year, they could complete 94,651,200 coins per annum. This is without any extra work, and if we add one hour per day, or 11½ hours, the Mint could produce 103,665,600 coins per annum. Money is sent out from the Mint in what is technically termed journey weights—thus:

Gold	=	15 ℔ troy	=	£701, or 1,402 half sovereigns.
Silver	=	60 ℔ "	=	£198, or 3,960 shillings, &c.
Copper	=	50 ℔ avoir.	=	£5, or 1,200 pence, &c.

The first step in the introduction of the decimal coins would be to begin with the copper coinage, to meet the convenience of the humble in life, and familiarise them with the system imperceptibly. We would then commence with the decimal copper coinage. How does the proposed system and its values correspond to the present copper coinage? It is more simple than it looks at first sight, and the lower we come, the nearer they approach—as 16s. 2d. is the value of a proposed decimal sovereign, this contains 194 pence; but we divide this amount into 200 decimal pence, so that the decimal and the present pence would stand in this relation:—

Equal.		Old Pence.		Decimal Pence.		Difference. in number,
1	=	194	=	200	. . .	6d.
½	=	97	=	100	. . .	3d.
¼	=	48½	=	50	. . .	1½d.
⅛	=	24¼	=	25	. . .	¾d.

So that below this they may be said to be equal in value, and as *twelve pence is the legal tender*, the decimal penny would stand equivalent to the present one in exchange, only the decimal penny would have *five* mills to it instead of *four* farthings.

We could still boast, then, although we changed to a decimal system, of our Saxon penny with as much pride as the Americans do of their almighty dollar. As far as the legal tender went in trade and domestic purchases, the decimal penny and the present would be equal.* The halfpenny we would abolish, as the mills would answer better, the poor man sometimes perhaps being able to drive a bargain for two mills, what would be considered worth three mills, and so on, so that we would have only two copper coins—the mill and the penny.

It has been said by the opponents of the decimal system that the poor apple-women would be distracted by calculating the difference of value. This is all moonshine, and only asserted for argument's sake.

Now, to get rid of the halfpence and farthings, we might as well exchange all the old copper for the decimals, and this could be done by having Government depôts in the market-places of all the chief towns, and tradesmen, licensed victuallers, &c., might be requested to exchange their old coppers for the decimal.

The decimal coppers at the depôts might be ready tied up in two packages, one containing 50 decimal pence, the second, 250 mills = 48½ old coppers. This is the quarter of the decimal pound, and tradesmen bringing a quarter of a decimal sovereign would gain 1½d.; if half, 3d.; and if 194 pence, would gain 6d. This would be an encouragement to tradesmen to collect the coppers for the Government depôts, and 6d. would be the gain of every tradesman who exchanged a sovereign, or

* In the *legal tender*, 12¼ pence old would equal 12½ decimal pence—a difference of ¼ of a penny. *This is not a halfpenny difference.*

194 pence, for 200 decimal, as in *legal tenders in business* 12 would be equal to the old.*

We have before seen that the Mint is capable of issuing 100,000,000 coins per annum, and in these islands we may say that there are in round numbers 30,000,000 persons. Now, if the Mint coined the copper coin for two years, it would produce, say—

30,000,000	pence.
170,000,000	mills.
200,000,000	copper coins.

In two years, then, nearly the same amount of copper coin of the present system would have found their way back to the Mint, *and neither the money of accounts nor the banks yet interfered with;* and this might be continued for a year or two longer, to exhaust all the old copper in circulation, before we proceeded with the next stage—the introduction of the decimal silver coins.†

The most essential silver coins would be the florin, the franc, and the cent; and in introducing these we need not yet alter the money system, as they could be applied in exchange to the present sovereign—thus:

1 sovereign	=	12 florins	3 cents, 1 penny, 1 mill.
1 "	=	24 francs	" " "

We would not introduce the other silver decimal coins until all the old stock was re-coined. In three years' coinage with the silver, there could be issued 300,000,000 coins: say—

100,000,000	florins	silver coins.
100,000,000	francs	
100,000,000	cents	

* The Government depots would only receive the *old copper coins* in exchange for the decimals, viz., copper for copper, and not to give copper in exchange for silver, &c.

† The postage and receipt stamp plates would have a row from each side erased —10 x 20 = 200 to the sheet—the moment the decimal sovereign was proclaimed legal.

This amount would displace silver coins in use equal to this value.

The value of the present silver coins are well known in proportion to the present sovereign, and we would go on with the silver decimal coinage to exhaust all the old silver until the decimal sovereign was proclaimed, which would in a moment alter the money system to the decimal.

The banks and money-order offices would of course be the vehicles with the public in issuing the silver coinage, and the old would be re-coined in exchange for the old in amounts of one sovereign, equal value, viz.:—4 crowns, 8 half-crowns, 10 present florins, 20 shillings, 40 sixpences, &c., = £1, and in exchange the values of the three decimal coins above indicated.

Having accomplished this, we would have now, at the end of five years after the sanction by Parliament to the decimal system, and not before, issued, say in the third month of the sixth year, the new decimal sovereign, and a proclamation that the money system of the United Kingdom would in future be kept in S., Fl., C., and M. There would still be the shillings in circulation; but yearly they would become less and less, as the old silver coins became absorbed.*

We said at the third month of the sixth year, before the proclamation, as this would give the Mint a good start, and it would be absorbing the bank rests before the proclamation.

This year we would issue all gold coins — 50,000,000 sovereigns, 50,000,000 angels. The Government seignorage on this 75,000,000 would be £176,121 7s. 10d., which would pay all expenses; the corresponding value of the old going into the Mint for re-coinage. With respect to stock account, &c., at the date of proclamation, the values corresponding to the decimal system would merely have to be transferred to the

* A person receiving an old sovereign per week for wages would receive 1 decimal sovereign, 2 florins, 3 cents, 1 penny, and 1 mill as an equivalent. 10 florins and 20 francs would be now easy to the decimal sovereign.

decimal accounts in the ledgers, &c. Money would not interfere with this change.

When the old coins became scarce, the intermediate decimal coins might be introduced, for the purpose of change and convenience. These changes would produce a little inconvenience at first, but they would become daily less so, and all classes would willingly aid in a system that, if once established, need never be disturbed.

But the precious metals are represented by paper, and it is of no value; but inasmuch as it stands in the place of money, *i. e.*, the money is there before it can be issued, and must always be there when required for this paper, it is equally as good in this case as the gold itself. This is a great convenience to the mercantile community, as it would never do to be always interchanging coined money for every transaction; and this is a great boon. Bills, &c., represent money in the same manner.

It is to be hoped that the Government of this country will always insist that the paper currency of this country shall always be represented by the precious metals; and however commercial speculators may growl at this, when they desire it otherwise, let them do so, as their speculations are becoming then more a species of black-legging than legitimate commerce. The total paper money in circulation in the United Kingdom is about £40,000,000.

At the date of the proclamation of the decimal system, decimal notes to be issued along with the coins; and to distinguish the decimal notes from those in circulation, let them be stamped by the Bank press on coloured paper—the three primitive colours—to indicate the values of each set at first sight; also, let them be slightly of a different size, say a half by a quarter metre (7·888 in. by 3·944 in.): the halves would then be of a convenient size to send per post. The red for £5, the blue for £10, and the yellow for £20 and upwards.

As soon as a proclamation was issued, the old value of notes would cease being issued, and after that date all would be decimal notes. The old notes in circulation would demand their value when presented, and they would be known by these differences: first, their black type on white paper; secondly, their dates, being all anterior to the proclamation; and, thirdly, by being of a different size.

A decimal five pound note would demand £4 0s. 10d. of old money, and an old five pound note would command £6 (decimal) and three shillings. This interchange would soon pass away, as old notes would find their way back to the banks, and never be seen again.

Business would be transacted more readily at the banks by the notes of different values being of different colours, as a change of colour in a note would instantly be detected in its wrong lot of notes, and they would be issued out to the public without half the trouble of examination of the amounts of each as at present. This would be our method of introducing the decimal coins to the nation; and as we have before this come from the guinea, valued at 21s., with its corresponding crowns and half-crowns, &c., so can we come to the decimal sovereign; but first of all, let our philosophers fix a better standard of weights, &c., than those we have at present, *based on nothing definite*; and when they have determined and settled this point, let our statesmen accede to those views, and enact them, that they may become fixed also by the law of the land. We do not want the whole system at once; but let us have one part of it at a time, and that part *based on a definite state of nature*, so that when one is established, the rest can follow on the same base.

Other civilised nations will follow in the train, and then there will be one universal system of time, measure, weight, capacity, and money — the last only affected by the rate of exchange and according to its scarcity or abundance: if the former, it will be dear; if the latter, cheap. Let the *standard* of coinage be the same all over the world, and the coins would, although bearing different images, names, and superscriptions, be equal in value.

Again, then, before any more changes are contemplated, let us have a base fixed upon in unison with the proportions of the earth and its elements, so that, when once effected, it will stand true throughout all time.

Thus we would have universal systems of time, measure, weight, capacity, and money based on the unity of the elements and proportions of the globe which man inhabits.

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