Notes on Decimal Currency, Tea Making, Value of Gold and Other Material

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AND THE IMPERIAL STANDARD TO THE OLD MEASURES.

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BRICKLAYING	MASONRY	PLANTING	TILING
CARPENTRY	PAPER-HANGING	PLASTERING	WELL-SINKING
LATHING	PAVING	SLATING	DIGGING, &c. &c.

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COMMERCIAL, ARITHMETICAL, SCIENTIFIC, STATISTICAL & MISCELLANEOUS

TABLES.

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NOTATION OR NUMERATION.

Units.	1	Units	One.
	2	Tens	Twenty 1.
	3	Hundreds	3 hundred and 21.
	4,	Thousands	4 thousand 321.
	5	Tens of Thousands	54 thousand 321.
	6	Hundreds of Thousands	654 thousand 321.
Millions.	7	Millions	7 million 654 thousand 321.
	8	Tens of Millions	87 million 654 thousand 321.
	9	Hundreds of Millions	987 million 654 thousand 321.
	1,	Thousands of Millions	1 thou. 987 mill. 654 thou. 321.
	2	Tens of Thousands of Millions	21 thou. 987 mill. 654 thou. 321.
	3	Hund. of Thous. of Millions	321 thou. 987 mill. 654 thou. 321.

OBSERVE.—To read large numbers, divide the figures from the right hand to the left, into half periods of three figures, and full periods of six figures.

The first three figures, are called respectively units, tens, and hundreds; the next three are thousands, tens of thousands, and hundreds of thousands; the next six are millions, tens of millions, &c.

NOTATION EXPRESSED IN WORDS.—EXAMPLE.—987, 654, 321 is thus written in words:—Nine hundred and eighty seven Millions, six hundred and fifty four Thousands, three Hundred and Twenty One.

ROMAN NOTATION.—The Romans used seven letters; they were as follows: I one, V five, X ten, C one hundred, D five hundred, M one thousand.

I	1	XIV	14	LV	55	D or IↃ	500
II	2	XV	15	LX	60	DC	600
III	3	XVI	16	LXV	65	DCC	700
IV	4	XVII	17	LXX	70	DCCC	800
V	5	XVIII	18	LXXV	75	DCCCC	900
VI	6	XIX	19	LXXX	80	M or CIↃ	1,000
VII	7	XX	20	LXXXV	85	MM	2,000
VIII	8	XXV	25	XC	90	IↃↃ or $\overline{V}$	5,000
IX	9	XXX	30	XCV	95	$\overline{VI}$	6,000
X	10	XXXV	35	C	100	$\overline{X}$ or CCIↃↃ	10,000
XI	11	XL	40	CC	200	IↃↃↃ	50,000
XII	12	XLV	45	CCC	300	$\overline{C}$ or CCCIↃↃↃ	100,000
XIII	13	L	50	CCCC	400	M.DCCC.LVI	1856

OBSERVE.—In Roman figures, as often as a character is repeated, so many times will its value be increased. A letter bearing a less value than the one before which it is placed, is deducted from the value of the latter as, I (one) put before X (ten), diminishes the ten by one, leaving nine; but a less character after a greater increases the former by the amount of the latter. When Ↄ is affixed, to a letter, its value is increased ten times; C and Ↄ set one at each end of X, show that the number is 10 times greater than X (ten). A line over any increases it 1000 times.

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ADDITION TABLE.

1 *and*	3 *and*	5 *and*	7 *and*	9 *and*	11 *and*
1 *are* 2	1 *are* 4	1 *are* 6	1 *are* 8	1 *are* 10	1 *are* 12
2 3	2 5	2 7	2 9	2 11	2 13
3 4	3 6	3 8	3 10	3 12	3 14
4 5	4 7	4 9	4 11	4 13	4 15
5 6	5 8	5 10	5 12	5 14	5 16
6 7	6 9	6 11	6 13	6 15	6 17
7 8	7 10	7 12	7 14	7 16	7 18
8 9	8 11	8 13	8 15	8 17	8 19
9 10	9 12	9 14	9 16	9 18	9 20
10 11	10 13	10 15	10 17	10 19	10 21
11 12	11 14	11 16	11 18	11 20	11 22
12 13	12 15	12 17	12 19	12 21	12 23

2 *and*	4 *and*	6 *and*	8 *and*	10 *and*	12 *and*
1 *are* 3	1 *are* 5	1 *are* 7	1 *are* 9	1 *are* 11	1 *are* 13
2 4	2 6	2 8	2 10	2 12	2 14
3 5	3 7	3 9	3 11	3 13	3 15
4 6	4 8	4 10	4 12	4 14	4 16
5 7	5 9	5 11	5 13	5 15	5 17
6 8	6 10	6 12	6 14	6 16	6 18
7 9	7 11	7 13	7 15	7 17	7 19
8 10	8 12	8 14	8 16	8 18	8 20
9 11	9 13	9 15	9 17	9 19	9 21
10 12	10 14	10 16	10 18	10 20	10 22
11 13	11 15	11 17	11 19	11 21	11 23
12 14	12 16	12 18	12 20	12 22	12 24

SUBTRACTION.—By reversing this table subtraction is learnt, thus: instead of saying 1 and 1 *are* two, say 1 *from* 2 and 1 *remains*; 1 *from* 3 and 2 *remain*; again, 9 *from* 10 and 1 *remains*; 9 *from* 11 and 2 *remain*, &c.

MULTIPLICATION TABLE.

Twice	3 *times*	4 *times*	5 *times*	6 *times*	7 *times*
1 *are* 2	1 *are* 3	1 *are* 4	1 *are* 5	1 *are* 6	1 *are* 7
2 4	2 6	2 8	2 10	2 12	2 14
3 6	3 9	3 12	3 15	3 18	3 21
4 8	4 12	4 16	4 20	4 24	4 28
5 10	5 15	5 20	5 25	5 30	5 35
6 12	6 18	6 24	6 30	6 36	6 42
7 14	7 21	7 28	7 35	7 42	7 49
8 16	8 24	8 32	8 40	8 48	8 56
9 18	9 27	9 36	9 45	9 54	9 63
10 20	10 30	10 40	10 50	10 60	10 70
11 22	11 33	11 44	11 55	11 66	11 77
12 24	12 36	12 48	12 60	12 72	12 84

8 *times*	9 *times*	10 *times*	11 *times*	12 *times*
1 *are* 8	1 *are* 9	1 *are* 10	1 *are* 11	1 *are* 12
2 16	2 18	2 20	2 22	2 24
3 24	3 27	3 30	3 33	3 36
4 32	4 36	4 40	4 44	4 48
5 40	5 45	5 50	5 55	5 60
6 48	6 54	6 60	6 66	6 72
7 56	7 63	7 70	7 77	7 84
8 64	8 72	8 80	8 88	8 96
9 72	9 81	9 90	9 99	9 108
10 80	10 90	10 100	10 110	10 120
11 88	11 99	11 110	11 121	11 132
12 96	12 108	12 120	12 132	12 144

DIVISION.—To apply this table to Division, reverse the mode of using it for Multiplication: thus, instead of saying twice 1 are 2, say 2's in 2 are 1, or go once; 2's in 4 are 2, or go twice; 4's in 12 are 3, or go 3 times.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240
13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400
21	42	63	84	105	126	147	168	189	210	231	252	273	294	315	336	357	378	399	420
22	44	66	88	110	132	154	176	198	220	242	264	286	308	330	352	374	396	418	440
23	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	391	414	437	460
24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480

MONEY AND COINAGE.

The Ancient Britons used leather and iron rings for money.

A shilling, during the Saxon times, is said to have been three times the value of the shilling of our times, while most articles of use were thirty times cheaper.

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A silver penny, which in the reign of Ethelbert, a thousand years ago, weighed 22½ grains, in Elizabeth's reign, about 300 years since, weighed only 7⅞ grains Troy Weight.

A pound of silver which in the reign of Edward III, 500 years ago, was coined into 22 shillings, in the present century is coined into 66 shillings, exactly 3 times as many.

A gold sovereign of the present day weighs only a little more than half a sovereign of Henry VIII, some 300 years ago.

Besides Pounds (or sovereigns), Shillings, Pence, and Farthings, the following gold and silver coins are in use.

Half Sovereign	=	10 shillings
Crown	=	5 shillings
Half-crown	=	2 shillings and 6 pence
Florin	=	2 shillings
Tester or Sixpence	=	6 pennies
Groat or Fourpenny pieces.		

Besides these the following were once in circulation:

Moidore	=	27 shillings
Jacobus	=	25 shillings
Carolus	=	23 shillings
Guinea	=	21 shillings
Half Guinea	=	10 shillings and 6 pence
Angel	=	7 shillings and 6 pence
Noble	=	6 shillings and 8 pence

£. *s.* *d.* and *q.* are the initials of the Latin words 'Libra,' 'Soldus,' 'Denarius,' and 'Quadrans,' signifying respectively pounds, shillings, pence, and farthings, (or fourthings.)

¼ denotes one farthing, or one-fourth of a penny.
½ denotes one halfpenny, or one-half of anything.
¾ denotes three farthings, or three-fourths of anything.

MONEY TABLES.

Farthings	*d.*
1	¼
2	½
3	¾
4	1
5	1¼
6	1½
7	1¾
8	2
9	2¼
10	2½
11	2¾
12	3
13	3¼
14	3½
15	3¾
16	4
17	4¼
18	4½
19	4¾

Farthings	*d.*
20	5
21	5¼
22	5½
23	5¾
24	6
30	7½
35	8¾
40	10
45	11¼
50	1 0½
60	1 3

Pence	*s.*	*d.*
12	1	0
20	1	8
24	2	0
30	2	6
36	3	0
40	3	4

Pence	*s.*	*d.*
48	4	0
50	4	2
60	5	0
70	5	10
72	6	0
80	6	8
84	7	0
90	7	6
96	8	0
100	8	4
108	9	0
110	9	2
120	10	0
130	10	10
132	11	0
140	11	8
144	12	0
150	12	6
160	13	4

Pence	*s.*	*d.*
170	14	2
180	15	0
190	15	10
200	16	8
210	17	6
240	20	0

Shillings	£.	*s.*
20	1	0
30	1	10
40	2	0
50	2	10
60	3	0
70	3	10
80	4	0
90	4	10
100	5	0
110	5	10
120	6	0

Shillings	£.	*s.*
130	6	10
140	7	0
150	7	10
160	8	0
170	8	10
180	9	0
190	9	10
200	10	0
250	12	10
300	15	0
350	17	10
400	20	0
450	22	10
500	25	0
600	30	0
700	35	0
800	40	0
900	45	0
1000	50	0

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TABLE.

2 Farthings make	1 halfpenny
4 Farthings make	2 halfpence, 1 penny
48 Farthings make	24 halfpence, 12 pence, 1 shilling
960 Farthings make	480 halfpence, 240 pence, 20 shillings, 1 pound.

Scotch and Irish Money.

Scotch money is only one-twelfth of the value of money sterling, and is divided in the same manner. Hence a pound Scotch is only 20 pence, and a shilling Scotch is only one penny sterling. In all bill or money transactions relating to Scotland, or Ireland, if it be desired that the amount should be understood as in England, it is requisite to insert or mention the word *Sterling*, to show that English value or amount is intended.

WEIGHT OF COPPER COINS.—AVOIRDUPOIS.

A farthing . .	4 dr.	A penny . . .	1 oz.
A halfpenny . .	8 dr.	A twopenny piece .	2 oz.

WEIGHT OF GOLD AND SILVER COINS.—TROY.

The full weight of our gold and silver coin are expressed below.

Gold.	£.	s.	d.		dwt.	grs.
Guinea	1	1	0		5	$9\frac{1}{2}$
Sovereign	1	0	0	weight	5	$3\frac{3}{11}$
Half Guinea	0	10	6		2	$16\frac{3}{4}$
Half Sovereign	0	10	0		2	13

Silver.	£.	s.	d.		dwt.	grs
Crown	0	5	0		18	$4\frac{4}{11}$
Half Crown	0	2	6	weight	9	$2\frac{3}{11}$
Shilling	0	1	0		3	$15\frac{3}{11}$
Sixpence	0	0	6		1	$19\frac{7}{11}$

VARIATION OF THE MONEY POUND.

William I the pound was	576 grs.	Elizabeth the pound was	172	grs.
Edward III ,,	384 to 437	Charles II the pound was	129	
Henry VIII ,,	213 then 192	Present time the pound is	$123\frac{3}{11}$	

Standard Gold and Silver.

The pound Troy of standard Gold is coined into 46 sovereigns and $89\frac{1}{11\,0}$ of a sovereign. The standard price of Gold is £3. 17s. 0½d. per oz. or £46. 14s. 6d. per lb.; or nearly 2d. per grain. A lb. of standard Silver is now coined into 66 shillings, instead of 62 shillings as formerly. An oz. of silver is worth about 5s. All coins are weighed by Troy weight.

Gold coin wastes a half per cent. in 16 years wear, and Silver from 2 to 5.

The term *carat* has only a relative meaning when used to express the fineness of gold. All Alloyed gold is supposed to be divided into 24 equal parts; thus, standard gold for coin consists of 22 parts or carats of pure gold, and 2 parts of pure copper or alloy; and standard silver contains 11 oz. 2 dwts. of pure silver, and 18 dwts of alloy. Standard gold is 14 times that of silver. The new standard for watch cases, &c. is 18 carats fine. The carat for weighing diamonds is 3.1 grains Troy.

The carat is divided into grains, and the grains into quarters thus:—

The Carat.—Troy.

	lb.	oz.	dwt.	gr.		dwt.	gr.
24 carats . .	1	0	0	0	1 grain or ¼ carat . .	2	10
2 carats . .	0	0	20	0	1 quarter of a grain . .	0	15
1 carat . . .	0	0	10	0			

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WEIGHTS AND MEASURES.

IMPERIAL STANDARD.

The act, 5 Geo. IV, c. 74, for establishing uniformity of weights and measures came into operation January 1st, 1826. This act made no change in the Lineal and Superficial Measures, nor did it alter the Troy or Avoirdupois WEIGHTS in use; but the measures of capacity underwent considerable change. The Ale, Wine, and Dry Measures were formerly the three authorised measures of capacity. The old Wine gallon contained 231 cubic inches; the Corn gallon, 268·8; and the old Ale gallon, 282. These measures were altered to the Imperial Gallon, containing as nearly as possible 277¼ cubic inches.

TROY WEIGHT.

24 grains	make	1 pennyweight,	dwt.
20 pennyweights		1 ounce	oz.
12 ounces		1 pound	lb.

By this weight gold, silver, jewels, and precious stones are weighed. It is also used in ascertaining the strength of spirituous liquors, and in experiments in natural philosophy, though the weights for this latter purpose are generally constructed in decimals from 10,000 grains, to the one-hundreth part of a grain; it is used to compare the different weights with each other.

The weighing of diamonds is an exception in jewellery; they are weighed by the carat, which is 4 grains.

The 'Imperial Standard Pound Troy' made in the year 1758, is that from which all other weights are derived, computed, and ascertained; one-twelfth of it is an ounce; one-twentieth of the ounce is a pennyweight; and one-twenty-fourth of the pennyweight is a grain; so that 5760 grains is a Troy pound, and 7000 such grains is a pound Avoirdupois. This Standard was adopted as being the weight of a cubical inch of distilled water, which was found to weigh by Fahrenheit's Thermometer (the barometer being at thirty-six inches), 252 grains, 458 thousandth part of a grain.

GOLD AND SILVER LEGAL MARKS.

All articles manufactured of gold and silver, except watch-cases, have to be taken to the Assay Office of the district, and if found of legal quality are stamped thus:—

The Hall Mark, showing the district where manufactured, or the hall where assayed, is at *Birmingham*, an anchor; *Chester*, three wheatsheaves or a dagger; *Dublin*, figure of Hibernia; *Edinburgh*, castle and lion; *Exeter*, a castle with two wings; *Glasgow*, a tree, and a salmon with a ring in its mouth; LONDON, a leopard's head; *Newcastle-on-Tyne*, three castles; *Sheffield*, a crown; *York*, five lions and a cross.

The Standard Mark for gold of 22 carats, and silver of 11 oz. 2 dwts., is for England a lion passant; for Edingburgh, a thistle; for Glasgow, a lion rampant; for Ireland, a harp crowned. Gold of 18 carats fine, a crown and the figures 18. Silver of the new standard, figure of Britannia.

The Duty Mark is the head of the Sovereign, and indicates the duty has been paid.

The Date Mark is a letter of the alphabet, which is changed every year; it differs however in different companies. The Goldsmith's company of London nave used the following: from 1716 to 1755, Roman capital letters; 1756 to 1775,

small Roman letters; 1776 to 1795, old English letters; 1796 to 1815, Roman capital letters, A to U; 1816 to 1835, small Roman letters a to u; 1836 to 1855, old English letters 𝔞 to 𝔲. In 1856 a new Date mark will be issued. (I and J are always regarded as one letter).

APOTHECARIES' WEIGHT.

20 grains (*gr.*)	make	1 scruple	(equal to	20	grains Troy,)		sign	℈
3 scruples	„	1 drachm	(„	60	„	)	„	ʒ
8 drachms	„	1 ounce	(„	480	„	)	„	℥
12 ounces	„	1 pound	(„	5760	„	)	„	*lb.*

Apothecaries compound their medicines by these weights, but buy and sell by Avoirdupois.

The *pound*, *ounce*, and *grain*, are the same as in *Troy* weight.

APOTHECARIES' FLUID MEASURE.

60 Minims, ♏	make	1 drachm,	*f* ʒ	16 ounces	make	1 wine pint,	*O*
8 drachms	„	1 ounce	*f* ℥	8 pints	„	1 gallon,	*gal.*

MEDICAL PROPORTIONATE DOSES.

If a dose be a single drachm for a person of 21 years of age, the proportionate doses according to the age will be:—

Under 1 year	$\frac{1}{12}$	or 5	grs.	Under 14 years	$\frac{1}{2}$	or 30	grs.
2 „	$\frac{1}{8}$	„ $7\frac{1}{2}$	grs.	20 „	$\frac{2}{3}$	„ 40	grs.
3 „	$\frac{1}{6}$	„ 10	grs.	Above 21 „	$1\frac{1}{6}$	„ 70	grs.
4 „	$\frac{1}{4}$	„ 15	grs.	65	the inverse ratio.		
7 „	$\frac{1}{3}$	„ 20	grs.	Women require smaller doses than men.			

PHYSICIANS' CHARACTERS.—℞ recipe, take; ā, āā, or ana, of each the same quantity; ss signifies the half of any thing; cong. congius, a gallon; coch. cochleare, a spoonful; M. manipulus, a handful; P. pugil. as much as can be taken between the thumb and forefingers; q. s. a sufficient quantity.

AVOIRDUPOIS WEIGHT.

16 drachms	make	1 ounce	(oz.)	28 pounds	.	1 quarter	(qr.)
16 ounces	„	1 pound	(lb.)	4 qrs., or 112lbs.		1 hundred	(cwt.)
14 pounds	„	1 stone	(st.)	20 cwt.	.	1 ton	(ton.)

The new act declares that "all articles sold by weight shall be by Avoirdupois weight, excepting gold, silver, platina, diamonds, and other precious stones, and drugs, when sold by retail; and that such excepted articles, and none others, may be sold by Troy weight." "No weights made of lead or pewter shall be stamped or used."

The stone formerly varied from 8 lb. to 16 lb. in different places; but by the late Act the stone is to consist of 14 lb. Avoirdupois, and the cwt. of 8 stone; and all contracts made by any other measure are null and void.

f 5v

MISCELLANEOUS CHEMICALS, OILS, DYES, ETC.

Annatto, a case	nearly 2¼	cwt.
Arsenic, cask	about 4	„
Ashes, American, cask	3½ to 5	„
—— St. Petersburgh, cask	10	„
Burgundy pitch, stand	1¼	„
Camphor, box	about 1	„
Candles, a barrel	120	lbs.
Cochineal, seron	140	„
——— a bag,	about 200	„
——— 70,000 insects to a lb.		
Copperas, hhd.	16 to 20	cwt.
Galls, sack	3½	„
Gum, Arabic, E. I. chest	6	„
—— Turkey, chest	4	„
Gunpowder, barrel	1	„
——— a last 24 bar. or	2,400	lbs.
Indigo, E.I. about 3½ maunds,	260	„
——— Guatamala, seron	250	„
Lac dye, chest	4	cwt.
Madder, cask	15 to 23	„
Magnesia, chest	1	„
Molasses, puncheon	10 to 12	„
Oil, tun, wine measure	252	galls.
——— imperial measure	210	„
—— Olive, chest of 60 flasks	125	„
———, jar	25	„
Oil, imp. gallon is	9¼	lbs.
—— seed, tun	236	gall.
—— fish, tun	252	„
—— Spermaceti, gallon	8	lbs.
Opium, ch. E.I. 2 maunds	149½	„
——— Turkey	136	„
Pimento, bag	about 1	cwt.
Pitch, a last	12	bar.
Potashes, a bar. 200 lbs. a last	12	„
Quicksilver, bottle	about 84	lbs.
Rosin, barrel	about 2	cwt.
Saltpetre, E.I. bag	1	„
——— refined, barrel	1	„
Shellac, chest	1 to 3	„
Smalts, barrel	3	„
Soap, chest	3¼	„
—— a firkin, 8 galls.	64	lbs.
—— soft, barrell, 4 fir.	256	„
Soda, cask	3 to 4	cwt.
Turpentine, barrel	2 to 2½	„
Tragacanth, case	about 2½	„
Tar, barrel	26¼	„
Tar, a last	12	bar.
Tallow, cask	about 9	cwt.
Vermilion, bag	50	lbs.

GROCERIES, FRUITS, SPICES.

Almonds, seron	1¼ to 2	cwt.
——— basket	1¼ to 1½	„
——— Jordan, box	25	lbs.
Cassia, chest	60	„
Cinnamon, bale	92½	„
Cloves, a matt	about 80	lbs.
——— chest	200	„
Cocoa, bag.	about 1	cwt.
——— cask	1¼	„
Coffee, tierce	5 to 7	„
——— barrel	1 to 1½	„
——— bag	1¼ to 1½	„
——— Mocha, bale	2 to 2½	„
———, robin	1 to 1½	„
Currants, butt	15 to 20	„
——— caroteel	5 to 9	„
Figs, Faro, frail	32	lbs.
—— Malaga	56	„
—— barrell	96 to 360	„
Ginger, Jamaica, bag	about 1	cwt.
——— Barbadoes, bag	1¼	„
——— East India, bag	1	„
Honey, gallon.	12	lbs.
Liquorice juice, case, nearly	1½	cwt.
Mace, case	about 1½	„
Mustard, casks	18 to 36	lbs.
Nutmegs, cask	200	„
Nuts, Barcelona, bag	126	„
Nuts, Messina, bag	1½ to 1¾	cwt.
Pepper, bl. Company's bag	316	lbs.
—— free trade bags, 28, 56, or	112	„
—— white, bag	about 1½	cwt.
Plums, ¼ box	about 20	lbs.
——— carton	9	„
Prunes, barrel	1 to 3	cwt.
——— a puncheon	10	„
Raisins, a drum	about 24	lbs.
——— a barrel	1	cwt.
——— a cask, Malaga	1	„
——— Turkey	2½	„
——— box, Malaga	22	lbs.
——— Valencia	26	„
Rice, E. I. bag	about 1½	cwt.
—— American, cask	6	„
Sago, chest	1⅓	„
—— bag	1	„

Sugarcandy, box about 70 lbs.	Tapioca, barrel . about 1¼ cwt.
—— E. I. bag . . 1 to 1¼ cwt.	Tea, chest . . about 84 lbs.
—— Mauritius, matt or bag 1 to 1½ „	——— Hyson . . 60 „
—— tierce . . 7 to 9 „	——— Twankay . . 80 „
—— W. I. hhd. . 13 to 16 „	Walnuts, bag . . . 1 cwt.

FISH.

Anchovies, barrel, 30 lbs.
Codfish, quintal, 112 lbs.
——— a last, 12 barrels
Fish, a stone, 14 lbs.
Herrings, white, a last, 12 lbs.
——— barrel, 26⅔ impl. galls.
——— cran, 37½ ditto
Herrings, a mease, 600 fish
——— a cade, 500 ditto
Pilchards, barrel, 41⅔ impl. galls.
——— hhd. about 3000 fish, 41 lbs.
Sprats, a cade, about 1000 fish
Salmon, a box, 120 to 130 lbs.
Sturgeons, keg, 4 to 5 galls.

SALT PROVISIONS.

Beef, Irish, tierce, 38 pieces, or 304 lbs.	Pork, Irish, tierce, 80 pieces, or 320 lbs.
—— barrel, 25 pieces of 8 lbs. 200 „	—— bar., army, 52 pieces, or 208 „
—— firkin, 25 pieces of 4 lbs. 100 „	——— mess, 50 do. or 200 „
Butter, firkin . . . 56 „	—— firkin, 25 do. or 100 „
——— Irish . . about 56 „	SALT.
——— tub . . . . 84 „	A peck of salt . . . 14 lbs.
——— barrel . . . 2 cwt.	A bushel of salt . . . 56 „
——— Dutch, cask . . 1 „	——— rock salt . . 65 „

WOOL WEIGHT.

7	pounds . .	make	.	1 clove	. cl.
14	pounds, or 2 cloves	. .		1 stone	. st.
2	stones, or 28 lbs.	. .		1 tod	. td.
6½	tods, or 13 stone, or 182 lbs.			1 wey	. wy.
2	weys, or 364 lbs.	. .		1 sack	. sk.
12	sacks, or 4368 lbs.	. .		1 last	. la.
20	pounds . . .	.		1 score	. sc.
12	score, or 240 lbs.	. .		1 pack	. pk.

A German bale is about 350 lbs.

In purchasing wool from the grower, 28 lbs. are a legal tod; but wool staplers, in their transactions with each other, and with manufacturers, allow 30 lbs. to the tod, and 8 tods, or 240 lbs. to the pack.

COTTON WOOL.

Virginia, Carolina, Georgia, West Indies,	a bale,	300 to 310 lbs.
New Orleans, Alabama	„	400 to 500 „
East India	„	320 to 360 „
Brazil	„	160 to 200 „
Egyptian	„	180 to 283 „

f.6v

HAY AND STRAW.

36 pounds	make	1 truss of Straw
56 pounds		1 truss of Old Hay
60 pounds		1 truss of New Hay
36 trusses		1 load
18 cwt.		1 load of Old Hay
19 cwt. 32 lbs.		1 load of New Hay
11 cwt. 64 lbs.		1 load of Straw
1 square yard of New Hay		6 stone
1 ——————— Oldish Hay		8 stone
8 ——————— Old Hay		9 stone

Hay is considered as new for three months, and is called old on the 1st of September.

In the English army a horse in full work is allowed 16 lbs. of hay, and 10 lbs. of corn per day; or 10 lbs. of oats, 12 lbs. of hay, and 8 lbs. of straw per day.

To find the weight of Hay contained in a Stack.—Multiply the length of the stack by its breadth, and multiply the result by its height, all in feet; divide the total by 27, which will give the number of square yards; this multiply by 6, 8, or 9, according to the age of the hay, as above, and the product will be the weight in stones. In measuring the height allow off two thirds of the amount of feet from the eaves to the top. Thus, say a stack is 30 feet long and 20 broad, this multiplied is 600 feet, the height to the eaves 8 feet, from the eaves to the top 3 feet—take of this last 1, and add it to the 8=9, then multiply 600 by 9=5400: then 5400 divided by 27 gives 200 square yards, and 200 multiplied by 6, makes 1200 stones of new hay.

COAL.

14 pounds	make	1 stone
28 pounds		1 quarter cwt.
56 pounds		1 half cwt.
1 sack of 112 pounds		1 cwt.
1 double sack of 224 pounds		2 cwt.
20 cwt. or 10 large sacks		1 ton
21 tons 4 cwt.		1 barge or keel
20 keels, or 424 tons		1 ship load
140 cwt. or 7 tons		1 room

By the 1st and 2d of William IV, it is directed that all Coals be sold by Weight instead of measure; 10 sacks of 224 lbs. each to one ton. There is a duty of 1*s.* 1*d.* per ton on all coals coming through London.

Coke is sold by Measure, as formerly, per Chaldron, except "Furnace Coke," which is sold by weight, 36 bushels making 1 Chaldron.

It is directed, "That with any quantity of Coals exceeding five hundred and sixty pounds, a paper or ticket describing the quantity, and if any particular sort is ordered or contracted for, the sort of Coals sent by the Seller shall be

delivered to the Purchaser, his agent or servant, before any part of such Coals shall be unloaded; that a weighing-machine, or proper scales and weights shall be carried with every waggon, cart, or other carriage, and the carman is required to weigh gratuitously any sack or sacks of Coals which may be chosen by the Purchaser, his agent or servant; and if any carman refuses to weigh any such sack or sacks of Coals as aforesaid, or drives away the waggon, cart, or other carriage before such Coals are weighed, or otherwise obstructs the weighing thereof, he is liable to a penalty not exceeding twenty pounds; also that a proper machine, or proper scales and weights for weighing Coals shall be kept at every watch-house or police station, and at any other place appointed for that purpose by two or more of her Majesty's Justices of the Peace.

WEIGHT OF CATTLE.

Measure round the animal close behind the shoulder, then along the back, from the fore part of the shoulder blade to the bone at the tail. Multiply the square of the girt by five times the length, both expressed in feet. Divide the result by 21, and you have the weight of the four quarters, in stones of 14 lbs. Thus, if the girt be $6\frac{1}{2}$ feet, multiply it by $6\frac{1}{2}$, making $42\frac{1}{4}$ feet—then if the length be $5\frac{1}{4}$ feet, multiply by 5, making $26\frac{1}{4}$ feet: next multiply the results $42\frac{1}{4}$ by $26\frac{1}{4}$, and you have $1109\frac{1}{16}$, this divided by 21, gives 52 stones 11 lbs. as nearly as possible. In very fat cattle, the weight is about a twentieth more than that ascertained in this manner, while very lean ones weigh about a twentieth less. The quarters are little more than half the weight of the animal. The skin weighs about the eighteenth, and the tallow about the twelfth of the beast. Seven millions of money exchange hands annually in Smithfield market.

LONG MEASURE.

3	barleycorns	make . 1 inch .	in.
3	inches	1 palm .	pm.
4	inches	1 hand .	hd.
9	inches	1 span .	sp.
12	inches	1 foot .	ft.
3	feet	1 yard .	yd.
$1\frac{1}{2}$	foot	1 cubit .	cub.
$2\frac{1}{2}$	feet	1 military pace,	m. pa.
5	feet	1 pace .	pa.
6	feet, or 2 yards . . .	1 fathom .	fa.
120	fathoms	1 cable's length	
$5\frac{1}{2}$	yards, or 11 half yds. or $16\frac{1}{2}$ feet	1 rod, pole, or perch	
4	poles, or 100 links . .	1 chain .	ch.
40	poles, 10 chains, or 200 yards	1 furlong .	fur.
8	fur. 80 chains, or 1760 yards	1 mile .	mi.
3	miles	1 league .	leag.
60	geographical miles, or $69\frac{1}{2}$ statute miles . .	1 degree .	deg.

A line is the 12th part of an inch.

The Scotch and Irish miles are about $1\frac{3}{4}$ English.

The hand is rarely used except in the measurement of horses; and the fathom in sounding the depth of the ocean or of mines. The navy log line is 48 feet long.

The standard of this measure is declared to be "the straight line or distance between the centres of the two points in the gold studs in the straight brass rod, now in the custody of the Clerk of the House of Commons, whereon the words and figures, 'STANDARD YARD, 1760,' are engraved. This distance, when the brass is at the temperature of 62 degrees by Fahrenheit's thermometer, shall be the only Standard Measure of Extension in the three Kingdoms, by which all other measures of extension, whether lineal, superficial, or solid, shall be derived and computed."

The measure, if lost, may be restored by comparison with a pendulum vibrating seconds of mean time, in the latitude of London, in a vacuum at the level of the sea, in the proportion of 36 inches to 39·1393.

This measure is for length, without regard to breadth.

Mechanics have their measures divided into 8ths and 16ths of an inch; and for scientific purposes they are divided into 10ths and 100ths, &c.

ARTIFICERS' MEASURE.

1 foot divided into		12 inches (in.)	Feet multiplied by	feet	give feet
1 inch	„ „	12 seconds (″)	Feet „	„	inches „ inches
1 second	„ „	12 thirds (‴)	Feet „	„	seconds „ seconds
1 third	„ „	12 fourths (⁗)	Inches „	„	inches „ seconds
			Inches „	„	seconds „ thirds
			Seconds „	„	seconds „ fourths

Thus their work is measured by feet, inches, and twelfths.

SQUARE OR LAND MEASURE.

144	inches . make . .	1 square foot .	s. f.
9	feet	1 square yard .	s. yd.
100	feet	1 square of flooring	s. fl.
272¼	feet	1 rod of brickwork	r. b. w.
30¼	yards	1 pole, rod, or perch	p.
16	poles	1 chain . .	ch.
40	poles, or 1210 square yards	1 rood . . .	r.
4	roods, or 10 chains, or 160 poles, or 4840 yards .	1 acre . . .	a.
640	acres	1 mile . . .	m.

(N.B. The square of a number is obtained by multiplying the number by itself, as 12 × 12=144, the square of 12.)

By this measure all things that have length and breadth are measured.

LAND is measured by *Gunter's Chain*; which is as follows:

Length:—7·92 inches, make 1 link; 12 inches, or 1·515 links, make 1 foot; 36 inches, or 4·545 links, make 1 yard; 198 inches, or 25 links, make 1 pole or perch; 792 inches, or 100 links, or 66 feet, or 22 yards, or 4 poles, make 1 chain; 7920 inches, or 1000 links, or 10 chains, make 1 furlong; 63,360 inches, or 8000 links, or 80 chains, make 1 mile.

Square:—62·726 square inches, make 1 square link; 2·295 square links, make 1 square foot; 22·661 square links, make 1 square yard; 625 square links make 1 square pole; 10,000 square links, make 1 square chain; 25,000 square links, or 2·5 square chains, make 1 square rood; 100,000 square links, or 10 square chains, make 1 square acre.

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SCOTS LAND OR SQUARE MEASURE.

1 square fall is nearly 346 English square feet
16 square falls make 1 square Gunter's chain.
2½ square Gunter's chains, or 40 falls, 1 square rood.
4 square roods, or 6150½ English square yards, 1 square acre.
1 rood of mason or slate work is 36 square Scotch ells; but through custom it is now only reckoned as 36 square English yards.

The French acre (*arpent*) is equal to 54,450 English feet.

The English to the Scottish acre is as 78 to 100.

The Welsh acre is generally equal to 2 English acres.

The Irish acre is more than the English by 2 roods 10¾ perches.

PLANTING ORCHARDS, GARDENS, ETC.

Trees required to plant an acre of land.

Distance *feet. in.*	*No.*	Distance *feet. in.*	*No.*	Distance *feet. in.*	*No.*
1 0	43,560	6 0	1,210	12 0	302
1 6	19,360	6 6	1,031	13 0	258
2 0	10,890	7 0	889	14 0	223
2 6	6,960	7 6	775	15 0	194
3 0	4,840	8 0	680	16 0	171
3 6	3,556	8 6	602	17 0	151
4 0	2,722	9 0	538	18 0	135
4 6	2,151	9 6	482	19 0	121
5 0	1,742	10 0	436	20 0	109
5 6	1,440	10 6	361	21 0	99

CUBIC, OR SOLID MEASURE.

1728 inches	make	1 solid foot
27 feet		1 solid yard
40 feet of rough, or 50 feet of hewn timber		1 ton or load
42 feet		1 ton of shipping
1 yard of earth		1 load

Thus, a CORD of wood is 4 feet broad, 3 feet deep, and 8 feet long, being 128 cubic feet.—A STACK of wood is 3 feet broad, 3 feet deep, and 12 feet long, being 108 cubic feet.

The dimensions of timber, stone, excavations, and all works which have length, breadth, and thickness, are taken by lineal measure; but the contents are calculated by cubic measure.

A CUBE is a solid body, and contains length, breadth, and thickness. A cubic number is produced by multiplying the simple number twice into itself: thus 343 is a cube number, being produced by multiplying the number 7 twice into itself; as, $7 \times 7 \times 7 = 343$.

f. 8v

DRY MEASURE.

4 gills	.	make	1	pint	pt.
2 pints	.		1	quart	qt.
2 quarts or 4 pints	.		1	pottle	pot.
2 pottles, or 8 pints, or 4 quarts	.		1	gallon	gal.
2 gallons	.		1	peck	pk.
4 pecks	.		1	bushel	bush.
2 bushels	.		1	strike	str.
4 bushels	.		1	coomb	cb.
5 bushels	.		1	market porter's load	
8 bushels, or 2 coombs	.		1	quarter	qr.
4 quarters, or 32 bushels	.		1	chaldron	chal.
5 quarters, or 10 coombs, or 40 bush.			1	weigh, or horse load	
2 weighs, or 80 bushels	.		1	last	
1 last of meal	.		12	barrels	

Corn, fruit, oysters, salt, and other dry goods are measured by this table.

Imperial Dry and Liquid Measures.—1·25 lb. of *distilled* water (at the temperature of 62 degrees Fahrenheit, and barometer 30 inches) or 34·659 cubic inches, 1 pint; 2·5 lbs. of water, or 69·318 cubic inches, 1 quart; 5 lbs. of water, or 138·637 cubic inches, 1 pottle; 10 lbs. of water, or 277·274 cubic inches, 1 gallon; 20 lbs of water, or 554·548 cubic inches, 1 peck; 80 lbs. of water, or 2218·122 cubic inches, 1 bushel; 320 lbs. of water, or 8872·763 cubic inches 1 coomb; 640 lbs. of water, or 17745·526 cubic inches, 1 quarter.

All goods sold by *heaped measure* must be heaped up in the form of a cone, the outside of the measure forming the extremity of the base of such cone. All measures are to be made cylindrical, and their dimensions to be as follows:—

Bushel	19½ inches	Half-peck or Gallon	9¾ inches
Half-bushel	15½ inches	Quartern or half Gall.	7¾ inches
Peck	12¼ inches	Half Quartern	6⅛ inches

The measurement to be made from outside to outside, on the top.

BREAD AND FLOUR.

	lbs.	*oz.*	*dr.*
A peck loaf weighs	17	6	1
A half peck	8	11	0
A quartern	4	5	8
A peck, or stone of flour	14	0	0
A bushel of flour	56	0	0
A boll of 10 pecks, or stones	140	0	0
A barrel of American flour	196	0	0
A pack, or load of flour	240	0	0
A sack, or 5 bushels of flour	280	0	0

FLOUR, GRAIN, BREAD.

A gallon of flour	7	0	0
A bushel of barley	47	0	0
A bushel of peas	64	0	0

	lbs.
A bushel of beans	63
A bushel of rye	53
A bushel of oats	40
A bushel of wheat	60
6 Bush. of wheat yields of fine flour	280
280 lbs. of flour, 1 sack, makes of white bread	400
8 bushels of wheat, 1 quarter, averages of flour	462
Ditto of bread	577
A man's average use of bread weekly	11
A man's consumption yearly	572

which is the produce of 1 qr. of wheat.

A sack of flour in some counties is 18 stones, or 252 lbs. The sale of bread by the quartern is now abolished; it is sold by the 4 lb. and 2 lb. loaf, which must be weighed in the presence of the purchaser.

Potatoes, *uncleaned*, are sold at 120 lbs. to the cwt.

SEED.

A bushel of Canary-seed weighs 53 lbs.	A cask of Clover . . 7 to 9 cwt.
——— Rape 48 lbs. A last 80 bush.	A sack of Clover . . 2 to 3½ cwt.

Scots Corn Measure.—4 lippics, 1 peck; 4 pecks, 1 firlot; 4 firlots, 1 boll; 16 bolls, 1 chalder. The Linlithgow firlot, which is the standard for dry measure in Scotland, contains for wheat, rye, beans, peas, and salt, 24 pints 1 mutchkin; and for barley, malt, oats, and potatoes, 31 pints, measured by the Stirling jug of 103,404 cubic inches.

CHEESE AND BUTTER.

A Clove, or half stone . . 8 lbs.	A wey in Suffolk 32 cloves, or 256 lbs.
A Stone of cheese . . . 16 lbs,	A wey in Sussex 42 cloves, or 336 lbs.

VOLUME MEASURE OF INCHES CONTAINED IN A FOOT.

A Cylinder, 1 foot high, and 1 foot in diameter, contains . 1357.17 cubic inches.
A Sphere, 1 foot in diameter, contains . . . . 904.78 cubic inches.
A Cone, 1 foot high, and 1 foot in diameter, at base . 452.39 cubic inches.
1 Cubic foot, contains 2200 cylindrical inches of 1 inch long, and 1 inch diameter.
——— 3300 spherical inches of 1 inch diameter.
——— ——— 6600 conical inches of 1 in. high, and 1 in. diameter at base.

CLOTH MEASURE.

2¼ inches . .	make .	1 nail .	or n.
4 nails, or 9 inches . .	.	¼ of a yard .	qr.
3 quarters, or 27 inches .	.	1 Flemish ell	Fl. e.
4 quarters, or 36 inches .	.	1 yard .	yd.
5 quarters, or 45 inches .	.	1 English ell	E. e.
4 quarters 1 inch, or 37 inches .		1 Scotch ell .	S. e.

The English Ell is sometimes made use of to measure Holland, but most articles are measured by the yard.

LINEN-YARN MEASURE.

Inches, 90 = 1 thread.
Inches, 10,800 = 120 = 1 lea, or rap.
Inches, 108,000 = 12,000 = 10 = 1 slip.
Inches, 2,160,000 = 24,000 = 200 = 20 = 1 bundle.
A heer of 2 cuts, or 240 threads . . . 600 yards.
A spindle of 24 heers, ... 14,400 yards.
A bundle of 4⅙ spindles . . . . . 60,000 yards.

COTTON-YARN MEASURE.

Inches. 54 = 1 thread
Inches. 4320 = 80 = 1 lea or rap.
Inches. 30240 = 560 = 7 = 1 hank, or 480 yards.
A spindle of 18 hanks is 15,120 yards.

WORSTED-YARN MEASURE.

Inches, 35 = 1 thread.
Inches, 2,830 = 80 = 1 lea, or rap.
Inches, 20,160 = 560 = 7 = 1 hank, or 560 yards.

REELS.

1 cotton reel . 54 inches in circuit | 1 worsted reel 30 inches in circuit
1 linen reel . do. | 1 hank of do. yarn, 30 threads.

FOREIGN LINEN-YARN MEASURE.

Inches, 85⅓ Ermland = 1 thread.
Inches, 3,420 „ = 40 = 1 lea.
Inches, 80 Hamburg = 1 =
Inches, 7,200 „ = 90 = 1 lea.

FLAX.

Russian bale, or matt , 5 to 6 cwt. | Flemish bale . . . 224 lbs.
——— 12 head bobbins 126 lbs. | A last of Flax . . . 17 cwt.
Dutch matt . . . 126 lbs. | A boll of canvas . . . 28 lbs.
A boll of canvass is 28 ells, or 35 yards.

CORDS AND CABLES.

A stone of hemp . . . 32 lbs | A bale of hemp, nearly . . 20 cwt.

Cords of hemp are estimated by the square of the number of inches in girth multiplied by 200, when the product is reckoned to be the number of lbs. it will safely bear in strain. The square of the number of inches in girth of a cable is multiplied by 120, to ensure safety. The Dockyard calculations are these—

A rope of
23 inches circumference, 2736 threads in each, breaks at 114 tons strain.
21 inches circumference, 2268 threads in each, breaks at 89 tons strain.
18 inches circumference, 1656 threads in each, breaks at 63 tons strain.
14½ inches circumference, 1080 threads in each, breaks at 40 tons strain.

Tarred cordage is not so strong as white.

IRON.

A stone of iron is . . . . . 14 lbs.
A cubic foot of iron weighs about . . . . 580 lbs.
An iron wire the 12th of an inch in diameter will support 549¼ lbs.
Wrought iron, 3 feet long, 1 inch square, weighs 10·08 lbs.—cast, 9·668 lbs.
Ditto, ditto, round, 1 inch diameter, weighs 7·89 lbs.—cast, 7·567 lbs.
A rod of good wrought iron 1 inch square, will support 30 tons.
A faggot of steel is . . . . . 120 lbs.

WINE AND SPIRIT MEASURE.

4 gills	make	1 pint	pt.
2 pints		1 quart	qt.
4 quarts		1 gallon	gall.
63 gallons		1 hogshead	hhd.
84 gallons		1 puncheon	pun.
2 hogsheads, or 126 gallons		1 pipe, or butt	pipe.
4 hogsheads, or 252 gallons		1 tun	tun.

In London the gill is called a quartern; in the North of England a noggin; and a half pint is termed a gill.

OLD MEASURE. gallons.		IMPERIAL MEASURE. galls.	qts.	pts.	gills.	100th parts.	
10	equal to	8	1	0	2	·28	1 anker.
18	„	14	3	1	3	·87	1 runlet.
42	„	34	3	1	3	·70	1 tierce.
63	„	52	1	1	3	·45	1 hogshead.
85 or 2 tierce		69	3	1	3	·40	1 puncheon.
126 or 2 hhds.		104	3	1	3	·11	1 pipe, or butt
252 or 2 pipes		209	3	1	2	·22	1 tun.

Thus the wine measure will be found to be considerably enlarged—the imperial gallon containing about one-fifth more than the old, being made equal to beer measure, which is only about one-sixtieth less than formerly. All vessels of larger capacity, such as hogsheads, puncheons, &c. are gauged, and charged according to the exact quantity contained therein.

ALE, BEER, AND PORTER MEASURE.

4 gills	make	1 pint	pt.
2 pints		1 quart	qt.
4 quarts		1 gallon	gall.
9 gallons		1 firkin	fir.
2 firkins, or 18 gallons		1 kilderkin	kild.
2 kilderkins, or 36 gallons		1 barrel	bar.
3 kilderkins, or 54 gallons		1 hogshead	hhd.
3 hogsheads, or 108 gallons		1 butt	butt.

OLD MEASURE. gallons.		IMPERIAL MEASURE. galls.	qts.	pts.	gills.	100th part.	
9 galls.	equal to	9	0	1	0	·91	1 firkin.
2 firs.	or 18 galls.	18	1	0	1	·82	1 kilderkin.
2 kilds.	or 36 galls.	36	2	0	3	·64	1 barrel.
3 kilds.	or 54 galls.	54	3	1	1	·45	1 hogshead.
72 galls.	or 2 bars.	72	0	1	3	·27	1 puncheon.
108 kilds.	or 2 hhds.	109	3	0	2	·27	3 butts.

By the Act for establishing the uniformity of weights and measures, the 'Imperial Standard Gallon,' containing 277·274 cubic inches, is now the only standard measure of capacity for wine, beer, ale, spirits, and all sorts of liquids, and also for dry goods, heaped measures having been abolished. The 'Imperial Gallon' contains 10 lbs. avoirdupois weight of distilled water, weighed in water at the temperature of 60° of Fahrenheit's thermometer, the barometer being at 30 inches. All measures are taken in parts or certain portions of the 'Imperial Gallon:' the quart is one fourth part, and the pint one eighth part of such standard gallon; 2 such gallons are a peck, and 8 gallons a bushel, and 8 such bushels a quarter.

100 Imperial Gallons are equal to 120·032 old wine gallons, or to 98·624 old ale gallons, or to 103·152 gallons old dry measure.

CONTENTS of the New and the Old Gallons, both in Measure and Weight:—

Gallons,	Cubic inches.	Avoird. weight. lb.	oz.	dr.	Troy weight. lb.	oz.	dr.	gr.
Imperial gallon	277·274	10	0	0	12	1	16	13
Old corn gallon	268·8	9	10	1¾	11	9	7	12
Old wine gallon	231	8	5	6¼	10	1	9	22
Old ale gallon	282	10	2	11½	12	4	6	8

To reduce inches to gallons, multiply by 1000, and divide by 277·274; and reverse the operation to reduce gallons to inches.

The Imperial Bushel is nearly equal to $1\frac{1}{32}$ of the Winchester bushel.

TABLES for reducing the Old Standard Measures of capacity to the Imperial Standard, and the Imperial to the Old Standard.

TABLE I.

Old gal.	Wine Meas. to Imp. St.	Ale Meas. to Imp. St.	Dry Meas. to Imp. St.
1	0·83311	1·01704	0·96943
2	1·66622	2·03408	1·93887
3	2·49933	3·05113	2·90831
4	3·33244	4·06818	3·87775
5	4·16555	5·08522	4·84719
6	4·99867	6·10227	5·81662
7	5·83178	7·11931	6·78606
8	6·66489	8·13636	7·75550
9	7·49790	2·15339	8·72494

TABLE II.

Im. gal.	Gallons Wine Meas.	Gallons Ale Meas.	Gallons Dry Meas.
1	1·20032	0·98324	1·03152
2	2·40064	1·86648	2·06305
3	3·60096	2·94972	3·09457
4	4·80128	3·93296	4·12610
5	6·00160	4·91620	5·15762
6	7·20192	5·89944	6·18915
7	8·40224	6·88268	7·22067
8	9·60256	7·86592	8·25220
9	10·80288	8·84916	9·28372

NOTE.—In Table I, the first column denotes the number of gallons of the old standard, and the corresponding lines show the equivalent value of the old measures reduced to gallons of the imperial standard. In Table II, the figures in the first column denote the number of imperial gallons, and the corresponding lines the proportionate value of the old measures in their respective gallons.

RULE.—Look for the first figure of the given quantity in the left-hand column of the table; then take the numbers opposite it, and should the given quantity be hundreds, remove the decimal point two figures to the right, and if tens, one figure; proceed then with each subsequent figure in the given quantity, in the same manner, after which add up the whole, and you will have the result required.

Another method, which brings within minute fractions the Old to the Imperial Measures:—

Beer.—Multiply by	172	and divide by	176
Dry	32	. . . . .	33
Wine	624	. . . . .	749

To change the Imperial to the Old Measures, reverse the division and multiplication of the above table.

SCOTS LIQUID MEASURE.

4 gills . .	1 mutchkin	2 pints . .	1 quart
2 mutchkins .	1 choppin	4 quarts . .	1 gallon of
2 choppins .	1 pint	827—1·5 solid inches	

MISCELLANEOUS TABLE OF LIQUID MEASURES.

1 hogshead of Claret. .	46 galls.	1 hhd. of Marsalas Bronte	93 galls.
1 pipe of Sherry . .	108 „	1 pun. of S. Whiskey	112 to 120 „
1 pipe of Port . . .	115 „	1 pun. of Brandy .	100 to 110 „
1 pipe of Madeira . .	92 „	1 hhd. of Brandy .	45 to 60 „
1 pipe of Teneriffe . .	100 „	Quarter cask of Brandy	20 to 25 „
1 pipe of Lisbon . .	117 „	1 pipe of Cider .	100 to 118 „
1 pipe of Malaga . .	105 „	1 piece of Geneva, about	116 „
1 hogshead of Hock, Rheins, and Moselle . .	30 „	1 pun. of Rum .	90 to 100 „
1 hogshead of Cape . .	92 „	1 hhd. of Rum .	45 to 50 „
1 hogshead of Tent . .	52 „	A tun of Wine . .	252 „
		A pipe or butt . .	126 „

German wines are sold by the Anlm, containing 30 gallons. French wines are usually sold in bottles.

MISCELLANEOUS ARTICLES.

A fodder of lead is 19½ cwt. or	2184 lbs.	12 articles . . .	1 dozen
A cask of Blacklead, about	11½ cwt.	1 long dozen . .	13 articles
A stone of Butcher's meat .	8 lbs.	12 dozen articles . .	1 gross
A stone of Horseman's weight	14 lbs.	1 long gross . .	156 articles
A stone of Iron shot . .	14 lbs.	20 articles . . .	1 score
A stone of Glass . . .	5 lbs.	5 score .	1 common hundred
A seam of do. 24 st. of 5 lbs. or	120 lbs.	6 score .	1 long hundred
A faggot of Steel . . .	120 lbs.	30 deals . . .	1 quarter
A ton is in number of bushels	42	4 quarters . . .	1 hundred
A quintal	100 lbs.	6 score of nails, tacks, &c.	1 hundred
Pig ballast	56 lbs.	A dicker of hides . .	10 skins
Cask of Bristles . . .	10 cwt.	A dicker of gloves . .	10 dozen
A bale of Feathers, about .	1 cwt.	A last of hides . .	20 dickers
A pocket of Hops .	1½ to 2 cwt.	A last of feathers . .	17 cwt.
A bag of Hops nearly . .	2½ cwt.	A last of gunpowder .	24 barrels
A hogshead of Tobacco	12 to 18 cwt.	A roll of vellum	5 doz. or 60 skins

BOOKS.

	pages.	leaves.	sheet.		pages.	leaves.	sheet.
Folio Books . .	4	or 2	make 1	Duodecimo, or 12mo	24	or 12	make 1
Quarto, or 4to .	8	. 4	make 1	Octodecimo, or 18mo	36	18	. 1
Octavo, or 8vo .	16	. 8	make 1	24mo, 32mo, 48mo, 72mo, &c. &c.			

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PAPER.

24 sheets of paper	1 quire	21½ quires	1 Printer's ream
20 sheets	1 quire outsides	2 reams	1 bundle
25 sheets	1 Printer's quire	10 reams	1 bale
20 quires	1 ream		

Sizes of Paper.

Pot	12¾ by 15¼ inches	Medium	18½ by 23½ inches
Foolscap	13½ by 16½ inches	Royal	19½ by 24 inches
Littris	13½ by 17½ inches	Super Royal	19½ by 27½ inches
Post	15½ by 18 inches	Imperial	21¾ by 29¾ inches
Large Post	16 by 20½ inches	Double crown	20 by 30 inches
Demy	18 by 22 inches	Double Foolscap	16¾ by 26½ inches

Sizes of Drawing Paper.

Wove Antique	52 by 27 inches	Imperial	31 by 21 inches
Double Elephant	40 by 26 inches	Super Royal	27 by 19 inches
Atlas	33 by 26 inches	Royal	24 by 19 inches
Columbier	34 by 23 inches	Medium	22 by 17 inches
Elephant	27 by 23 inches	Demy	20 by 15 inches

A roll of parchment 60 skins
90 words in Chancery, 80 in Exchequer, and 71 in Common law, are 1 folio.
A bag of Hamburgh rags weighs 2½ cwt.
A bale of Mediterranean rags weighs 4½ to 5 cwt.
Quills are sold by weight, called loths—a loth is about half an ounce.

VULGAR OR COMMON FRACTIONS.

A Fraction is the part or parts of a whole number; thus we say of 1; ½, one-half; ¼, one-fourth; ¾, three-quarters, &c. &c.

The figure above the line is called the *numerator*, as it 'enumerates,' or names how many of the parts are to be taken. The figure below the line is called the *denominator*, as it 'denominates' into how many parts the number stated is divided. Thus in ¾, the lower number shows that the amount is divided into 4 equal parts, and the figure 3 at the top, that you have to take 3 of these 4 parts. Thus, if you had to receive ¾, three-fourths, of a shilling, the shilling would be divided into four equal parts, or threepences; and as you were to have three of them, your share would be 9*d*; or had four persons to divide 2*s*. 6*d*. between them, a fourth would be each one's share, and the ¼ of 2*s*. 6*d*. is 7½*d*.; again, had a school of 60 scholars a sovereign to be divided among them, the share of each one would be $\frac{1}{60}$ of a sovereign, that is 4*d*.

There are six sorts of Fractions, called Proper, Simple, Improper, Compound, Mixed, and Complex.

A proper fraction is when the numerator is less than the denominator, as $\frac{2}{4}$, $\frac{3}{6}$, $\frac{1}{10}$, &c. *A simple fraction* is when there is but one denominator and one numerator, as ¼, ½, ⅛, &c. *An improper fraction* is when the numerator is equal to or greater than the denominator, as $\frac{5}{5}$, $\frac{8}{7}$, $\frac{100}{50}$, &c. *A compound fraction* is the fraction of a fraction, as ¼ of ¾, &c. *A mixed number of fractions* is composed of a whole number and fractions, as 2¼, 3⅓, &c. *A Complex fraction* has a fraction either in the numerator, denominator, or both, as $\frac{3\frac{1}{2}}{4}$, $\frac{5}{7\frac{1}{2}}$ &c.

DECIMAL FRACTIONS

Are sometimes used instead of Vulgar Fractions, because fewer figures are required. Thus, in vulgar fractions, to express three-quarters, you would write $\frac{3}{4}$; but in decimals, ·75; that is, 75 divided by 100; 75 hundredth parts being the same as three-quarters of any thing.

Decimal fractions always represent tenths, hundredths, thousandths, &c. only; they are distinguished by a dot (·) placed before the figure; thus ·5 stands for $\frac{5}{10}$, ·25 for $\frac{25}{100}$, ·123 for $\frac{123}{1000}$.

Ciphers after decimal parts do not alter their value. Thus ·5, ·50, ·500, each express an equal value, that is $\frac{5}{10}$, or half of a unit; but a cipher placed before a figure or figures, removing them further from the decimal point, decreases the value tenfold, as ·05 is five hundredths, or $\frac{5}{100}$; ·005 is five thousandths or $\frac{5}{1000}$ &c.

PRACTICE.

Aliquot Parts of

A PENNY.—$\frac{1}{4}$ or farthing, is the *fourth*; $\frac{1}{2}$ or halfpenny, the *half*.

A SHILLING.—6*d.* the *half*; 4*d.* the *third*; 3*d* the *fourth*; 2*d.* the *sixth*; $1\frac{1}{2}$*d.* the *eighth*; 1*d.* the *twelfth*; $\frac{3}{4}$ the *sixteenth*; $\frac{1}{2}$ the *twenty-fourth*; $\frac{1}{4}$ the *forty-eighth*.

A POUND.—10*s.* the *half*; 6*s.* 8*d.* the *third*; 5*s.* the *fourth*; 4*s.* the *fifth*; 3*s.* 4*d.* the *sixth*; 2*s.* 6*d.* the *eighth*; 2*s.* the *tenth*; 1*s.* 8*d.* the *twelfth*; 1*s.* 4*d.* the *fifteenth*; 1*s.* 3*d.* the *sixteenth*; 1*s.* the *twentieth*; 10*d.* the *twenty-fourth*; 8*d.* the *thirtieth*; $7\frac{1}{2}$*d.* the *thirty-second*; 6*d.* the *fortieth*; 5*d.* the *forty-eighth*; 4*d.* the *sixtieth*; $3\frac{3}{4}$*d.* the *sixty-fourth*.

Aliquot Parts of

A POUND WEIGHT AVOIRDUPOIS.—8 ounces, the *half*; 4 ounces, the *fourth*; 2 ounces, the *eighth*; 1 ounce, the *sixteenth*.

A QUARTER OF A HUNDRED WEIGHT.—14 lbs. the *half*; 7 lbs. the *fourth*; 4 lbs. the *seventh*; $3\frac{1}{2}$ lbs. the *eighth*; 2 lbs. the *fourteenth*; 1 lb. the *twenty-eighth*.

A HUNDRED WEIGHT.—2 quarters, or 56 lbs. the *half*; 1 quarter, or 28 lbs. the *fourth*; 16 lbs. the *seventh*; 14 lbs. the *eighth*; 8 lbs. the *fourteenth*; 7 lbs. the *sixteenth*.

A TON.—10 cwt. the *half*; 5 cwt. the *fourth*; 4 cwt. the *fifth*; $2\frac{1}{2}$ cwt. the *eighth*; 2 cwt. the *tenth*; 1 cwt. the *twentieth*.

A PENNYWEIGHT.—12 grains, the *half*; 8 grains, the *third*; 6 grains, the *fourth*; 4 grains, the *sixth*; 3 grains, the *eighth*; 2 grains, the *twelfth*..

AN OUNCE TROY.—The same as the parts of a £, changing the names from shillings to pennyweights.

ARTIFICERS' TABLES AND CALCULATIONS. TIMBER.

40	cubic feet of unhewn timber	1 load
50	——— of squared timber	
600	superficial feet, 1 inch planks or deals . .	
400	——— $1\frac{1}{2}$ inch ditto	
300	——— 2 inch ditto	
240	——— $2\frac{1}{2}$ inch ditto	
200	——— 3 inch ditto	
170	——— $3\frac{1}{2}$ inch ditto	
150	——— 4 inch ditto	
120	deals 12 ft. long, 3 in. thick, 9 in. wide . . .	$5\frac{2}{3}$ loads
1	——— contains 2 ft. 3 in. cubic.	

A batten is from 2 to 7 inches broad, and from $\frac{1}{2}$ to $1\frac{1}{2}$ inches thick
A deal is above 7 inches wide
A plank is 11 inches wide, or above
120 deals are 1 hundred
$64\frac{1}{2}$ cubic feet of elm are 1 ton

64	cubic ft. Honduras Mahogany	1 ton
$51\frac{1}{2}$	——— Beech . . .	1 ton
$57\frac{3}{4}$	——— Riga fir . . .	1 ton
47	——— Ash and Dantzic oak	1 ton
42	——— Spanish mahogany .	1 ton
$36\frac{1}{8}$	——— English oak . .	1 ton

A baulk is 11 to 25 feet long, nearly 10 inches thick, tapering, unsquared.
A log is a large piece of mahogany or oak.
A fir pole is the trunk of a fir tree, from 10 to 16 feet long.

To Measure unsquared Timber.—In order to ascertain the contents, multiply the square of the quarter girth, or of $\frac{1}{4}$ of the mean circumference, by the length. When the buyer is not allowed his choice of girth in taper trees, he may take the mean dimensions, either by girthing it in the middle for the mean girth, or by girthing it at the two ends, and taking half of their sum. If not, girth the tree in so many places as is thought necessary, then the sum of the several girths divided by their number, will give a mean circumference, the fourth part of which being squared, and multiplied by the length, will give the solid contents.

The Superficial feet in a Board or Plank is known by multiplying the length by the breadth. If the board be tapering, add the breadth of the two ends together, and take half their sum for the mean breadth, and multiply the length by this mean breadth.

The Solid contents of Squared Timber are found by measuring the mean breadth by the mean thickness, and the product again by the length Or multiply the square of what is called the quarter girth, in inches by the length in feet, and divide by 144, and you have the contents in feet.

Boughs, the quarter girth of which is less than 6 inches, and parts of the trunk less than 2 feet in circumference, are not reckoned as timber.

$1\frac{1}{2}$ inch in every foot of quarter girth, or $\frac{1}{8}$ of the girth, is allowed for bark, except of elm. 1 inch in the circumference of the tree, or whole girth, or $\frac{1}{12}$ of the quarter girth is the general fair average allowance.

The quarter girth is half the sum of the breadth and depth in the middle.

The nearest approach to truth in the measuring of timber, is to multiply the square of $\frac{1}{5}$ of the girth, or circumference, by double the length, and the product will be the contents.

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CARPENTRY TABLES.

The square of 10 feet—100 superficial feet;—100 feet superficial—1 square of boarding, flooring, &c. 38 deals 12 feet long, 2½ inches thick, make 1 ton.

Ten feet boards to a Square.

24 boards 5 inches broad	15 boards 3 inches broad
20 ——— 6 inches broad	13 ——— 9 inches broad, add 2 ft. 6 in.
17 ——— 7 inches broad, add 1 foot	12 ——— 10 inches broad

Twelve feet boards to a Square.

20 boards 5 inches broad	12 boards 8 inches broad, add 4 feet
16 ——— 6 inches broad, add 4 feet	11 ——— 9 inches broad, add 1 foot
14 ——— 7 inches broad, add 2 feet	10 ——— 10 inches broad

13 12 feet deals . . .	1 square of wrought flooring
12½ 12 feet deals . . .	1 square of rough flooring
14 12 feet battens . .	1 square of wrought flooring

BRICKLAYING TABLES.

1 square yard of clay makes 460 bricks.
1 unburnt brick is 10 inches long, and 5 inches broad.
1 burnt brick is 9 inches long, 4½ inches wide, and 2½ inches thick.
1 burnt brick weighs about 4 lbs. 15 ounces
32 bricks cover a square yard.
16 bricks 1 foot of reduced brickwork.
7 bricks 1 foot superficial marle facing, laid Flemish bond.
10 bricks 1 foot superficial gauged arching.
272 superficial feet 1 rod of reduced brickwork, 1½ brick thick.
306 cubic feet 1 rod.
450 stock bricks 1 ton.
1 rod of brickwork 13 tons.
500 bricks 1 load.

Brickwork is generally measured by the rod of 16½ feet, or 272¼ square feet.

Brickwork is estimated at 1½ brick thick, which is called the standard thickness. To reduce cubic feet to the standard, multiply by 8, and divide by 9.

If a wall be more or less than the standard, multiply the superficial contents of the wall by the number of half bricks in the thickness, and divide the product by 3.

36 bushels of cement, and 36 of sand, for .	1 rod of brickwork.
2½ ——— 1 yard, or 9 superficial ft.	1½ brickwork.
½ ———	of pointing.
¼ ———	of plastering.

Lime, newly slaked	1 part
Fine sand	3 parts
Coarse sand	4 parts

} is considered the best proportions for good mortar.

1 hundred of lime	26 striked bushels.
2 ——— 57¾ cubic feet . . .	1 chaldron.
1 ———	100 pecks.
18 nearly, heaped bushels	1 square yard, or load.
22 nearly, striked bushels	1 square yard, or load.
½ hundred of lime with sand proper . .	1 load.
27 bushels of chalk lime, and 3 loads of sand for	1 rod of brickwork.
18 bushels of Dorking, Merstham, or Guildford stone lime, and 3½ loads of sand for	1 rod of brickwork.
1 hod of mortar, nearly half a bushel.	

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MASONRY TABLES.

16	cubic feet of Portland stone	1 ton	12½	cubic feet of Granite	1 ton
17	——— Bath stone	1 ton	13	——— Marble	1 ton
15	——— Yorkshire stone	1 ton	14¾	——— Paving stone	1 ton

It is common for masons to reduce their work to 2 feet in thickness.

All stones above 2 inches thick are usually calculated at so much per cubic foot. Work is paid for by the foot superficial appearing outside the wall.

LATHING TABLES.

A plain-tile lath is 1½ inches wide, and 1 inch thick		167	plain-tile laths 3 ft. long 1 bundle
12	pan-tile laths 10 ft. long, 1 bundle	500	feet, any length . . 1 bundle
30	bundles plain-tile laths 1 load	Lath-wood 6 feet long and 6 feet high . . . 1 fathom	
100	plain-tile laths 5 feet long 1 bundle	1	bundle of laths is used for tiling . . . . 1 square
125	——— 4 feet long 1 bundle		

TILING.

1	plain-tile is 10½ inches long, 6¼ inches wide, ⅝ of an inch thick	1000	plain-tiles weigh about 21 cwt.		
1	plain-tile weighs 2 lbs. 5 ounces	A pan-tile is 13½ inches long, 9½ inches wide, ½ an inch thick			
760	——— 6 inch gauge	1 square	1	pan-tile weighs 4 lbs. 11 ounces	
700	——— 6½ inch gauge	1 square	180	——— 10 inch gauge	1 square
660	——— 7 inch gauge	1 square	160	——— 11 inch gauge	1 square
576	——— 8 inch gauge	1 square	150	——— 12 inch gauge	1 square
1	square weighs about	14½ cwt.	1	square weighs . .	7¼ cwt.
1000	plain-tiles make . .	1 load	1000	pan-tiles weigh . .	42 cwt.

LEAD.

Sheet Lead $\frac{1}{10}$ inch thick, is 5·899 lbs. to a square foot; $\frac{1}{9}$ inch thick, 6·554 lbs; $\frac{1}{8}$ inch thick, 7·373 lbs.; $\frac{1}{7}$ inch thick, 8·427 lbs.; $\frac{1}{6}$ inch thick, 9·831 lbs. $\frac{1}{5}$ inch thick, 11·797 lbs.

Leaden Pipe. Bore ¾ inch, 10 lbs. per yard; 1 inch, 12 lbs; 1¼ inch, 16 lbs.; 1½ inch, 18 lbs.; 1¾ inch, 21 lbs.; 2 inches, 24 lbs. per yard.

SLATING TABLES.

120	slates make . .	1 hundred	Doubles .	1 ft. 6 in. by 0 ft. 6 in.	
½	ton Westmoreland .	1 square	Ladies . .	1 — 3 — by 0 — 8 in.	
1	ton nearly Welsh rags	1 square	Countesses .	1 —10 — by 0 —11 in.	
360	Tavistock slates .	1 square	Duchesses .	2 — 2 — by 1 — 3 in.	
308	Ladies, nearly 6½ cwt.	1 square	Rags & Queens	3 — 3 — by 2 — 3 in.	
200	Countesses . .	1 square	Imperial and Patent	2 — 8 — by 2 — 2 in.	
110	Duchesses . .	1 square			

Slating and Tiling are measured by the foot, yard, or square of 100 feet.

The contents of a roof is found by multiplying the length of the ridge by the girth over from the eaves to eaves; allowing for the double row of slates at the bottom, or for how much one row of slates or tiles is laid over another. It is common to add the length of the valley or hip to the contents in feet.

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PLASTERING TABLES.

1 bundle of laths, and 500 nails, cover 4½ yards.
4½ hundred of lime, 6 loads of sand, 15 bushels of hair, 2 loads of laths, and nails, cover nearly 1 rod, plaster set.
3 hundred of lime, 4 loads of sand, and 10 bushels of hair, required for 200 yards of render set.
Single fir laths are less than a ¼ of an inch thick.
Double fir laths are ⅜ of an inch thick.

PAPER-HANGING TABLES.

17 sheets . . . . . 1 piece
1 piece is equal to 12 yards being . 1 foot 8 inches wide.
1 dozen border . . . . . 12 yards.

To find the quantity of yards in a superficial quantity, divide the number of superficial feet by five.

PAVING TABLES.

1 paving-brick is 9 inches long, 4½ in. broad, and 1½ in. thick.
1 ——— weighs about 3 lbs. 13 oz.
1 ft. tile 11 in. sq. 1½ thick, 12 lbs. 4 oz.
10 in. tile 9½ in. sq. 1 thick, 8 lbs. 9 oz.
36 stock-bricks laid flat 1 yd. paving
52 ——— laid edge 1 ditto
36 paving do. laid flat 1 ditto
92 ——— laid edge 1 ditto

9 foot tiles . . 1 yd. paving
13 ten inch tiles . . 1 ditto
125 clinkers, laid flat . 1 ditto
143 ——— laid edge . 1 ditto
136 ——— laid her.bone 1 ditto
15 square feet York paving . 1 ton
17 square feet Bath paving . 1 ton
12½ square feet Granite paving 1 ton
Paid by the square yard.

DIGGING TABLE.

1 cubic yard of gravel or earth . . 1 load
17 cubic feet of clay . . . . . } 1 ton
18 cubic feet of earth . . . } 1 ton
24 cubic feet of sand . . . } 1 ton

1 load contains 16½ heaped bushels before digging, and 27 when dug.

WELL-SINKING TABLE.

A well 3 feet diam. per foot 44 galls.
——— 4 ——— ——— 73 galls.
——— 5 ——— ——— 122 galls.
——— 6 ——— ——— 176 galls.

A well 7 foot diam. per foot 239 galls.
——— 8 ——— ——— 313 galls.
——— 9 ——— ——— 396 galls.
——— 10 ——— ——— 489 galls.

RECEIPT STAMPS.

For any amount above £2 . . . . 1 penny.

Letters acknowledging receipt of Bills of Exchange, Promissory Notes, or other securities for money, also require a Receipt Stamp of 1*d.* affixed or impressed.

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FORMS.

No. 5, Wine Office Court, London.

Received the 1st of January, 18—, of Mr. John J———, the sum of Twenty Pounds, five shillings, and sixpence.

£20. 5*s*. 6*d*. Thomas S———.

Note.—When only *part* of an account is paid, write at the end of the last word *on account*.

When the money is paid by one person for another, write after the name of the person on whose account it is paid, "J. J." *by payment of Mr. T.*

If the money be received by a clerk or agent for another person, above the signature must be written, *for Mr.* or *Messrs.* ———.

If the receipt be given for wages, write after the amount, *for* ——— *wages due* ———

If a payment for rent, write *for one quarter's* (or otherwise) *rent of No.* — ———, *due* ———. Put in figures on the receipt the amount of cash paid, and the land or other taxes agreed to be paid by the landlord, which when added up is the amount of rent for which the receipt is given.

BILLS AND PROMISSORY NOTES.

Inland Bill of Exchange, Draft, or Order for the Payment to the Bearer, or to Order, at any time otherwise than on Demand, of any Sum—

Not exceeding			£5	0	0	1
Exceeding	£5	and not exceeding	£10	0	0	2
———	£10	———	£25	0	0	3
———	£25	———	£50	0	0	6
———	£50	———	£75	0	0	9
———	£75	———	£100	0	1	0
———	£100	———	£200	0	2	0
———	£200	———	£300	0	3	0
———	£300	———	£400	0	4	0
———	£400	———	£500	0	5	0
———	£500	———	£750	0	7	6
———	£753	———	£1000	0	10	0
———	£1000	———	£1500	0	15	0
———	£1500	———	£2000	1	0	0
———	£2000	———	£3000	1	10	0
———	£3000	———	£4000	2	0	0
	£4000	and upwards		2	5	0

FORMS.

No. —, Lombard Street, London,
January 2d, 18—.

£25. 7*s*. 6*d*.

Two months after date pay to me, or my order, the sum of Twenty-five pounds, seven shillings, and sixpence, for value received.

William T———.

To Mr. Richard W———,
Bookseller,
B———.

Of course you write the two or three months, or whatsoever time be agreed upon. In Scotch and Irish Bills, after the amount is stated, write the word *Sterling*.

The above Bill being sent to the party from whom the money is wanted, he

writes across your writing in the middle of the Bill, "*Accepted Richard W——*," and should Richard W—— have any particular place where the Bill will be paid when due, he writes after "Accepted Richard W——," *Payable at Messrs. or Mr. ——, No. —, —— Street.*

When the bill is thus accepted, and Mr. William T—— desires to pay it away, to make it negotiable, he writes his name on the back of it. This is called *endorsing* the bill. Sometimes when a bill is taken, the person to whom the amount is due, desires the acceptor of the bill to get him, as a further security, the bill endorsed by some friend, for every person whose name is on a bill is liable for the amount of it.

PROMISSORY NOTES, the same Duties as on Inland Bills of Exchange. N.B. If the sum *exceeds* £100, the Promissory Note may be drawn *on demand*, or in any other manner. *Licensed Bankers only are allowed to draw Promissory Notes "on demand," for Sums of* £100 *or under.*

No. —, Cheapside London.
January 3d, 18—.

£40. 2*s*. 6*d*.

I promise to pay to Messrs. T—— & G——, or order, (*here say on demand, or —— months after date,*) the sum of Forty pounds, two shillings, and sixpence, for value received.

Patrick O——

This bill being endorsed by Messrs T—— & G——, becomes negotiable.

A joint Promissory Note is thus drawn up:

No. —, Mark Lane, London.
January 4th, 18—.

£30. 0 0

Three months after date, we jointly and severally promise to pay Mr. James F——, or order, the sum of Thirty pounds, for value received.

Frederic C——,
Roderic D——.

FOREIGN BILLS OF EXCHANGE.

FOREIGN BILL OF EXCHANGE drawn in, but payable out of the United Kingdom. If drawn in *Sets of Three*, or more, for every Bill of each Set—

Where the sum shall not exceed			£25	0	0	1
Exceeding	£25	and not exceeding	£50	0	0	2
———	£50	———	£75	0	0	3
———	£75	———	£100	0	0	4
———	£100	———	£200	0	0	8
———	£200	———	£300	0	1	0
———	£300	———	£400	0	1	4
———	£400	———	£500	0	1	8
———	£500	———	£750	0	2	6
———	£750	———	£1000	0	3	4
———	£1000	———	£1500	0	5	0
———	£1500	———	£2000	0	6	8
———	£2000	———	£3000	0	10	0
———	£3000	———	£4000	0	13	4
	£4000	and upwards		0	15	0

If drawn singly, or otherwise than in a Set of Three, or more, the same Duty as on an Inland Bill of the same amount and tenor.

FOREIGN BILL OF EXCHANGE, drawn out of the United Kingdom, and pay-

able within the United Kingdom, the same Duty as on an Inland Bill of the same Amount and Tenor.

FOREIGN BILL OF EXCHANGE, drawn out of the United Kingdom, and payable out of the United Kingdom, but endorsed and negotiated within the United Kingdom, the same duty as on a Foreign Bill drawn within the United Kingdom, and payable out of the United Kingdom.

FORMS.

(No. 1.)

£150. Amsterdam. January 5th, 18—.

At usance, pay this my first Bill of Exchange, to Mr. Philip W——, or order, one hundred and fifty pounds sterling, value received, and place it to my account, as per advice.

To Mr. Solomon G——, London. Hans X——.

Thus, Mr. Philip W——, living at Amsterdam, wants to pay the amount named in this bill to, say a Mr. Roger Z——, in London, and to do this goes to Hans X——, in Amsterdam, pays to him the money, and gets the above bill, which he transmits to Mr. Roger Z——, first writing on the back of the bill "*Pay to Mr. Roger Z——, or order, value in account, Philip W——.*" Mr. Roger Z——, on receiving the bill, takes it to Mr. Solomon G——, who writes at the foot of it, "*Accepted, Solomon G——.*" When the bill becomes due, Mr. Roger Z——, goes for the money, or he can endorse it and pay it away.

(No. 2.)

4253*g*. 14. 4, Wine Office Court, London, Feb. 27, 18—,

At usance, pay this my first per exchange to Mr. Solomon G——, or order, four thousand two hundred and fifty-three Guilders, fourteen stivers current, value received, and place it to my account, with or without advice.

To Mr. Lionel R——, Amsterdam. James S——.

Before Solomon G—— sends off this bill he endorses it: *Pay to Mr. Hans X——, or order, value in account.*" But to save the trouble of the endorsation, the bill may be originally drawn in the following form:—

4253*g*. 14. 5, Wine Office Court, London, Feb. 27, 18—.

At usance, pay this my first per exchange to Mr. Hans X——, or order, four thousand two hundred and fifty-three guilders, fourteen stivers current, value received of Mr. Solomon G——, and place it to my account, with or without advice.

To Mr. Lionel R——, Amsterdam. James S——.

(No. 3.)

£217.

Twenty days after date, pay this my first bill of exchange to Mr. Henry M——, or order, two hundred and seventeen pounds sterling, value received, and place it to my account, as per advice.

To Mr. Benjamin O——, London. Isaac D——.

Accepted, Benjamin O——.

Endorsed thus:—"Pay to Mr. Solomon G——, or order, value in account, Henry M——.

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(No. 4.)

£115. 10*s*. Liverpool, June 3, 18—.

Ten days after sight, pay this, my only bill of exchange, to Mr. Moses B——, or order, one hundred and fifteen pounds, ten shillings, value in account, and place it to my account as per advice.

To Mr. Solomon G——, London. Henry M——.

7th June, Accepted, Solomon Y——.

(No. 5.)

£312. 1*s*. Bilboa, 4th October, 18—.

One month after date, pay this, my second bill of exchange, first not paid, to Don H. P——, or order, three hundred and twelve pounds, one shilling sterling, value received, and place it to account of Mr. Solomon G——, as per advice. Carlos Q——.

To Messrs. A——, B——, & Co. London.

If a bill be lost by any accident, a second one is drawn to supply its place in the form of No. 5; in like manner a third or fourth bill, if necessary, may be drawn.

ADHESIVE 1*d*. Receipt and Draft Stamps may be used for Receipts or Drafts, without regard to their special appropriation.

For giving Receipt above £2 on unstamped paper, or for omitting to cancel adhesive Receipt or Draft Stamps, £10.

For paying or negotiating Bills of Exchange drawn out of, but payable in the United Kingdom, without first affixing an adhesive stamp of the proper value, or the holder neglecting to cancel the same, by signing his name or the name of the firm, and the date when such Bill was paid or negotiated, £50.

For drawing or issuing, or transferring or negotiating Bills purporting to be drawn in a set, and not drawing the whole number of the set, £100.

For omitting to affix a 1*d*. Draft or Receipt Stamp to any Banker's Draft or Order when such document is remitted beyond the distance of fifteen miles from the Banker's establishment, or any person receiving the same in payment, or negotiating the same, £50.

Note.—If a Foreign Bill of Exchange is not duly stamped, the *receiver* of such Bill *cannot recover* the amount.

USANCE AND DAYS OF GRACE.

Usance is the usual term allowed by the law of the place where the Bill is payable.

Days of grace, are days allowed for the payment of the Bill after it is due; in England *three* days are granted.

	usance	*grace*		*usance*	*grace*
Amsterdam	one month	6 days	Gibraltar	2 months	14 days
Antwerp	one month	6 days	Leipsic	14 days	0
Altona	one month	12 days	Madrid	2 months	14 days
Bourdeaux	30 days	10 days	Malta	30 days	13 days
Bilboa	2 months	14 days	Naples	3 months	3 days
Cadiz	60 days	6 days	Oporto	30 days	6 days
Dantzic	14 days	10 days	Paris	30 days	10 days
Geneva	30 days	5 days	Rio Janeiro	30 days	6 days
Genoa	3 months	30 days	Venice	3 months	6 days

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INTEREST TABLE

For ascertaining the Number of Days from any one Day in the Year to any other Day.

Jan.	Feb.	Mar	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	32	60	91	121	152	182	213	244	274	305	335
2	33	61	92	122	153	183	214	245	275	306	336
3	34	62	93	123	154	184	215	246	276	307	337
4	35	63	94	124	155	185	216	247	277	308	338
5	36	64	95	125	156	186	217	248	278	309	339
6	37	65	96	126	157	187	218	249	279	310	340
7	38	66	97	127	158	188	219	250	280	311	341
8	39	67	98	128	159	189	220	251	281	312	342
9	40	68	99	129	160	190	221	252	282	313	343
10	41	69	100	130	161	191	222	253	283	314	344
11	42	70	101	131	162	192	223	254	284	315	345
12	43	71	102	132	163	193	224	255	285	316	346
13	44	72	103	133	164	194	225	256	286	317	347
14	45	73	104	134	165	195	226	257	287	318	348
15	46	74	105	135	166	196	227	258	288	319	349
16	47	75	106	136	167	197	228	259	289	320	350
17	48	76	107	137	168	198	229	260	290	321	351
18	49	77	108	138	169	199	230	261	291	322	352
19	50	78	109	139	170	200	231	262	292	323	353
20	51	79	110	140	171	201	232	263	293	324	354
21	52	80	111	141	172	202	233	264	294	325	355
22	53	81	112	142	173	203	234	265	295	326	356
23	54	82	113	143	174	204	235	266	296	327	357
24	55	83	114	144	175	205	236	267	297	328	358
25	56	84	115	145	176	206	237	268	298	329	359
26	57	85	116	146	177	207	238	269	299	330	360
27	58	86	117	147	178	208	239	270	300	331	361
28	59	87	118	148	179	209	240	271	301	332	362
29		88	119	149	180	210	241	272	302	333	363
30		89	120	150	181	211	242	273	303	334	364
31		90		151		212	243		304		365

To use the foregoing Interest Table.—Should you desire to know the number of days from January 1, to August 5, look to figure 5 under January, and trace the line along to under the head August, this you will find to be 217, which is the number of days. But should you desire to know how many days from April 11th to August 13th, look first to figure 11 on the first column, trace along to the column April, and you will find 101; next look to 13 on the first column, trace this line along to August, and you find 225; deduct then 101, the April figures, from 225, the August figures, and the balance, 124, is the time required. In Leap-years add one after the 28th of February.

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ANOTHER TABLE

For showing the number of Days from any one Day in the Month to the same Day in any other Month throughout the Year.

From	To	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	January .	365	31	59	90	120	151	181	212	243	273	304	334
	February .	334	365	28	59	89	120	150	181	212	242	273	303
	March .	306	337	365	31	61	92	122	153	184	214	245	275
	April . .	275	306	334	365	30	61	91	122	153	183	214	244
	May . .	245	276	304	335	365	31	61	92	123	153	184	214
	June . .	214	245	273	304	334	365	30	61	91	122	153	183
	July . .	184	215	243	274	304	335	365	31	62	92	123	153
	August .	153	184	212	243	273	304	334	365	31	61	92	122
	September	122	153	181	212	242	273	303	334	365	30	61	91
	October .	92	123	151	182	212	243	273	305	335	365	31	61
	November	61	92	120	151	181	212	242	273	304	334	365	30
	December	31	62	90	121	151	182	212	243	274	304	335	365

TABLE TO CALCULATE WAGES AND OTHER PAYMENTS.

Year	Per Month.			Per Week.			Per Day.			Year	Per Month.			Per Week.			Per Day.		
£	£	s.	d.	£	s.	d.	£	s.	d.	£	£	s.	d.	£	s.	d	£	s.	d.
1	0	1	8	0	0	4¾	0	0	0¾	15	1	5	0	0	5	9	0	0	10
2	0	3	4	0	0	9½	0	0	1¾	16	1	6	8	0	6	1¾	0	0	10½
3	0	5	0	0	1	1¾	0	0	2	17	1	8	4	0	6	6¼	0	0	11
4	0	6	8	0	1	6½	0	0	2¾	18	1	10	0	0	6	10¾	0	0	11¾
5	0	8	4	0	1	11	0	0	3¼	19	1	11	8	0	7	3½	0	1	0½
6	0	10	0	0	2	3½	0	0	4	20	1	13	4	0	7	8	0	1	1¼
7	0	11	8	0	2	8¼	0	0	4½	30	2	10	0	0	11	6	0	1	7¾
8	0	13	4	0	3	3¾	0	0	5¼	40	3	6	8	0	15	4	0	2	2¼
9	0	15	0	0	3	5½	0	0	6	50	4	3	4	0	19	2	0	2	9
10	0	16	8	0	3	10	0	0	6½	60	5	0	0	1	3	0¾	0	3	3¾
11	0	18	4	0	4	2¾	0	0	7¼	70	5	16	8	1	6	10¼	0	3	10
12	1	0	0	0	4	7¼	0	0	8	80	6	13	4	1	10	8¼	0	4	4½
13	1	1	8	0	4	11¾	0	0	8½	90	7	10	0	1	14	6¼	0	4	11½
14	1	3	4	0	5	4½	0	0	9¼	100	8	6	8	1	18	4½	0	5	5¾

If the wages be guineas instead of pounds, for each guinea add one penny to each month, or one farthing to each week.

POSTAGE REGULATIONS.

Half-ounce . . .	1*d.*	2 ounces . . .	4*d.*
1 ounce	2*d.*	3 ounces . . .	6*d.*

All letters to be prepaid, or they will be charged double.

Free.—Parliamentary proceedings—Public addresses—Petitions—Letters and packets received from or addressed to places beyond the United Kingdom—Government papers.

Parcels must be prepaid, 2*d.* per ounce, and not exceed 2 feet in length.

Books and Pamphlets 6*d.* per lb. prepaid in Stamps, to be sent open at the ends.

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TABLE TO JUDGE THE WEIGHT OF LETTERS.

(Weight allowed by Post-office to pass for 1*d*. 218¾ grains)

A sheet of common 4to letter paper	120	grains
A sheet of thick ditto	180	grains
Small thin post letter paper	65	grains
Usual quantity of wax	6	grains
20 dips of ink from a steel pen, wet	4	grains
Ditto ditto dry	1	grain
1 drop of water will add to the weight	1	grain

THE YEAR.

The length of the Julian Year, or old style, is 365 days, 6 hours. These 6 hours, in the space of 4 years, make 1 day, which is added to February, and this year is called "leap year;" the tropical year does not contain more than 365 days, 5 hours, 48 minutes, 48 seconds, being 11 minutes, 12 seconds less than the Julian year. In 400 years this difference amounts to 3 days, 2 hours, and 40 minutes; to correct which the Gregorian, or new style, ordains that one day should be added every fourth year, but that of every 400 years, the 100th, 200th, and 300th, should not be leap-years, but reckoned as common years. By this the seasons and the calendar are made nearly to agree, differing only about one day in 3600 years.

O. S. OLD STYLE. N. S. NEW STYLE.

The Gregorian, or New Style, was adopted in England in the year 1752, when 11 days were taken from the month of September, by calling the third of that month the 14th. The beginning of the year was also changed from the 25th of March to the 1st of January. So that the succeeding months of January, February, and to the 24th day of March, which would by the old style have been reckoned part of the year 1752, were accounted as the first three months of the year 1753. Hence we sometimes meet with such a date as this:—January the 1st, 1752-3, or February the 4th, 1754-5; that is, according to the old style it was 1754, but according to the new, 1755, because the year then began in January instead of March.

LEAP-YEAR.—To know when it is leap-year, divide the date of the year by four, and if there be no remainder, it is leap-year, and if there be any, it shows how many years have elapsed since the last leap-year.

SEASONS.

Spring commences March 21st;—Summer (longest day) June 21st;—Autumn, September 23d;—Winter (shortest day) December 21st.

Spring commences at the "Vernal Equinox," when the Sun enters "Aries."
Summer, at the "Summer Solstice," when he enters "Cancer."
Autumn, at the "Autumnal Equinox," when he enters "Libra."
Winter, at the "Winter Solstice," when he enters "Capricorn."

QUARTERLY TERMS.

In England.—Lady-day, 25th March;—Midsummer, 24th June;—Michaelmas, 29th September;—Christmas, 25th December.

In Scotland.—Candlemas, 2d February;—Whitsuntide, 15th May;—Lammas 1st August;—Martinmas, 11th November.

In England the "Old" Terms are each 12 days after the above respectively.

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MONTHS.

The Year is divided into 12 Calendar Months;—January, February, March, April, May, June, July, August, September, October, November, December.

Calendar Months are those by which we usually reckon time: they are unequal, varying from 30 to 31 days, excepting February, which has 28 (and in Leap Year 29) days.

In retaining the length of each month, the memory will be assisted by the following lines:—

Thirty days hath September,
April, June, and November;
February hath twenty-eight alone,
And all the rest have thirty-one,
Except in leap year, at which time
February's days are twenty-nine.

A Periodical Month is the time the Moon takes to revolve from one point of the heavens to the same point again, which is 27 days, 7 hours, and 43 minutes.

A Synodical Month extends from one New Moon to the New Moon again, and consists of 29 days, 12 hours, and 44 minutes.

A Solar Month is the time the Sun takes in passing through the different SIGNS of the ZODIAC. The Zodiac is that Circle in the Heavens, in which the Sun appears to move, and is divided into Twelve SIGNS, namely:—

Northern Constellations.		Southern Constellations.	
♈ Aries, the *Ram.*	Summer. Spring.	♎ Libra, the *Balance.*	Winter. Autumn.
♉ Taurus, the *Bull.*		♏ Scorpio, the *Scorpion.*	
♊ Gemini, the *Twins.*		♐ Sagittarius, the *Archer.*	
♋ Cancer, the *Crab*		♑ Capricornus, the *Goat.*	
♌ Leo, the *Lion.*		♒ Aquarius, the *Water-bearer*	
♍ Virgo, the *Virgin.*		♓ Pisces, the *Fishes*	

The following lines will assist the memory:—

The *Ram*, the *Bull*, the heavenly *Twins*,
And next the *Crab* the *Lion* shines,
The *Virgin* and the *Scales*;
The *Scorpion*, *Archer*, and *Sea-Goat*,
The man that holds the *Watering-pot*,
And *Fish* with glittering tails.

THE MOON'S RISING AND SETTING.

At 4 days old, the moon sets at about 10 at night.	At 16 days old, at a quarter-past 7 even.
At 5 days old, at about 11 at night.	At 17 days old, at half-past 8 even.
At 6 days old, at about 12 at night,	At 18 days old, . about 10 night.
At 7 days old, at or near 1 in morn.	At 19 days old, . about 11 night.
At 15 days, at full it rises abt. 6 even.	At 20 days old, . about 12 night.

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ROMAN NAMES OF THE MONTHS AND DAYS.

(Used by Medical men, and in Public documents,)

MONTHS:—Januarius, Februarius, Martius, Aprilis, Maius, Junius, Julius, Augustus, September, October, November, December.

DAYS:—Dies Solis, Lunæ. Martis, Mercurii, Jovis, Veneris; Saturni.
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.

FRENCH NAMES OF THE MONTHS AND DAYS.

MONTHS:—Janvier, Fevrier, Mars, Avril, Mai, Juin, Juillet, Août, Septembre, Octobre, Novembre, Decembre.

DAYS:—Dimanche, Lundi, Mardi, Mercredi, Jeudi, Vendredi, Samedi.

DAYS.

A Sideral Day is the real and invariable period of the diurnal rotation of the earth on its axis, and contains 23 hours, 56 minutes, 3·5 seconds of mean solar time.

An Apparent Solar Day is the interval of time between two successive transits of the sun's centre over the same meridian.

A Lunar Day is 24 hours, 48 minutes.

TIME.

60 thirds	make	1 second	*sec.*
60 seconds		1 minute	*min.*
60 minutes		1 hour	*hr.*
12 hours		1 working day	*w. d.*
24 hours		1 natural day	*n. d.*
7 days		1 week	*wk.*
4 weeks		1 lunar month	*l. m.*
12 calendar months		1 year	*yr.*
13 lunar months, 1 day, 6 hours		1 year	*yr.*
52 weeks		1 year	*yr.*
365 days, 5 hours, 48 minutes, 51½ sec.		1 solar year	*s. y.*
100 years		1 century	*cen.*

SEC. M. H. D. H. W. D. H.

31,557,600=525,960=8766=365 6=52 1 6=1 Julian year.

D. H. M.

31,556,937=525,948=8765=365 5 48 57″=1 Solar year.

EQUATION OF TIME.

Apparent Solar Time is shown by the Sun-dial, and therefore depends upon the motion of the Sun.

Mean Solar Time is shown by a correct Clock.

The difference between the *Mean* and *Apparent* time of day, or between the Time shown by the Clock, and by the Sun-dial, is called the *Equation of Time.*

TABLE

Showing the NEAREST FULL MINUTE how much a CLOCK should be FASTER or SLOWER than the SUN or SUN-DIAL.

		Equation in Minutes.			Equation in Minutes.			Equation in Minutes.	
January	1	4	April .	19	1	September	27	9	
	3	5		24	2		31	10	
	5	6		30	3	October .	3	11	
	7	7	May . .	14	4		6	12	
	10	8		29	3		10	13	
	12	9	June . .	5	2		14	14	
	15	10		10	1		19	15	
	18	11		15	0		27	16	
	21	12		20	1	November	8	16	
	25	13		24	2		15	15	
	31	14		29	3		20	14	
February	6	15	July . .	4	4		24	13	
	21	14		11	5		27	12	
	27	13		26	6		30	11	
March	4	12	August .	10	5	December	2	10	
	8	11		15	4		5	9	
	12	10		20	3		7	8	
	15	9		24	2		9	7	
	19	8		28	1		11	6	
	22	7		31	0		13	5	
	25	6	September	3	1		15	4	
	28	5		6	2		18	3	
April	1	4		9	3		20	2	
	4	3		12	4		22	1	
	7	2		15	5		24	0	
	11	1		18	6		26	1	
	15	0		21	7		28	2	
				24	8		30	3	

Clock faster than the Sun.

Clock slower.

Clock faster.

Clock slower.

Clock slower.

Clock

To Convert Astronomical Mean Time (as used in the 'Nautical Almanack,' publish by Government for the use of Seamen) into Mean Civil Time.

If the given hours exceed 12, add one to the number of days given for the d of the month, and the excess of the hours above 12, called A.M., will be t Civil Mean Time.

If the hours do not exceed 12, reserve the number expressing the days for t day of the month, and call the given hours P. M.

Thus, March 1st day, 21 hours, 20 minutes, Astronomical Time, mea March 2d, at 9 hours, 20 minutes, A. M. Civil Time; or 21 hours, and 20 minut after the noon of March.

Forenoon; N. Noon; P. M. Afternoon.

GEOGRAPHICAL AND ASTRONOMICAL TABLES.

60 seconds	make 1 minute	′	30 degrees	1 sign	
60 minutes	1 degree	°	90 degrees	1 quadrant	

4 quadrants, 12 signs, or 360 degrees, . . 1 great circle.

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ROMAN NAMES OF THE MONTHS AND DAYS.

(Used by Medical men, and in Public documents,)

MONTHS:—Januarius, Februarius, Martius, Aprilis, Maius, Junius, Julius, Augustus, September, October, November, December.

DAYS:—Dies Solis, Lunæ. Martis, Mercurii, Jovis, Veneris; Saturni.
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.

FRENCH NAMES OF THE MONTHS AND DAYS.

MONTHS:—Janvier, Fevrier, Mars, Avril, Mai, Juin, Juillet, Août, Septembre, Octobre, Novembre, Decembre.

DAYS:—Dimanche, Lundi, Mardi, Mercredi, Jeudi, Vendredi, Samedi.

DAYS.

A Sideral Day is the real and invariable period of the diurnal rotation of the earth on its axis, and contains 23 hours, 56 minutes, 3·5 seconds of mean solar time.

An Apparent Solar Day is the interval of time between two successive transits of the sun's centre over the same meridian.

A Lunar Day is 24 hours, 48 minutes.

TIME.

60 thirds	make	1 second	*sec.*
60 seconds		1 minute	*min.*
60 minutes		1 hour	*hr.*
12 hours		1 working day	*w. d.*
24 hours		1 natural day	*n. d.*
7 days		1 week	*wk.*
4 weeks		1 lunar month	*l. m.*
12 calendar months		1 year	*yr.*
13 lunar months, 1 day, 6 hours		1 year	*yr.*
52 weeks		1 year	*yr.*
365 days, 5 hours, 48 minutes, 51½ sec.		1 solar year	*s. y.*
100 years		1 century	*cen.*

SEC.	M.	H.	D. H.	W. D. H.	
31,557,600	= 525,960	= 8766	= 365 6	= 52 1 6	= 1 Julian year.

D. H. M.	
31,556,937 = 525,948 = 8765 = 365 5 48 57″	= 1 Solar year.

EQUATION OF TIME.

Apparent Solar Time is shown by the Sun-dial, and therefore depends upon the motion of the Sun.

Mean Solar Time is shown by a correct Clock.

The difference between the *Mean* and *Apparent* time of day, or between the Time shown by the Clock, and by the Sun-dial, is called the *Equation of Time.*

TABLE

Showing the NEAREST FULL MINUTE how much a CLOCK should be FASTER or SLOWER than the SUN or SUN-DIAL.

		Equation in Minutes.			Equation in Minutes.			Equation in Minutes.
January	1	4	April .	19	1	September	27	9
	3	5		24	2		31	10
	5	6		30	3	October .	3	11
	7	7	May . .	14	4		6	12
	10	8		29	3		10	13
	12	9	June . .	5	2		14	14
	15	10		10	1		19	15
	18	11		15	0		27	16
	21	12		20	1	November	8	16
	25	13		24	2		15	15
	31	14		29	3		20	14
February	6	15	July . .	4	4		24	13
	21	14		11	5		27	12
	27	13		26	6		30	11
March	4	12	August .	10	5	December	2	10
	8	11		15	4		5	9
	12	10		20	3		7	8
	15	9		24	2		9	7
	19	8		28	1		11	6
	22	7		31	0		13	5
	25	6	September	3	1		15	4
	28	5		6	2		18	3
April	1	4		9	3		20	2
	4	3		12	4		22	1
	7	2		15	5		24	0
	11	1		18	6		26	1
	15	0		21	7		28	2
				24	8		30	3

Clock faster than the Sun.

Clock slower.

Clock faster.

Clock slower.

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GEOGRAPHICAL AND ASTRONOMICAL TABLES.

60 seconds	make 1 minute . ′	30 degrees . .	1 sign . .
60 minutes . .	1 degree . °	90 degrees . .	1 quadrant .

4 quadrants, 12 signs, or 360 degrees, . . 1 great circle.

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Division of a Degree, or mean apparent motion of the Sun.

360 degrees	equal	24 hours	1 degree	equals	4 minutes
15 degrees		1 hour	¼ degree		1 minute

St. Paul's is 22 seconds of time West of Greenwich; Dublin Observatory, 24 *m.* 26 *s.* West; Edinburgh, 12 *m.* 41 *s.* North; Paris Observatory, 9 *m.* 21 *s.* East. The most Westerly point of Ireland is 41 m. of time West. Between Greenwich and Paris the difference of Longitude is 20°, 20′, 17·73″, or 9 minutes, 21·5 seconds.

SPACE.

An octant	48 degrees	A right angle	90 minutes
A sextant	60 degrees	Two right angles	180 minutes
A quadrant	90 degrees	The circumference of a circle is nearly	
A semi-circle	180 degrees	$3\frac{1}{7}$ times its diameter.	

EQUATOR, LATITUDE AND LONGITUDE.

The Equator is an imaginary belt round the middle of the earth, equally distant from both poles, and by it we distinguish the Northern and Southern Hemispheres. *Latitude* is the distance either North or South from the Equator. *Longitude* is the distance of a place from the meridian of Greenwich, either East or West.

OBSERVATIONS AT SEA.

If it appear by the almanack that on the 5th of June, the Sun at London is 60 degrees high at 12 o'clock and a sailor by his sextant finds it at that time to be 70 degrees high, he concludes that he is 9 degrees, or 625 miles nearer to the vertical place of the sun, or that distance South of London. If it appear by the almanack, that at 10 o'clock on the evening of June the 5th, the moon comes to a conjunction with the planet Mars at London, and a sailor finds that the conjunction takes place at 9 o'clock, he concludes that he is one hour, or 15 degrees, or 1045 miles West of London.

A Knot is the 120th part of a geographical mile, nearly 50 feet 8 inches. A geographical mile is 1 sixtieth of a degree, 6079 feet; 6 geographical miles are nearly equal to 7 ordinary ones

PLANETS, ETC.

♁ The Earth.	⚵ Juno.	☍ Opposition.
☉ The Sun.	⚴ Pallas.	☊ Ascending Node.
☽ The Moon.	⚳ Ceres.	☋ Descending Node
☽ First Quarter.	♃ Jupiter.	° Degrees.
☽ Last Quarter.	♄ Saturn.	′ Minutes of Arc.
☽ Full Moon.	♅ Uranus.	″ Seconds of Arc.
☿ Mercury.	☌ Conjunction.	H. Hours.
♀ Venus.	□ Quadrature.	D. Days.
♂ Mars.	△ Trine.	M. Minutes of Time.
⚶ Vesta.	✶ Sextile.	S. Seconds of Time.

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ECLIPSES.

Not more than seven Eclipses can occur in a year, and two at the least must happen. If seven, five will be of the Sun, and two of the Moon. If only two, both must be of the Sun; for there are two Solar Eclipses, at least, every year.

There are never more than three Lunar Eclipses in a year, sometimes none.

The number of Solar to Lunar Eclipses is in the ratio of three to two, yet more Lunar than Solar Eclipses are visible at any particular place; for a Lunar Eclipse is visible to an entire hemisphere, while a Solar Eclipse is only visible at a particular part.

THE MARINERS' COMPASS.

The magnetic power of the Loadstone was known long before the Christian era to the Chinese, though its use was not applied to navigation.

A thin piece of steel, or needle, as it is called, when magnetized, if nicely balanced' always points to the north. One of these needles balanced and placed in a frame covered with glass, having a card or paper on which are marked 32 points, that is to say the whole of the horizon divided into 32 parts, constitutes the *Mariner's Compass*. Every point is the 32d part of 360, and is equal to 11¼ degrees; a half point is equal to 5 degrees, 37 minutes, 30 seconds; and a quarter point is equal to 2 degrees, 48 minutes, 45 seconds.

North, East, South, and West, are termed the four *Cardinal Points*.

When the Needle remains at rest, that place is called the *Magnetic Meridian*. At Greenwich the Magnetic Meridian makes with the Astronomical, an angle of 25½ degrees West. This variation from the direct North has been observed to be from 23 degrees, 4 minutes, 48 seconds, to 23 degrees, 24 minutes, 1 seconds. It increases Westward from 7 A. M. till about 11 P. M. about 7¼ minutes of arc; it then returns Eastward till about 11 P. M. about 8½ minutes of arc. This is called the *Variation of the Compass*, or *Magnetic declination* Wes

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or East. The diurnal range in the summer of 1846 was 15 minutes, 14 seconds; in the winter 11 minutes, 53 seconds; and for the year 13 minutes, 34 seconds; it was smallest in January, and largest in September. Going from London, and proceeding West on the Atlantic ocean, the Magnet is found to attain its greatest tendency towards the West; proceeding onward it returns towards the North, and at the East of the United States of America it becomes due North, and further Westward it becomes East. Going from London to the East, the Western declination lessens, and at the Eastern part of Russia again it is due North; proceeding further East, the variation becomes gradually more Easterly.

If a piece of iron be balanced and afterwards magnetised, and placed on its former balancing point, it will be found to have lost its previous equilibrium, and the North point will incline towards the earth about 70 degrees. This is called the *Dip*. On conveying this needle towards the North, the dip increases until it becomes vertical. At the Equator, in the magnetic line, it is also vertical. Towards the South pole it dips to the South until it becomes vertical. The mean magnetic dip for 1846, at 21 hours at Greenwich, was 68 degrees, 58 minutes, ·6, and at 3 h. 68 degrees, 57 minutes, ·6. Captain Ross found the *Magnetic Pole* was nearly 70 degrees North latitude, and 97 degrees West longitude; for here the horizontal needle remained in any situation given it, and the dipping needle became vertical, There are supposed to be two North and two South magnetic poles.

THE WORLD.

Square miles of land, about	57,783,660	Diameter at the Equator	7,924⅘ miles
——— habitable .	37,673,000	——— Poles .	7,898⅓ miles
——— water about	138,216,340	Circumf. at the Equator	24,897 miles
Supposed population	1,035,200,000		

POPULATION.

If the world were populated equally with Great Britain and Ireland, and the productive portions of it were similarly cultivated, eight times the number of the presumed human family could find food.

Estimated Population of the World in round numbers.

	Square Miles.	*Population.*	
Europe contains .	3,800,000 .	255,696,296	population to square mile 69
Asia . . .	17,500,000 .	550,000,000	——— 31
Africa . . .	11,000,000 .	150,000,000	——— 14
America . . .	24,500,000 .	48,000,000	——— 2
Australia . . .	4,000,000 .	2,000,000	——— 1
Small Islands, &c. .	unknown, about	29,487,000	

The mortality in the world is calculated at 1 in 40;—thus then above 2,300 die hourly; upwards of 55,000 daily: and more than 20,125,000 die annually.

RELIGIONS.—(*Hassel.*)

Christians . . .	252,600,000	Brahmins . . .	111,353,000
Jews	3,936,000	Buddhists . . .	313,977,000
Mahometans . . .	120,105,000	Other denominations .	134,490,000

Statists vary much in their computations, but the above is generally admitted to be a near approach to the truth.

COMPLEXION OF THE HUMAN RACE.—(*Bell.*)

Whites	440,000,000	Mulattos	235,000,000
Copper colour . . .	15,000,000	Blacks	120,000,000

There are six or seven variations in the complexion of the human race; but they imperceptibly approach, till they are lost in each other. The white and brown complexions include the Europeans, Western Asiatics, Chinese, Tartars, Northern Hindoos and Africans, the Anglo-Americans, Spaniards, and descendants of Europeans in all parts of the Torrid or Middle Zone. Many of the higher classes in tropical regions, who are not much exposed to the sun, are of a brown olive complexion, particularly the females. The greater part of the Mulattos, or yellow coloured people, are in China and Eastern Asia. The copper or bronze coloured Indians are nearly all natives of America. The Burmans, Malays, and Australians are mostly dark brown or tawny. The Central and Southern Africans and the Hindoos are jet black.

SIZE OF THE HUMAN RACE.

The Patagonians are said to be the tallest of the human race, being mostly 6½ feet in height. The Laplanders, Icelanders, and other inhabitants of the North Frigid Zone are the shortest, being rarely more than five feet high. The handsomest people are the Circassians, Hungarians, and Poles.

LANGUAGE AND ALPHABETS.

It is said that the various nations of the earth speak about 88 different dialects; but these can be traced to a much smaller number of Languages, which again are all referred by philosophers to three classes:—1, the Indo-Germanic, embracing the ancient classical languages as well as those of modern Europe;—2, the Sanscrit, embracing all the varieties of India;—3, the Semitic including Hebrew and Arabic.

It is said that there are 937 Asiatic languages; 587 European; 276 African and 1264 American. No less than 3064 vocabularies of languages are enumerated by M. Aldelung.

Of languages, the Hebrew is the oldest and most poetic; the Latin the most copious and sonorous; the Greek the most expressive and sublime. These three are generally called the dead languages.

Modern Languages.—The Chinese is the most difficult; the Italian the softest; the Spanish the most pompous; the French the most polite and passionate; and the English the most copious and energetic.

The English contains 26 letters; French, 25; Hebrew, Chaldee, and Syriac, 22; Greek, 24; Latin, 25; Spanish, 27; Italian, 20; Arabic, 28; Persian, 31; Turkish, 33; Georgian, 36; Coptic, 32; Muscovite, 43; Sclavonic, 27; Dutch, 26; Ethiopic, 222; Tartarian, 222; Bengal India, 21; Brachman, 19; Sanscrit, 2

The French language has about 32,000 words; the Spanish, 30,000; and the Italian, 35,000.

The English Language consists of above 40,000 words, and is continually increasing its stock. It is said to contain about 20,000 Saxon words, with 9,00 of Latin or Norman origin, and about 1,500 of Greek derivation; together wi German, Welsh, Spanish, Danish, Arabic, and several from the Teutoni Gothic, Hebrew, Swedish, Portuguese, Flemish, Runic, Egyptian, Persia Cimbric, and Chinese.

In English, the scientific words are mostly from the Greek; terms of art fro the French, Latin, and Italian; and names of places, and rivers, and most the particles from the Saxon.

The number of articles is 2; the nouns are said to be 20,000; the adjectives 9,000; pronouns 40; regular verbs 8,000; irregular verbs 170; adverbs 2,600; the prepositions are 69; the conjunctions 19; and the interjections 68.

Antiquity of English Words.—Dr. Johnson says, "we have many words in common with the Germans, and it is doubtful whether the old Teutons borrowed them from the Latins, or the Latins from the Teutons, or both had them from some common original. I make no doubt that the Teutonic is more ancient than the Latin; and it is no less certain that the Latin, which borrowed a great number of words, not only from the Greek, especially the Æolic, but from other neighbouring languages, as the Oscan and others, which have long become obsolete, received not a few from the Teutonic. It is certain that the English, German, and other Teutonic languages, retained some derived from the Greek, which the Latin has not. Since they received these immediately from the Greeks, without the intervention of the Latin language, why may not other words be derived from the same fountain, though they be likewise found among the Latins?"

THE OCEAN.

Sea Water contains 220 parts of common salt; 33 parts of sulphate of soda; 42 parts of muriate of magnesia; and 8 parts of muriate of lime.

The Ocean, inland Seas, &c. cover 147,800,000 square miles; a little less than three-fourths of the world is covered with water, and rather more than one-fourth by land. An average depth of 2 miles would give nearly 300,000,000 square miles of water. At 5,000 fathoms depth, in some parts, no bottom has been found. Light penetrates it to the depth of 120 fathoms. A wave moves at the rate of about 2¼ miles an hour.

STEAM.

1 cubic inch of water, boiled, forms a little more than 1 cubic foot of steam.
1 cubic foot of steam expands to 72,000 times its size when water.
19 cubic inches of water form 20 feet of steam.
20 cubic feet of steam equal the power of one horse—two tons.
20 ———————— require a quarter of a lb. of coal to make it.
20 ———————— made of a quarter of a lb. of coal, give from 30 to 40 strokes per minute.
1 bushel of coals makes steam to raise 46 million of lbs, 1 foot high.
1 cwt. of coals makes steam to raise 30 million of lbs. 24 feet high.
1 chaldron of coals makes steam to work 100 horse power 4 hours.
3½ gallons of water per minute condensed=1 horse power.
0 ———————— hour supply a boiler with 1 horse power.
1 square foot of steam piping warms 200 cubic feet of space.
1 gallon of water made into steam will heat 6 gallons of water from 50 to 212 degrees Fahrenheit.
0 cubic inches of steam, at a pressure of 30 inches, weigh 14·68 grains.

ENGINES.

Low-pressure engines are those which have cold water to cool the steam that ts upon the piston and gives motion to the machinery.
High-pressure engines are without this cooling water, and allow the steam to cape at one side of the piston; they occupy less space, and are cheaper.
A Locomotive engine can draw 200 tons twelve miles in one hour upon a level.

A Locomotive engine can draw a train and 700 persons 22 miles in one hour with a rise of 3 inches in 100; but at a rise of one foot in 12 it cannot move forward. It generally has eleven times its own weight to draw; and consists of 5,416 separate pieces.

To calculate the Pressure which a Steam-engine Boiler will bear without bursting.—Multiply the tenacity of the metal (which if it were in one piece would be about 60,000 lbs. or $\frac{6}{7}$ that of good wrought iron, but as it is rivetted together, call it only 30,000 lbs.) by the thickness of the boiler, and divide it by half the diameter in inches. The quotient will be the number of pounds it will bear on every square inch without bursting.—*Mechanics' Magazine.*

N. B.—No material should be loaded with more than one-third of the greatest strain it can support.

RAILWAYS.

A rise of 8½ feet in one mile, adds one half to the resistance.
17 feet rise in one mile doubles the resistance, and 34 feet in a mile trebles it.
Atmospheric resistance at 32 miles per hour is 353 lbs.
One horse can draw 3½ tons on a railway at the rate of 6 miles an hour, or 1(
tons at 2 miles an hour.
An Engine can go 80 miles in an hour.
The Rails wear the one hundred and twentieth part of an inch deep yearly.
Railway traction is 7½ lbs. per ton.
A first-class 4 wheeled carriage, carrying 18 passengers, weighs 4 tons; and i
laden with dead weight 12 tons; and carrying 100 passengers weighs 7 tons.
Friction is allowed for at from ¼ to ⅓.

STRENGTH AND SIZE.

A secure model wagon, says Partington, to a scale of three inches to the foot if made to full size, 4 times the scale, the *strength* of the timbers is increased 16 times, and the *weight* of the machine 64 times; thus the parts that bear the weight have 4 times the load to carry in proportion to the increase of strength. The increase of strength and size if carried forward, would make the wagon have sufficient load in its own weight. This principle it is that limits the strength of animals, man, and his works. A moderate sized man, animal, or wagon, is stronger in proportion to weight, than a large one.

TENSILE AND TRANSVERSE STRENGTH OF MATERIALS

As stated by E. Hodgkinson, Esq.—Crushing strength 1000.

Timber	tensile	1,900	tranverse 85·1
Cast Iron		158	19·1
Glass (Plate and Crown)		123	10·0
Stone and Marble		100	9·8

The ratio in both cases and in all materials is the same.

RESISTANCE OF TIMBER—WEIGHT ON A SQUARE INCH

Pine	5,375	Plum	5,364	Mahogany	5,19
Deal	5,748	Beech	9,363	Elm	0,38
Poplar	4,307	Ash	9,363	Box	9,30
Larch	5,368	Oak	5,364	Kingwood	12,64

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POWER OF A HORSE.

1 horse can raise 150 lbs. 220 feet high in a minute, 8 hours a day.
1 horse power is reckoned at from 30,000 to 36,000 lbs. raised 1 foot high per min.
1 horse's force drawing horizontally is estimated at 770 lbs.
1 horse can draw on a level 4,480 lbs.—2 tons—equal to 7 men.
In 1847 there were 1,300,000 horses in Great Britain; each consumes what would feed 8 men.

POWER OF AN ORDINARY MAN.

1 man can raise 10 lbs. 10 feet in a second, 10 hours a day.
1 man can raise 100 lbs. 1 foot in a second.
1 man can draw on a level 640 lbs.
1 man can press with his hands equal to 110 lbs.
1 man's force drawing horizontally 110 lbs.
1 man can lift with both hands 236 lbs.
1 man can support on his shoulders 330 lbs.
5 men working 10 hours a day equal to 1 horse working 8 hours.
4 men carrying 100 lbs. each will ascend a hill quicker than 1 horse carrying 300.
1 man's strength is greatest in raising a weight when his weight is to that of his load as 4 is to 3.

FORCE REQUISITE TO MOVE A BODY.

A stone along a rough chisselled floor	requires	2 thirds of its weight.
———	on rollers	1 thirty second.
——— wooden floor	. . . .	3 fifths.
———	on rollers . .	1 fortieth.

DISTANCE IN FEET GONE IN A SECOND BY

Man walking	4	The Moon	3,300
Horse harnessed . . .	12	The Earth	99,733
Ship	14	An eagle	117
Steam vessel at sea . . .	18	A hawk	50
Reindeer on ice, with sledge .	26	A crow	36
Race horse	43		
Hare	88		
Locomotive engine . . .	117		
24 lb. cannon ball . . .	1300		

Electric Telegraph 1,520,640,000 or more than 11 times round the world.

A swift bird would be three weeks in flying round the world.

LIGHT.

Light is of three distinct colours:—red, conveying heat; yellow, conveying light; and blue, conveying chemical action; the three combined form a colourless mixture.

Light travels about 192,000 miles in a second.

Light could pass round the earth in the 18th of a second.

From the Moon to the Earth	1¼	sec.	
From the Sun . . „ .	8	min.	
From Jupiter . . .	52	min.	
From Uranus . . .	2	hours	
Fixed Star, First mag.	3 to 12	years	
——— Second mag. .	20	years	
Fixed Star, Third mag. .	30	years	
——— Fourth mag. .	45	years	
——— Fifth mag. .	66	years	
——— Sixth mag. .	96	years	
——— Seventh mag.	180	years	
——— Twelfth mag.	4,000	years	

The late Sir William Herschel stated, in writing upon the Power of Telescopes to penetrate into Space, that the light from the brilliant Nebulæ seen by him at that time, by means of his powerful telescope, cannot have been less than one million and nine hundred thousand years in its progress.

SOUND.

Captain Parry says in latitude 74° 30′ North, a person could be heard talking at a mile distant.

Sound passes through	air . . .	1,130 feet in a second.
——— along	water . .	4,900 feet in a second.
——— along	cast iron . .	11,090 feet in a second,
——— along	steel . .	17,000 feet in a second.
——— along	glass . .	18,000 feet in a second.
——— along	wood	4636 to 17,000 feet in a second.

Cold air conducts sound better than warm. A whisper travels as quickly as the report of a cannon.

WIND,

Captain Beaufort's Scale.

Light Air	hourly velocity . 0·1 mile	Moderate Gale,	hourly velocity 30 miles
Light Breeze . . .	. 5 miles	Fresh Gale . . .	. 45 miles
Gentle Breeze . .	. 10 miles	Strong Gale . . .	. 50 miles
Moderate Breeze . .	. 15 miles	Heavy Gale . . .	. 70 miles
Fresh Breeze . . .	. 20 miles	Storm . . . ,	. 80 miles
Strong Breeze . .	. 25 miles	Hurricane . . .	. 100 miles

TABLE OF THE FORCE OF WIND.

The height of the column of water sustained in the wind gauge being given, the force of the wind upon a square foot can be easily ascertained by the following table:—

Height of inches of water in gauge.	Force of wind on square foot.		Height of inches of water in gauge.	Force of wind on square foot.
12 . . .	62 500		4 . . .	20·833 storm.
11 . . .	57·292		3 . . .	15·625 storm.
10 . . .	52·083		2 . . .	10·417 v. h. wind.
9 . . .	46·875		1 . . .	5·208 highwind
8 . . .	41·667	hurricane.	0·5 . . .	2.604 bsk. gale.
7 . . .	36·548		0·1 . . .	0·521 fresh br.
6 . . .	31·750		0·05 . . .	0·260 pleas. wd.
5 . . .	26·041	storm.	0.025 . . .	0·030 gentle w.

PREVAILING WINDS AT LONDON.

Winds.	*Days.*	*Winds.*	*Days.*
South-West	112	South-East	82
North-East	58	East	26
North-West	50	South	18
West	53	North	16

The South-West wind blows more upon an average in each month of the year than any other, particularly in July and August; the North-East prevails during January, March, April, May, and June, and is most unfrequent in February, July, September, and December; the North-West occurs more frequently from November to March, and less so in September and October than in any other months. Average of seven years, by Dr. Meek, near Glasgow.

Winds.	*Days*	*Winds.*	*Days.*
South-West	174	North-East	104
North-West	40	South-East	47

In IRELAND the prevailing winds are the West and South-West.—If the wind veers about much, rain will ensue; if in changing it follows the course of the sun, it brings fair weather; the contrary foul. The whistling or howling of the wind is a sure sign of rain.

THE ATMOSPHERE.

Oxygen, about 80 per cent.
Nitrogen, about 20 per cent
Carbonic acid gas, about 1·1500 part.
1 square foot weighs 1·2 ounces.

1 inch of air 1 mile high weighs 43 2 oz.
1 inch of air at the earth's surface weighs 15 lbs. which is a height of 5·6 miles.

The atmosphere diminishes in weight as it is distant from the earth. It is computed to extend 50 miles above the surface of the globe.

HUMIDITY.

Upon an average 35 inches of rain fall annually in England.
——————— 31 inches of evaporation arise from the surface of the earth in England.
——————— 35 inches of evaporation arise from the surface of the whole earth.
1 cubic foot of fresh water weighs about 70 lbs.
1 cubic foot of sea water weighs about 72 lbs.
1 cubic foot of air contains of water 3·789 grains.

MAN.

The average weight of an adult man 140 lbs. 6 ounces.
——————— allowed in calculating the strength of bridges, 100 lbs.
——————— of a skeleton about 14 lbs.
Number of bones, 240.
The skeleton measures 1 inch less than the height of the living man.
The average weight of the brain of a man is 3½ lbs; of a woman 2 lbs. 11 oz.
The brain of a man exceeds twice that of any other animal
The average weight of an Englishman is 150 lbs; of a Frenchman 136 lbs; of a Belgian 140 lbs.
The average height of an Englishman is 5 feet 9 inches; of a Frenchman 5 feet 4 inches; of a Belgian 5 feet 6¾ inches.
The average number of teeth is 32.
A man breathes about 20 times in a minute, or 1200 times in an hour.
——————— 18 pints of air in a minute, 1067 in an hour, or upwards of 7 hogsheads in a day.
A man gives off 4·08 per cent. carbonic gas of the air he respires;—respires 10·666 cubic feet of carbonic acid gas in 24 hours;—consumes 10·666 cubic feet of oxygen in 24 hours=125 cubic inches of common air.
A man annually contributes to vegetation 124 lbs. of carbon.
The average of the pulse in infancy is 120 per minute; in manhood 80; at 60 years, 60. The pulse of females is more frequent than that of males.
The weight of the circulating blood is about 28 lbs.
The heart beats 75 times in a minute;—sends nearly 10 lbs. of blood through the veins and arteries each beat;—makes four beats while we breathe once.
540 lbs. or 1 hogshead, 1¼ pints of blood pass through the heart in 1 hour.

12,000 lbs. or 24 hogsheads, 4 gallons, or 10,782½ pints pass through the heart in 24 hours.
1000 ounces of blood pass through the kidneys in an hour.
174,000,000 holes or cells are in the lungs, which would cover a surface 30 times greater than the human body.
2500 square inches may be estimated as the surface of an ordinary sized man's body.
Each pore is about a quarter of an inch in length.
3528 pores have been counted on 1 square inch of the palm of the hand.
There are about 7,000,000 pores in an ordinary sized man.
There are 1,750,000 inches of pores, that is 145,833 feet, or 48,600 yards, nearly 28 miles of this drainage in a human body.
33 ounces, in 24 hours, of insensible perspiration pass from the human body.
98 degrees is the average temperature of the human body.
The pressure of the atmosphere being 14 lbs. to the square inch, the human body sustains a weight of 29,232 lbs. about 13 tons.
The average duration of life in towns is 38 years, in the country 55 years.
150 children out of 1000 die during the first year of their birth; 50 more during the 2d year; 58 more during the next three years; and 19 more during the next two years; thus 277 die in 7 years from their birth.

SUPPORT FROM ARTICLES OF DIET, (*by Playfair and Boussingault.*)

Weight.	Articles of Diet.	Yield of Solid Matter.	Yield of Water.	Flesh forming Principle	Heat forming principle (with innutricious matter.)	Ashes for the Bones.
100 lbs.	Turnips . . .	11 lbs.	89 lbs.	1 lb.	9 lbs.	1 lb.
———	Red Beet Root .	11	89	1½	8½	1
———	Carrots . . .	13	87	2	10	1
———	Blood	20	80	20	0	0
———	Flesh	25	75	25	0	0
———	Potatoes . . .	28	72	2	25	1
———	Oats	82	18	11	68	3
———	Pease	84	16	29	51½	3½
———	Lentils . . .	84	16	33	48	3
———	Barleymeal . .	84½	15½	14	68½	2
———	Wheat . . .	85½	14½	21	62	2½
———	Beans	86	14	31	51½	3½
———	Oatmeal . . .	91	9	12	77	2

THE CALENDAR.

THE DOMINICAL LETTER.—The seven first days of the year are designated by the first seven letters of the alphabet, and the one which falls on Sunday is the Dominical or Sunday letter; thus if the year began on Thursday, D would be the letter required. To find the Dominical letter for the present century, add to the current year one fourth part, and divide by 7; if there be no remainder, A is the Dominical letter; if 1 remain, G; if 2, F; if 3, E; if 4, D; if 5, C; and if 6, B. But in all Bissextile or Leap Years found in this manner, the letter commences from the 29th of February.

THE GOLDEN NUMBER.—In every 19 years the new and full Moons happen at nearly the same time of the year; this "Cycle of the Moon" was completed the year before the birth of Christ. To find the Golden Number, or Prime, add one year to the year of our Lord, and then divide by 19, the remainder, if any, is the Golden Number; but if there be no remainder, then

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19 will be the Golden Number. Thus 1849, add 1, which make 1850, divide by 19, leave the remainder 7, the Golden number.

THE SOLAR CYCLE consists of 28 years, that being the period before the same Sundays in the year happen on the same days of the month, Nine years of the Cycle had passed before the birth of Christ. To find the Cycle of the Sun, add 9 to the given year, and divide by 28; the quotient will be the number of Cycles since the Christian era, and the remainder the progressing Cycle: thus to 1849 add 9=1858, which divided by 28, the quotient is 66, and the solar year is the remainder, 10.

THE EPACT is the moon's age for the first day in the year, and it is the difference between the beginning of the solar and lunar year. To find the Epact for any year, divide the year by 19, and multiply the remainder by 11, the product, if it does not exceed 30 will be the Epact; if this product exceed 30, divide it by 30, and the remainder will be the Epact. Thus divide 1849 by 19, and 6 remains, which multiply by 11 and divide by 30, the remainder over the number of thirties will be found to be 6, the Epact of the year.

The Number or Epact for each month is usually.

Months.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
	0	2	0	2	2	4	4	6	7	8	9	10
Leap Year.	0	2	1	3	3	5	5	7	8	9	10	11

The Epact for the Year, + the Epact for Month, + The Day of the Month will be the Moon's age, if the sum does not exceed 30, if it does divide by 30, and the remainder will be the Moon's age.

THE ROMAN INDICTION was a Cycle of 15 years; it had no connection with the motions of the sun or moon. Three of the Cycle had elapsed at the birth of Christ. Add 3 to the year, divide by 15, and the remainder will be the Roman Indiction: thus to 1849 add 3=1852, divide by 15, and the remainder, 7, will be the desired number.

Septuagesima Sunday . 9 weeks before Easter.
Sexagesima Sunday . . 8 weeks before Easter.
Quinquagesima Sunday . 7 weeks before Easter.
Quadragesima Sunday . 6 weeks before Easter.

Epiphany commences on the 12th day after Christmas.
Shrove Sunday is the 7th Sunday before Easter Sunday.
Shrove Tuesday is the Tuesday following Shrove Sunday.
Ash Wednesday, the day after Shrove Tuesday
Lent is from Ash Wednesday to the feast of Easter, 40 days.
Midlent, is the 4th Sunday from Shrove Tuesday.
Carle, or Carling Sunday, is the 5th Sunday from Shrove Tuesday.
Palm Sunday, is the 6th Sunday from Shrove Tuesday.
Passion Week, the week after Palm Sunday.
Good Friday, the Friday in Passion week.
Easter Day, or commemoration of Christ's Resurrection, is the 7th Sunday after Shrove Tuesday, or the 1st Sunday after the full Moon which happens on or after the 21st of March.
Low Sunday, is the 1st after Easter.
Rogation Sunday, is the 5th after Easter.
Ascension Day, or Holy Thursday, the 40th day from Easter.
Pentecost, or Whitsuntide, is the 49th day, or 7th Sunday after Easter.
Ember Weeks, are those wherein the Ember days fall; these are the Wednesday, Friday, and Saturday after the 1st Sunday in Lent, after Pentecost, after Holy Rood Day in September, and after St. Lucias's Day in December.
Trinity Sunday, is the next after Pentecost, or Whit-Sunday.
Advent Sunday, is the nearest one to the feast of St. Andrew.
Christmas Day, is the 25th of December.

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COMMERCIAL MEASURES

According to Baron de Prony.

	Inches.
Amsterdam, ell (M)	27·17
Anvers, silk ell	27·33
——— woollen ell	26·94
Berlin, ell old measure	26·28
——— ell new measure	26·25
Berne, ell	21·35
Bologne, fathom	25·40
Brunswick, ell	22·46
Bremen, ell	22·77
Cagliari, raso	21·61
Carrara, canne for wood	24·59
——— fathom	24·39
——— palme for marble	9·81
Cassel, ell	22·41
Cologne, ell	22·64
Constantinople, large measure	26 34
——— small measure	25·50
Copenhagen, ell	24·71
Cracow, ell	24·29
Cremona, fathom (according to the tavole di ragguaglio)	23·42
Dresden, ell	22·30
Ferrara, silk fathom	24·97
——— fathom for cotton & linen	26·49
Florence, fathom	23·39
Francfort-on Main, ell	21·54
Genoa, palme	9·81
Geneva, ell	45·02
Hamburg, ell	22·55
——— Brabant ell	27·21
Hanover, ell	22·99
Harlem, common ell	26·90
——— linen ell	29·23
Leyden, ell	26·89
Leipsic, ell	22·25
Lisbon, vara	43·02
Lubeck, ell	22·71
Lucca, fathom	23·42
Madrid, ell (vara. of 36 Sp. in.)	33·38
Mantua, fathom	25·34
Milan, fathom	23·42
Modena, fathom	25·51
Munich, ell	32·79
Naples, canne=8 palmas	82·52
Neufchatel, ell	43·74
Nuremberg, ell	25·84
Ostend, ell	27·53
Padua, fathom of cloth	26·81
——— fathom for silk	25·09
Palermo, canne divided 8 palms	76·46
Parma, fathom for wool, cotton, and linen	25·34
——— fathom for silk	23·40
Pavia, fathom	23·42
Petersburg, arschine	28·95
Ragusa, ell	20·20
Riga, ell	21·58
Rome, merch. canne 8 palmes	78·42
——— merch. fathom 4 palmes	33 39
——— weavers' fathom 3 palmes	25·04
Rostock, ell	22·64
Stockholm, Swedish ell	23.37
Stuttgard, Wurtemburg ell	24·18
Turin, raso divided into 14 oz.	23·50
Venice, fathom for wool	26·90
——— fathom for silk	25·14
Verona, large fathom	25·55
——— small fathom	25·29
Vicenza, fathom for cloth	27·17
——— fathom for silk	25·04
Vienna, ell of Vienna	30·67
——— ell of Upper Austria	31·48
Warsaw, ell	23·01
Weimar, ell	22·20
Zurich, ell	23·62

THE POUND WEIGHT

Compared with the English Avoirdupois Pound.—ENGLISH 1·000.

Abbeville	1·0989	Calabria	0·73	Hamburg	1·0865	Rochelle	0·8928
Amsterdam	1·1111	Calais	0·9345	Leghorn	0·75	Rome	0·7874
Ancona	0·78	Dantzic	0·862	Lisbon	1·135	Rouen	1·1089
Antwerp	1·04	Dieppe	1·0989	Nuremberg	1·1863	Seville	0·9259
Avignon	0·8928	Ferrara	0·75	Naples	0·71	Toulouse	0·8928
Bologna	0·8	Flanders	0·9433	Paris	1·1235	Turin	0·82
Bourdeaux	1·0989	Geneva	0·07	Placentia	0·72	Venice	1·06
Bruges	1·0204	Genoa, gros	0·7	Prague	1·2048	Vienna	1·23

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SCRIPTURE WEIGHTS AND MEASURES, ETC.

Long Measure.

	ft.	in.
1 Finger		0·912
4 Fingers, 1 hand or palm		3·648
3 Palms, 1 span		10·944
2 Spans, 1 cubit	1	9·888
4 Cubits, 1 fathom	7	3·552
1½ fathoms 1 Ezekiel's reed	10	11·328
1 Ezekiel's rd. some say was	12	9·216
1½ ——— 1 Arabian pole	14	7·104
10 Arabian poles, 1 schœnus or measuring line	145	11·04

	mls	yds.	in.
1 Stadium or furlong		243	6
5 Furlongs, 1 Sabbath day's journey		1216	0
2 Sabbath day's journey 1 Eastern mile	1	672	0
24 Eastern mls. 1 d's. journey	33	288	0

Liquid Measure.

	galls.	qts.	pts.
1 Log, little more thon	0	0	¾
1 Firkin (metretes)	0	2	1½
1 Hin	1	0	⅓
1 Bath	6	1	⅓
1 Homer, or cor	63	0	¾

Dry Measure.

	pints.
1 Cab	2¾
1 Omer, nearly	4
1 Seah, nearly	14

	bush.	pks.	pts.
1 Ephah	0	2	12
1 Lethech	3	1	5¼
1 Homer	7	3	1·72

Weights.

	lbs.	oz.	dwts.	grs.
1 Shekel	0	0	9	2·6
1 Maneh	2	3	10	3
1 Talent	113	10	1	10·3

Money Table. Hebrew.

Silver calculated at 5s. per ounce. Gold at £4.

	£.	*s.*	*d.*
1 Gerah, little more than	0	0	1
1 Zuzah, „ „	0	0	6
1 Bekah, „ „	0	1	1
1 Shekel	0	2	3·3
1 Golden Daric, or Dram	1	1	10
1 Shekel of gold	1	16	5
1 Maneh or Mina, 60 shekel	6	16	7·28
1 Talent of silver, 50 manehs	341	10	4·3
1 Talent of gold=16 of silver	5464	5	8·6
Piece of silver (drachm)	0	0	7¾
Tribute money (di-drachm) 2 drachms	0	1	3½
Piece of silver (stater) 4 drachms	0	2	7
Pound (mina) 100 drachms	3	4	7
Penny (denarius)	0	0	7½
Farthing (assarium)	0	0	⅜
——— (quadrans)	0	0	0·8
A mite	0	0	0·4

The Day.

In holy Scripture the day is always reckoned from the sun-set of the previous evening. Both the day and night were divided into 12 equal parts, called the 1st, 2d, 3d, and 4th hours.

The Watches.

The first Watch was from *sun-set* to the *third hour* of the night.
The second or middle Watch was from the *third hour* to the *sixth*.
The third Watch, or Cock-crowing, was from the *sixth hour* to the *ninth*.
The fourth, or Morning Watch was from the *ninth hour* to *sun-rise*.

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THE JEWISH YEAR.

1 Nison, or Abib . .	March / April.	7 Tisri, or Ethanim .	September / October.
2 Ijar, or Zif. . .	April / May.	8 Merchesvan, or Bul	October / November.
3 Sivan . . .	May / June.	9 Chisleu . . .	November / December.
4 Thamuz . . .	June / July.	10 Tebeth . . .	December / January.
5 Ab.	July / August.	11 Shebat . . .	January / February.
6 Elul	August / September.	12 Adar . . .	February. / March.

FOREIGN MEASURES COMPARED WITH ENGLISH.

	Linear Measures.		*Linear Measures.*
The Foot English .	12 inches	The Foot Grecian .	12·0875 inches
——— at Paris .	12·816 inches	——— Eenetian .	13·944 inches
——— at Bologne .	15 inches	——— Rhineland .	12·396 inches
——— Dantzic .	11·328 inches	——— Strasburg .	11·424 inches
——— Danish . .	12·504 inches	——— Nuremberg .	12 inches
——— Swedish .	11·733 inches		

THE MILE.

	Yards.	*Geometrical Paces.*	*Proportions to English miles.*
England . . .	1,760 . .	1,056 . .	1·000
Russia verst . .	1,100 . .	660 . .	0·625
Italy	1,467 . .	880 . .	0·8335
Scotland and Ireland .	2,200 . .	1,320 . .	1·0275
Poland . . .	4,400 . .	1,640 . .	2·055
Spain, league . .	5,027 . .	3,017 . .	2·8562
Germany . . .	5,866 . .	3,520 . .	3·3331
Sweden . . .	7,233 . .	4,340 . .	4·11
Denmark . . .	7,233 . .	4,340 . .	4·11
Hungary . . .	8,800 . .	5,280 . .	5·000
Small degree, in France	2,933 . .	1,750 . .	1·666
Mean ditto . .	3,666 . .	2,197 . .	2·0829
Large ditto . .	4,400 . .	2,640 . .	2·055

FRENCH WEIGHTS AND MEASURES.

The mètre, or unit of length, is supposed to be the 10 millionth part of the distance from the pole to the equator, and all lineal measures are multiples or submultiples of it in decimal proportions.

The mètre corresponds nearly to the old French *aune*, or yard.

The gramme, or unit of weight, is a *cubic centimètre*, or the 100th part of a *mètre* of distilled water of the temperature of melting ice; 15·434 English grains Troy. The decimal method annihilates the difficulties of arithmetic.

The proportions for multiplying have Greek names prefixed; those for dividing, Latin, thus:—

Multiplying:—Decca means 10 times; Hecto. 100 times; Kilo, 1,000 times; Myra, 100,000 times.

Dividing:—Deci means 10th part; Centi, 100th part; Milli, 1000th part.

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Superficial Measure in English Denomination.

The *Are* is a square decamètre and is the element of square measure.

	perches.	yards.
Are	3	28·8546
Decare	39	16·296

	a.	rd.	p.	yds.
Hecatare	2	1	35	11·046

Lineal Measure.

Metre is the element in this measure.

	inches.
Millimètre	0·39371
Centimètre	·39371
Decimètre	3·93710
Mètre 3 ft. 3 in. 4½ pts. English	39·37100

	mil	fur.	yds.	ft.	in.
Decamètre	0	0	10	2	9·7
Hecatomètre	0	1	109	1	1
Kilomètre	0	4	213	1	10
Myriomètre	6	1	136	1	3

Solid Measure.

Stere, a cubic mètre is the element of this measure.

	Cubic feet.
Decistere	3·5317
Stere	35·317
Decastere	353·17

Measure of Capacity.

The *Litre*, a cubic Decimètre, is the element of all measures of Capacity.

	Cubic inches.
Millilitre	·06103
Centilitre	·61028
Decilitre	6·10280

English Liquid	t.	h.	g.	p.	in.
Litre	0	0	0	1	26·369
Decalitre	0	0	2	1	21·077
Hecatolitre	0	0	22	0	2·816

English Liquid	t.	h.	g.	p.	in.
Kilolitre	0	3	31	0	28·16
Myriolitre	8	2	59	0	4·328

Dry Measure.

	qrs.	bus.	pks.	gl.	pt.	in.
Litre	0	0	0	0	1	26·369
Decalitre	0	0	1	0	1	21·077
Hecatolitre	0	2	3	0	0	2·816

	qrs.	bus.	pks.	gl.	pt.	in.
Kilolitre	3	3	2	0	0	28·16
Myriolitre	34	3	0	1	0	4·328

Weight.

The *Gramme* is the element of weight.

	grs.
Milligramme	·0154
Centigramme	·1544
Decigramme	1·5444
Gramme	15·4440

Troy	lbs.	oz.	dwts.	grs.
Decagramme	0	0	6	10·44
Hecatogramme	0	3	4	8·40
Kilogramme	2	8	3	12·02
Myriogramme	26	9	15	0·23

Avoirdupois.	lbs.	oz.	drms.
Decagramme	0	0	5·65
Hecatogramme	0	3	8·5

Avoirdupoise	lbs.	oz.	drms.
Kilogramme	2	3	5
Myriogramme	22	1	2

The Systeme Usuel.

Is used in retail business; it has the metre and gramme for its basis, but their divisions are binary, that is by 2, 4, 8, &c. and the ancient names of weights and measures are used, annexing the term *usuel* to each. The half kilogramme is called the *livre usuelle*, and the double metre the *toise usuelle*. The following table of comparative English and French weights and measures will serve all common purposes.

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Weights.

	TROY. grammes.	lbs.	oz.	dwts.	grs.	AVOIRDUPOISE. lbs.	oz.	drs.
Kilogramme	1,000	2	8	3	2	2	3	$4\frac{1}{2}$
Livre usuelle	500	1	4	1	13	1	1	$10\frac{1}{4}$
Livre half	250	0	8	0	18·5	0	8	$13\frac{1}{2}$
Livre quarter	125	0	4	0	9·25	0	4	$6\frac{1}{2}$
Livre eighth	62·5	0	2	0	4·5	0	2	$3\frac{1}{4}$
Once	31·3	0	1	0	2·25	0	1	$1\frac{5}{8}$
Once half	15·6	0	0	10	1·125	0	0	$8\frac{7}{8}$
Once quarter	7·8	0	0	5	0·5	0	0	$4\frac{1}{2}$
Gros	3·9	0	0	2	12·25	0	0	$2\frac{1}{4}$

Linear Measure.

	Metres.	ft.	in.	parts.		Metres.	ft.	in.	parts.
Toise	2	6	6	9	Aune eighth	$\frac{3}{20}$	0	5	$10\frac{7}{8}$
Pied (foot)	$\frac{1}{3}$	1	1	$1\frac{1}{2}$	Aune sixteenth	$\frac{3}{40}$	0	2	$11\frac{1}{16}$
Pouce (inch)	$\frac{1}{36}$	0	1	$1\frac{1}{3}$	Aune one third	$\frac{2}{5}$	1	3	9
Aune (yard)	$1\frac{1}{5}$	3	11	3	Aune one sixth	$\frac{1}{5}$	0	7	$10\frac{1}{2}$
Aune half	$\frac{3}{5}$	1	11	$7\frac{1}{2}$	Aune one twelfth	$\frac{1}{10}$	0	3	$11\frac{1}{4}$
Aune quarter	$\frac{3}{10}$	0	11	$9\frac{1}{4}$					

Measure of Capacity.

Boisseau	125 Litres	2·837 gallons.
Litron	1·074 Paris pinte	$2\frac{1}{0}$ English pint.

With halves and quarters in proportion.

Geographical.

The Circle is divided by the French into 400 degrees; by the English into 360. Hence 10 French circular degrees are equal to 9 English.

The French Old System.

As in land surveying, road measuring, the work of labourers and mechanics, the old system is partially retained, some knowledge of it is necessary. The ancient weight was called the poids de marc.

The livre (pound) was divided into 2 marcs, 16 ounces, 128 gros, or 9,216 grains.

Diamonds, 1 carat=4 grains; 144 carats=1 ounce.

Apothecaries' weight was the poids de marc of 16 ounces, 256 drachms, 768 scruples, or 9,216 grains.

The poids de marc=0·4895 kilogrammes new, or 7·555 grains.

Corn measure of Paris was the muid divided into 12 setiers, or 144 boisseaux, and the boisseau into 16 litrons. The setier=1·56 hectolitre, or 4·427 English bushels.

Wine measure, the muid was divided into 36 setiers, 144 quarts, or 288 pintes. The muid=2·68 hectolitres, or 70·80 English gallons. The pinte=0·931 litre, or 0·2459 English gallons, nearly an English quart.

The foot (pied de roi) was divided into 12 inches, 144 lines, or 1828 points. The foot=0·32484 metres, or 12·7893 English inches.

The aune (yard) of Paris, was 1·1888 metre, or 46·85 English inches.

The toise, or fathom, also called the tois d'ordonnance, was 6 feet. Pied de roi=1·949 metre, or 6·395 English feet.

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The mile was 1000 toises=1949·036 metres, or 1 mile, 1 furlong, 28 poles English.

The league, legal road measure, is 2,000 toises.

The arpent, or acre, differs in the provinces, but was mostly 100 square perches.

The arpent (acre) d'ordonnance was 22 feet to the perch=51.07 ares= 1 acre, 1 rood, 2 perches, English.

The arpent commun, 29 feet to the perch=42·21 ares=1 acre, 7 perches, English.

The arpent de Paris, 18 feet to the perch=34·19 ares=3 roods, 15 perches, English.

FOREIGN RAILWAY VALUE OF COIN.

Gold.	*Francs.*	*Cents.*
A Sovereign	25	20
A Frederic	21	0
A William	21	16
A Pistole	20	75
A Ducat	11	50

Silver.	*Francs.*	*Cents*
A French Crown	5	70
A Brabant Crown	5	68
A Prussian Thaler	3	70
A Dutch Guilder	2	50

The above Table is on the authority of J. W. G. Gutch, Esq. Foreign Service Queen's Messenger.

FOREIGN MONEY.

NOTE.—In exchange for Foreign coin, more is obtained at Railways, Bankers, and Government Offices, than is usually given at Inns, Shops, and Steamboats. *a*, is placed after what is imaginary money, or money of account, as our guinea may now be termed.

AMERICA, (*The United States*).—Half-cent, 200th part of a Dollar, $\frac{1}{4}$ $\frac{1}{64}d.$—Cent, 100th part of a dollar, $\frac{1}{2}$ $\frac{1}{32}d.$—Quarter-dollar, silver, 1*s.* $0\frac{3}{4}d.$—Half-dollar, 2*s.* $1\frac{1}{2}d.$—Dollar, 4*s.* $3\frac{1}{2}d.$—Eagle, of $2\frac{1}{2}$ dollars, gold, 10*s.* $11\frac{3}{4}d.$—Eagle, of 5 dollars, £1. 1*s.* $10\frac{1}{4}d.$—Double Eagle, of 10 dollars, £2. 3*s.* $9\frac{3}{4}d.$

The currency of the United States varies in point of relative value in many of the States; the dollar in some parts passing for 8*s.*, 7*s.* 6*d.*, 6*s.*, and 4*s.* 8*d.* In some places are found the disme, or dime, about $5\frac{1}{2}d.$ and the half dime.

APPENZELL, (*Switzerland.*)—60 Kreutzers=1 Florin.—11 Florins=1 Louis neuf, or £1. English.

ARABIA.—Carret, $0\frac{1}{8}d.$—Caveer, $0\frac{5}{8}d.$—Comashee, $0\frac{9}{10}d.$—Larin, $10\frac{1}{2}d.$—Abyss, 1*s.* $4\frac{1}{8}d.$—Piastre, *a*, 4*s.* 6*d.*—Dollar, 4*s.* 6*d.*—Sequin, 7*s.* 6*d.*—Tomaun, £3. 7*s.* 6*d.*

AUSTRIA AND BOHEMIA.—4 Pfennigs,1 Kreutzer, $0\frac{2}{5}d.$—Groschen, $1\frac{2}{5}d.$—Batzen, $1\frac{3}{5}d.$—10 Kreutzer, silver, 4*d.*—20 Kreutzer, ditto, $8\frac{1}{4}d.$—Half Rix dollar, or florin (guilden), $2\frac{1}{4}d.$—Conventional dollar, silver, 4*s.* $0\frac{1}{2}d.$—Crown, since 1753, 4*s.* $1\frac{1}{2}d.$—Quarter Sovereign, gold, 7*s.* $4\frac{1}{2}d.$—Half Sovereign, gold, 14*s.* 9*d.*—Hungarian Ducat, gold, 9*s.* $5\frac{1}{4}d.$—Emperor's Ducat, 9*s.* 5*d.*

The currency in 1753 was raised to a standard of coining a mark of fine silver into 20 florins, or $13\frac{1}{3}$ dollars; this is what is called conventional money, or 20 florins standard. At Vienna the new Wiener Wahrung coin loses about $\frac{3}{4}$.

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BADEN, HESSE DARMSTADT, FRANKFORT-ON MAINE, AND WURTEMBERG.—60 Kreutzers, or 13 Groschen, 4 Pfennings, 1 florin.—Florin piece, silver, 1*s.* 3$\frac{3}{4}$*d.*—2 Florin piece, silver, 3*s.* 3$\frac{3}{4}$*d.*—Florin piece, gold, 8*s.* 4$\frac{1}{2}$*d.*—2 Florin piece, gold, 16*s.* 8$\frac{1}{4}$*d.*

There are also in circulation Louis d'ors, worth 10 and 11 florins; Ducats, worth 5 florins, and 5 florins 30 kreutzers; Crowns, worth 2 florins 24 kreutzers; and Conventional Dollars, worth 2 florins 24 kreutzers, besides many small coins More Florins are supposed to be coined out of the mark of fine silver than in Austria, hence its diminished value.

BARBADOS.—2 Half-pennies, 1 Penny, 0$\frac{57}{80}$*d.*—Bit, 5$\frac{3}{8}$*d.*—Shilling, 8$\frac{11}{20}$*d.*—Dollar, 4*s.* 6*d.*—Crown, 5*s.*—Pound, 14*s.* 3*d.*

BARBARY.—Asper, 0$\frac{5}{6}$*d.*—Medin, 1$\frac{3}{4}$*d.*—Rial old plate, 6$\frac{3}{4}$*d.*—Double, 1*s.* 1$\frac{1}{2}$*d.*—Dollar, 4*s.* 6*d.*—Silver Chequin, 3*s.* 4*d.*—Zequin, 8*s.* 10*d.*—Pistole, 16*s.* 10$\frac{1}{2}$*d.*

BARCELONA, (*See Spain*).—Maravedia, 0$\frac{27}{128}$*d.*—Soldo, 3$\frac{3}{8}$*d.*—Rial old plate, 6$\frac{3}{4}$*d.*—Libra, *a*, 5*s.* 7$\frac{1}{2}$*d.*—Ducat, 6*s.* 9*d.*—Dollar *a*, 4*s.* 6*d.*—Ducat *a*, 6*s.* 2$\frac{1}{4}$*d.* Ducat *a*, 5*s.* 10$\frac{1}{8}$*d.*—Pistole, 16*s.* 10$\frac{1}{2}$*d.*

BELGIUM.—French money is in general circulation, and accounts reckoned generally in that currency. For the local coinage, see *Holland*, &c.

BENGAL. (*See also Mogul, East Indies*).—Pice, 0$\frac{5}{32}$*d.*—Farram, 0$\frac{5}{8}$*d.*—Farram, 0$\frac{15}{16}$*d.*—Ana, 1$\frac{7}{8}$*d.*—Siano, 1*s.* 6$\frac{3}{4}$*d.*—Rupee, 2*s.* 6*d.*—French Crown, 5*s.*—English Crown, 5*s.*—Pagoda, 8*s.* 9*d.*—A Lac is 100,000 Rupees, silver.—A Crore of Rupees, silver, is 100 lacs.

BERNE, AARGAU, BASEL, FREYBERG, SOLOTHURN (*Switzerland*).—10 Rappen, or 4 Kreutzers, or 3 French Sous=1 Batz, 1$\frac{1}{2}$*d.*—10 Batz, 1 Swiss Franc, or Livre, 1*s.* 2$\frac{1}{4}$*d.*—15 Batzen, 1 Florin, 1*s.* 10$\frac{1}{4}$*d.*—16 Swiss Francs, 1 Louis neuf of 24 Livres tournois de France, 18*s.* 8$\frac{1}{2}$*d.*—Crown of Basel, silver, 4*s.*—Double Helvetic Sequin, 19*s.* 9*d.*—Florin of Basel, gold, 6*s.* 7$\frac{3}{4}$*d.*—Sequin of Basel, gold, 8*s.* 4$\frac{1}{2}$*d.*—Double Sequin of Basel, 1795, gold, 19*s.* 8$\frac{1}{2}$*d.*—Double Sequin of Solothurn, gold, 19*s.* 8$\frac{1}{4}$*d.*—Sequin, gold, 9*s.* 8$\frac{1}{4}$*d.*—Double Sequin of Berne, 1782, gold, 19*s.* 4$\frac{1}{2}$*d.*—6 Sequin piece, of Berne, gold, £3. 17*s.* 5$\frac{1}{2}$*d.*

The value of the coin varies much in the various cantons.

The Louis neuf of 24 Livres tournois de France, is reckoned as worth intrinsically 18*s.* 8$\frac{1}{3}$*d.* or 23 Francs, therefore in transactions this should be borne in mind, for the accustomed popular valuation is £1. English.

BOMBAY, (*See also Mogul, East Indies*)—Budgrook, 0$\frac{27}{800}$*d.*—Rex, 0$\frac{27}{400}$*d.*—Pice, 0$\frac{27}{80}$*d.*—Laree, 5$\frac{2}{5}$*d.*—Quarter, 6$\frac{3}{4}$*d.*—Zeraphim, 1*s.* 4$\frac{1}{5}$*d.* Company's Rupees, of Sicca silver, are reckoned at 2*s.*

BRABANT.—Pening, 0$\frac{9}{160}$*d.*—Urche, 0$\frac{9}{40}$*d.*—Grote, *a*, 0$\frac{9}{20}$*d.*—Petard, 0$\frac{9}{10}$*d.*—Scalin, *a*, 5$\frac{4}{10}$*d.*—Scalin, 6$\frac{3}{10}$*d.*—Florin, 1*s.* 6*d.*—Ducat, 9*s.* 2$\frac{1}{4}$*d.*—Pound Flemish, 9*s.*

Accounts are kept in French Francs and Centimes, which are current.

BRANDENBERG.—Denier, 0$\frac{7}{270}$*d.*—Polchen, 0$\frac{7}{30}$*d.*—Gross, 0$\frac{7}{15}$*d.*—Abrass, 0$\frac{7}{10}$*d.*—Mark, *a*, 9$\frac{1}{2}$*d.*—Florin, 1*s.* 2*d.*—Rix Dollar, 3*s.* 6*d*—Albertus, 4*s.* 2$\frac{2}{5}$*d.*—Ducat, 9*s.* 4*d.*

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BREMEN.—Grot=5 Schwaren, $0\frac{19}{36}d.$—Dollar=72 Grots, 3*s.* 2*d.*—Also Ducats whole, half, and quarter Dollars, and the Grot in pieces of various numbers.

BRUNSWICK.—Penning, $0\frac{19}{180}d.$—A Mary Groschen, $1\frac{1}{18}d.$—A good Groschen, $1\frac{7}{12}d.$—Rix-dollar=24 good, or 36 Mary Groschen, or 360 pennings, 3*s.* 2*d.* The new Dollar is equal to the Prussian Thaler; the Ducat worth 3 Rix-dollars, 10 Groschen; Gold Pieces, worth $2\frac{1}{3}$ dollars; and whole, half, and quarter conventional Dollars, worth 48, 24, and 12 Mary Groschens, also circulate.

CHINA.—Caxa, $0\frac{2}{25}d.$—Candareen, $0\frac{4}{5}d.$—Mace, 8*d.*—Rupee, 2*s.* 4*d.*—Dollar, 4*s.* 8*d.*—Rix-dollar, 4*s.* 8*d.*—Crown, 4*s.* 8*d.*—Tale, 6*s.* 8*d.*

COLOGNE.—Dute, $0\frac{3}{80}d.$—Kreutzer, $0\frac{21}{80}d.$—Albus, $0\frac{21}{40}d.$—Stiver, $0\frac{7}{10}d.$—Plapert, $2\frac{1}{10}d.$—Copstuck, $8\frac{2}{5}d.$—Guilder, 2*s.* 4*d.*—Hard Dollar, 4*s.* 9*d.*—Ducat, 9*s.* 4*d.* French money at its usual valuation circulates, and accounts are reckoned in that coinage.

COROMANDEL.—Cash, $0\frac{3}{80}d.$—Viz, $0\frac{3}{160}d.$—Pice, $0\frac{3}{4}d.$—Pical, $2\frac{1}{4}d.$—Fanam, 3*d.*—Rupee, 2*s.* 6*d.*—Crown, English, 5*s.*—Pagoda, 9*s.*—Rupee, gold, £1. 16*s.*

DENMARK.—Shilling, nearly, $0\frac{1}{2}d.$—Duggen, 3*d.*—Mark of 16 Shillings, 1776, $7\frac{1}{2}d.$—Rix-marc, $9\frac{1}{4}d.$—Rix-ort, $11\frac{1}{4}d.$—Crown of 4 Marc, 2*s.* 6*d.*—Rix-dollar, or piece of 6 Danish Marcs of 1750, 4*s.*—Rix-dollar, or double Crown of 96 Danish Shillings of 1776, 4*s.* 6*d.*—Ducat, current since 1767, 7*s.* 6*d.*—Ducat, specie, 1791 to 1802, 9*s.* $4\frac{3}{4}d.$—Christian, 1783, gold, 16*s.* 7*d.*

DOMINGO, ST.—2 Half-Sols, 1 Sol, *a*, $0\frac{117}{320}d.$—Half-Scalin, $2\frac{95}{128}d.$—Scalin, $5\frac{6}{16}d.$—Livre *a*, $7\frac{5}{16}d.$—Dollar, 4*s.* $3\frac{3}{16}d.$—Ecu, 4*s.* 10*d.*—Pistole, 15*s.* $10\frac{3}{8}d.$—Louis d'or, 19*s.* 6*d.*

FRANCE.—*Copper*, Centime, the 100th part of a Franc; Sou, 20th part of a Franc; 2 Sous, Gros Sou, or Decime, 10th part of a Franc=$\frac{3}{4}$-80th of an English penny. *Copper and Silver*, called billion, or monnaie grise, 4 liards=1 Sou; 6 liards=$1\frac{1}{2}$ Sou; pieces of 6 Blanc=$2\frac{1}{2}$ Sous. *Silver.* Quarter Franc, or 25 centimes, $2\frac{1}{4}d.$—Half Franc, or 50 centimes, $4\frac{3}{4}d.$—Franc, or 100 centimes, $9\frac{1}{2}d.$—2 Franc piece, 1*s.* 7*d.*,—5 Franc piece, 4*s.*—*Gold*, 20 Franc, or Napoleon, 15*s.* $10\frac{1}{2}d.$—40 Franc, or double Napoleon, £1. 11*s.* $8\frac{1}{2}d.$—80 Francs=81 Livres tournois.

All accounts are kept in Francs and Centimes, but the other coins are used in business. Travellers usually calculate the Sou at $\frac{1}{2}d.$ and the Franc at 10*d.* English. An English Sovereign, in comparison to a 20 Franc piece, from its superior pureness of gold, is as 7 to 5. The intrinsic value of the Sovereign is 25 Francs, 20 Centimes. The rate of exchange at Paris and the principal towns is usually 25 Francs, 50 Centimes for 1 Sovereign, and in smaller towns 25 Francs 75 Centimes. It is common for convenience to reckon 25 Francs as equal to 20*s.*; thus, 100 Francs=80 shillings, £4. English; and £5. English=125 Francs. An English Crown is worth 6 Francs 25 Centimes; a Shilling 1 Franc 25 Centimes; a Penny nearly 10 Centimes.

5 Francs in copper weigh
50 ——— in billion weigh
200 ——— in silver weigh
3,100 ——— in gold weigh
} 1 Kilogramme.

hence 1 Franc=5 grammes, and any other pieces in the above proportion.

ANCIENT FRENCH COINAGE.—6 Sou piece, $2\frac{3}{8}d.$—12 Sou piece, $4\frac{3}{4}d.$—15 Sou piece, $7\frac{1}{2}d.$—24 Sou piece, $9\frac{1}{2}d.$—30 Sou piece, $1s.\ 2\frac{1}{4}d$—Little Crown (écu), $2s.\ 2\frac{1}{8}d.$—Crown, écu, $4s.\ 7\frac{1}{6}d.$—Louis d'or of 24 Livres, $18s.\ 8\frac{1}{3}d.$—Louis d'or double, £1. $17s.\ 4\frac{2}{3}d.$

GENEVA (*Switzerland*).—12 Deniers=1 Petit Sou—12 Petit Sous=1 Florin, $4\frac{1}{2}d.$—20 Sous=1 Livre courante.—$43\frac{3}{8}$ Florins=1 French 20 Franc piece.—50 Florins 10 Sols=1 Louis neuf, $18s.\ 8\frac{1}{4}d.$; or the Louis neuf is worth 14 Livres, 10 Sols, 6 Deniers; and 2 Livres are worth 7 Geneva Florins.

GENEVA OLD COIN.—Pistole, Geneva, 1724, $17s.\ 4\frac{1}{4}d.$—Pistole of 10 Livres, courantes, 1755, $14s.\ 9\frac{1}{4}d.$—Crown of Republic, silver, $4s.\ 10d.$

GENOA.—French coin circulates. The copper coins are pieces of 8, 4, & 2 Denarii.—Parpajole, base silver, $0\frac{3}{4}d.$—Parpajole, double, $1\frac{1}{2}d.$—6 Soldi, 8 Denarii piece, $7\frac{1}{2}d.$—Half Madonnina of 10 soldi, silver, $4d.$—1 Madonnina, $8d.$—1 Madonnina, double, $1s.\ 4d.$—Scudo of 2 Lire, $1s.\ 4d.$—Scudo of 8 Lire, $5s.\ 4d.$—Genovina, $6s.$—Genovina, or Scudo 9 Lire 10 Soldi, $6s.\ 4d.$—$\frac{1}{8}$ Genovina, 12 Lire, gold, $8s.$—Quarter Genovina, gold, $16s.$—Half Genovina, £1. $13s.\ 4d.$—Half Genovina, new, or 2 Pistoles, £1. $12s.$—1 Genovina, 100 Lire, £3. $6s.\ 8d.$—1 Genovina, new, or 4 Pistoles, £3. $4s.$—Zecchino, or Sequin, $9s.\ 6\frac{1}{4}d.$—Doppia, or Pistole, $16s.$

Accounts are kept in Lire of 20 Soldi, each Soldo being divided into 12 Denari. The Lire is worth about $7\frac{1}{2}d.$ or $8d.$

GLARIS (*Switzerland*).—12 Hellars=1 Schelling.—40 Schellings, or 15 Batz, or 60 Kreutzers=1 florin.—$10\frac{1}{2}$ Florins=1 Louis neuf, $18s.\ 8\frac{1}{3}d.$

GRISONS (*Switzerland*).—5 Blutzgers=1 Batz.—15 Batzen, or 70 Blutzgers=60 Kreutzers.—60 Kreutzers=1 Florin.—$13\frac{3}{5}$ Florins=1 Louis neuf, $18s.\ 8\frac{1}{3}d.$

GOA.—The Re *a*, is $\frac{27}{400}$ parts of $1d.$—The Basaruco is 2 Res, and the Pecka, 4 Res.—Vintin, $1\frac{7}{20}d.$—Laree, $5\frac{2}{5}d.$—Xeraphim, $1s.\ 4\frac{1}{5}d.$—Tangu, $4s.\ 6d.$—Paric, $18s.$—Gold Rupee, £1. $16s.$

HAMBURG.—Schilling, currency, $0\frac{3}{4}d.$—Schilling, banco, $1d.$—Mark, $1s.$—16 Schilling piece, convention,, $1s.\ 2\frac{1}{2}d.$—Mark, banco, *a*, $1s.\ 5\frac{3}{4}d.$—Rix-dollar, specie, $4s.\ 7d.$—New Town Ducat, gold, $9s.\ 4d.$—Ducat ad legem imperii, $9s.\ 4\frac{3}{4}d.$

HANOVER, *See Brunswick.*—

In the North of Germany money is reckoned by Dollars and Groschen; in the South by Florins and Kreutzers.

HESSE CASSEL.—Albus=9 pennings—$\frac{12}{20}$ of $1d.$ English.—Conventional Dollar=24 Good Groschen, $3s.\ 2d.$ Also Ducat pieces, worth 10 and 5 Dollars; Conventional Dollars, worth 2 Florins, or 32 Good Groschen, or $42\frac{2}{3}$ Albus; there are also various pieces of Groschens and Pennings.

HOLLAND AND BELGIUM.—100 Centimes in a Florin. 20 Stivers=1 Florin, or Guilder. Sou, $1d.$—Escalin, silver, $6d.$—Florin, $1s.\ 8\frac{1}{2}d.$—Ducat, or Rix-Dollar, $1s.\ 4d.$—Ducaton, or Ryder, $5s.\ 5d.$—Ducat, gold, $9s.\ 5\frac{3}{4}d.$—10 Williams, 1818, $16s.\ 5\frac{1}{2}d.$—10 Florins, $17s.\ 1\frac{3}{4}d.$—20 Florins, 1808, £1. $14s.\ 2\frac{3}{4}d.$ Ryder, £1. $5s.\ 1\frac{1}{4}d.$

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HOLLAND AND BELGIUM. (*Flemish Old Coin still circulated.*)—Plaquette, 3*d.*—10 Liard's piece, 2¼*d.*—5 Sous, Brabant, 4½*d.*—Escalin, 6*d.*—Escalin, double, 1*s.*—Piece 5 Plaquettes, 1*s.* 3*d.*—Crown, 4*s.* 8*d.*—Half Crown, 2*s.* 4*d.*—Quarter Crown, 1*s.* 2*d.*—Ancient French coins are also still circulated.

JAMAICA (*Nearly the same as Barbadoes*).

JAPAN.—Piti, $0\frac{6}{3}\frac{3}{2}\frac{}{5}d.$—Mace, $3\frac{5}{6}\frac{7}{5}d.$—Tigo-gin, of 40 Mas, silver, 11*s.* 5*d.*—Half ditto, 5*s.* 8½*d.*—One-fourth ditto, 2*s.* 10½*d.*—One-eighth ditto, 1*s.* 5*d.*—Half-Kobang, gold, 12*s.* 10½*d.*—New ditto, £1. 5*s.* 11*d.*—Old Kobang of 100 Mas. £2. 3*s.* 7*d.*—Half Old ditto, £1. 3*s.* 7½*d.*

LIVONIA.—Blacken, $0\frac{7}{9}\frac{}{0}d.$—Grosh, $0\frac{7}{1}\frac{}{5}d.$—Vorden, $0\frac{7}{1}\frac{}{0}d.$—Whitin, $0\frac{1}{1}\frac{4}{5}d.$ parts of 1*d.* English.—Marc, 2⅕*d.*—Florin, 1*s.* 2*d.*—Rix Dollar, 3*s.* 6*d.*—Albertus, 4*s.* $2\frac{6}{1}\frac{}{0}d.$—Copperplate Dollar, 5*s.*

LOMBARDO (*Venetian*).—Livre, (Austrian) 8½*d.*—Florin or Half Crown, 2*s.* 0¾*d.* Crown, 4*s.* 1½*d.*—Half Sovereign, gold, 13*s.* 6*d*½.—Sovereign, 1823, £1. 7*s.* 1*d.*

LUCCA.—The Florentine coins circulate. The copper coins are Bolognini, Soldi, and Quattrini.—Quarter Barbone, of 3 Soldi, silver, 1*d.*—Half Barbone, 2*d.*—1 Barbone 4*d.*—One-fifth Scudo, 10½*d.*—One-third Scudo, 1*s.* 5½*d.* Half Scudo, 2*s.* 1*d.*—Scudo, 4*s.* 4*d.*—Pistole, gold, 13*s.* 9*d.*

Accounts are kept in Lire of 20 Soldi, or 240 Denari. The Lire is sometimes divided into 10 Bajocchi or Bolognini.

LUZERN AND UNTERWALDEN (*Switzerland*).—12 Hellars=1 Scheling.—46 Schelings=1 Florin.—12 Florins=1 Louis neuf, 18*s.* 8½*d.*—Old Gold Sequins of Luzern, 18*s.* 4¾*d.*

MILAN.—The copper coins are Denari.—1½ Denari.—3 Denari pieces.—Also Soldo, and half Soldo. The base silver coin is about in value—Piece of 5 Soldi, 1¾*d.*—Half Lira of 10 Soldi, 3¾*d.*—Lira, 20 Soldi, silver, 7½*d.*—Piece of 30 Soldi, silver, 11*d.*—Half Scudo of 3 Lire, silver; 1*s.* 10½*d.*—Scudore of 6 Lire, 3*s.* 9*d.*—Filippo of 7 Lire, 10 Soldi, 4*s.* 9*d.*—Ducatone of 8 Lire, 12 Soldi, 5*s.* 5*d.*—Zecchino, or Sequin of 15 Lire 4 Soldi, 9*s.* 5½*d.*—Pistole, or Doppia of 25 Lire 3 Soldi, 15*s.* 8½*d.*

At *Milan* accounts are kept in Italian Lire and Centimes. The Lira is worth 7*d.* or 7½*d.*, it is divided into 20 Soldo, each Soldo consisting of 5 Centimes.

MOGUL (*East Indies*).—Rupee Broach, silver, 1*s.* 9*d.*—Rupee, Bombay, 1*s.* 11*d.*—Rupee, Arcott, 1*s.* 11¾*d.*—Rupee, Sicca, (*used in accounts*) 2*s.* 0½*d.*—Star Pagoda, Madras, gold, 7*s.* 6*d.*—Rupee, Madras, gold, £1. 9*s.* 3*d.*—Rupee, Bombay, gold, £1. 9*s.* 2*d.*—Mohur of Bombay, gold, £1. 10*s.* 1*d.*—Mohur of Bengal, gold, £1. 13*s.* 8*d.*—The E. I. C. reckon the Sicca Rupee, 2*s.*

MODENA.—2½ Soldi piece, base silver, 0½*d.*—5 Soldi piece, 0¾*d.*—Copellone, 1¼*d.*—1 Lira piece, silver, 3¾*d.*—2 Lira piece, 7½*d.*—Scudo of 3⅝ Lire, 1*s.*—Scudo of 5 Lire, 6*s.* 6¾*d.*—Ducato of 8 Lire, 2*s.* 6*d.*—Filippo of 15½ Lire, 4*s.* 9½*d.*—Ducatone, 5*s.* 6*d.*—Pistole, gold, 15*s.* 11½*d.*

Accounts are kept in Lire, each worth about 3¾*d.* The Lira is divided into 20 Soldi, and the Soldo into 12 Denari.

MOROCCO.—Fluce $0\frac{1}{12}d.$—Blanquil, 2*d.*—Ounce, 8*d.*—Octavo, 1*s.* 2*d.*—Quarto, 2*s.* 6*d.*—Medio, or Dollar, 4*s.* 8*d.*—Zequin, 9*s.*—Pistole, 16*s.* 8*d.*

NAPLES.—The copper coins are pieces worth 5, 4, 3, 2, and 1 Grani, and Tornessi or half Grani.

Quarter Carlino, $2\frac{1}{2}$ Grani, silver, 1*d.*—Half Carlino, 5 Grani, 2*d.*—Carlino of 10 Grani, 1804, 4*d.*—Piece of 12 Grani, $4\frac{3}{4}d.$—Piece of 13 Grani, $5\frac{1}{4}d.$—Tari of 2 Carlino, 20 Grani, 1804, 8*d.*—Piece of 24 Grani, $9\frac{3}{4}d.$—Piece of 26 Grani 11*d.*—Piece of 3 Carlini, 1*s.*—Piece of 4 Carlini, 1*s.* $4\frac{1}{4}d.$—Pataca, or Half Ducato, 5 Carlini, 1*s.* $8\frac{1}{4}d.$—Half Scudo of 6 Carlini, 2*s.* $0\frac{1}{2}d.$—Ducato of 10 Carlini, 3*s.* $4\frac{1}{4}d.$—Scudo or Piastre of 12 Carlini, 4*s.* $1\frac{1}{4}d.$—Piece of 13 Carlini, 4*s.* 5*d.*—New Ounce of 3 Ducati, gold, 10*s.* $5\frac{3}{4}d.$ The Pieces of Ducati are numerous.

Accounts are kept in Ducati, divided into 10 Carlini, these into 10 Grani, or 5 Tari, and these into 10 Calli. Spanish Dollars are worth 12 Carlini. Napoleons about 47 Carlini, and old Louis d'Ors, about 55 Carlini. Cedule of 5, 6, and 7 Scudi of the Monte di Pietá, and the Bank of St. Spirito, also circulate. The Roman Scudo is worth $12\frac{1}{2}$ Carlini; the Sequin $25\frac{1}{2}$ Carlini.

NEUFCHATEL (*Switzerland*).—12 Denier=1 Sou.—20 Sous=1 Livre.—$16\frac{4}{5}$ Livres=1 Louis neuf, 18*s.* $8\frac{1}{2}d.$

PARMA, PLACENTIA, &c.—5 Soldi piece, base silver, $0\frac{1}{2}d.$—10 Soldi piece, ditto, 1*d.*—1 Lira, or 20 Soldi, nearly, $2\frac{1}{4}d.$—3 Lire piece, silver, $6\frac{1}{2}d.$—Testone, 6 Lire 6 Soldi, 1*s.* 2*d.*—Scudo, 8 Lire 8 Soldi, 1*s.* 7*d.*—Ducatone, of 21 Lire, 3*s.* $11\frac{1}{4}d.$—Ducatone of 1784, 4*s.* $1\frac{1}{4}d.$—Sequin of 45 Lire, gold, 8*s.* $5\frac{1}{4}d.$—Zecchino, gold, 9*s.* $5\frac{1}{2}d.$—Doppia, or Pistole, 72 Lire 12 Soldi, 13*s.* $7\frac{1}{2}d.$—Doppia, or Pistole of 1786, 17*s.* $4\frac{1}{2}d.$—Doppia, or Pistole of 1784, 18*s.* 3*d.*—20 Lire, Maria Louisa, 1815, 15*s.* $10\frac{1}{2}d.$—40 Lire, Maria Louisa, 1815, £1. 11*s.* 9*d.*

Accounts are kept in Lire of 20 Soldi, or 240 Denari, also in Italian Lire of 100 Centesimi. The Louis d'or is worth about 97 Lire.

PERSIA.—Coz, $0\frac{2}{5}d.$—Bisti, $1\frac{3}{5}d.$—Mamoudi, silver, $4\frac{1}{2}d.$—Abassi, 9*d.*—Larin $9\frac{1}{2}d.$—Rupee, 1*s.* $11\frac{1}{2}d.$—Rupee, double, 3*s.* $10\frac{1}{2}d.$—Half Rupee. gold, 14*s.* $6\frac{3}{4}d$ Rupee, gold, £1. 9*s.* $1\frac{3}{4}d.$

PIEDMONT, TURIN, NICE, &c.—The copper coins are pieces of 1 Soldi, and Quatrini, consisting of 3 Denari.

$2\frac{1}{2}$ Soldi piece, base silver, $1\frac{1}{4}d.$—$7\frac{1}{2}$ Soldi piece, 4*d.*—One-eighth of Scudo of 15 Soldi, silver, $8\frac{1}{4}d.$—Quarter Scudo of $1\frac{1}{2}$ Lire, 1*s.* $4\frac{3}{4}d.$—2 Lire piece, 1*s.* $10\frac{1}{2}d.$—Half Scudo of 3 Lire, 2*s.* $9\frac{1}{2}d.$—1 Scudo, new, of 5 Lire, 1816, 3*s.* $11\frac{1}{2}d.$—Scudo of 6 Lire, since 1755, 5*s.* $7\frac{1}{4}d.$—Half Zecchino, or Sequin, gold, 4*s.* 8*d.*—Quarter Doppia, or Pistole, 5*s.* $7\frac{1}{2}d.$—Zecchino, or Sequin, 9*s.* $5\frac{3}{4}d.$—Zecchino of Genoa, 9*s.* $6\frac{1}{4}d.$—Half new Pistole, 10*s.* $10\frac{3}{4}d.$—Marengo, of 20 Franc piece, 14*s.* 7*d.*—New Pistole of 20 Lire, 1816, 15*s.* 10*d.*—Double new Pistole of 24 Lire, £1. 3*s.* $9\frac{1}{2}d.$—Quarter Carlino of 30 Lire, £1. 8*s.* $1\frac{1}{2}d.$—Half Carlino, since 1755, £2. 19*s.* 6*d.*—Carlino, £5. 19*s.*

Accounts are kept in Lire, Soldi, and Denari; the Lira consists of 20 Soldi, and the Soldo of 12 Denari—the Lira is worth about $11\frac{1}{4}d.$ Some keep their accounts in Francs and Centimes, as in France.

POLAND.—Shelon, $0\frac{7}{45}d.$—Grosh, $0\frac{7}{15}d.$ part of a penny English.

Caustic, $2\frac{1}{5}d.$—Timse, 7*d.*—Ort, $8\frac{2}{5}d.$—Florin, 1*s.* 2*d.*—Rix dollar, 3*s.* 6*d.*—Ducat, 9*s.* 4*d.*—Frederic d'or, 17*s.* 6*d.*

PORTUGAL.—Re *a*, $\frac{27}{400}$ the half Vinten—$\frac{27}{40}$ parts of a penny English.—Vinten, $1\frac{7}{20}d.$—Testoon, silver, $6\frac{3}{4}d.$—New Cruzada of 480 Reis, silver, 4*s.* 11*d.*—Cruzada of 480 Reis, gold, 2*s.* $7\frac{1}{4}d.$—8 Testoon piece, 800 Reis, 4*s.* $5\frac{3}{4}d.$—12 Testoon piece, 1200 Reis, 6*s.* $4\frac{1}{4}d.$—16 Testoon piece, 1600 Reis, 8*s.* $11\frac{1}{4}d.$—Half Portuguese piece, or Moiadobra, 3200 Reis, 17*s.* $10\frac{1}{2}d.$—1 Portuguese piece, or Moiadobra, 6400 Reis, £1. 15*s.* 10*d.*—Quarter Lisbonina, or Moidore, 1200 Reis, 6*s.* $8\frac{3}{4}d.$—Half Lisbonina, or Moidore, 2400 Reis, 13*s.* $5\frac{1}{2}d.$—1 Lisbonina, or Moidore, 4800 Reis, £1. 6*s.* $11\frac{1}{4}d.$

PRUSSIA.—The Pfennig is $\frac{1}{100}$, and the Gröschel $\frac{3}{100}$ of a penny English.—Silber Groschen, $0\frac{3}{4}d.$—Guter Groschen, $1\frac{1}{2}d.$—5 Silver Groschen piece, $5\frac{3}{4}d.$—Currency Dollar (Courant Thaler)=24 good, or 30 silver Groschen, or 360 Pfennigs, nearly 2*s.* $11\frac{1}{4}d.$—Half Frederic, gold, 8*s.* 3*d.*—1 Froderic, 16*s.* 6*d.*—Ducat, 9*s.* 4*d.*—Paper money down to a Thaler.

ROME, BOLOGNA, &c.—The copper coins are the Bajoccho, the half Bajoccho, and the Quattrino. The base silver is—

Bajocchello of 2 Bajocchi, 1*d.*—Bajocchello, double, 2*d.*—Carlino of $7\frac{1}{2}$ Bajocchi, $3\frac{3}{4}d.$—Carlino, double, $7\frac{3}{4}d.$—Piece of $2\frac{1}{2}$ Bajocchi, silver, $1\frac{1}{4}d.$—Half Paolo, or piece of 5 Bajocchi, $2\frac{1}{2}d.$—Paolo, or 10 Bajocchi, $5\frac{1}{2}d.$—Papetto of 2 Paoli, $10\frac{1}{2}d.$—Testone of 3 Paoli, 1*s.* $3\frac{3}{4}d.$—Half Scudo of 5 Paoli, 2*s.* $1\frac{1}{4}d.$—Scudo Romano of 10 Paoli, 4*s.* $3\frac{1}{4}d.$—Half Zecchino, gold, 4*s.* $8\frac{1}{4}d.$—Half Doppia, or Pistole, 6*s.* $11\frac{1}{2}d.$—Zecchino, or Sequin, 9*s.* $4\frac{1}{2}d.$—Doppia, or Pistole, Paoli 6 or 8, 13*s.* $11\frac{1}{4}d.$—Double Zecchino, 18*s.* 9*d.*

Accounts are kept in Crowns, or Scudi, called Scudi Romani, and Scudi Moneta, in Paoli, and Bajocchi. Each Scudo contains 10 Paoli, and each Paoli 10 Bajocchi. The Scudo is also sometimes divided into $3\frac{1}{3}$ Testoni, 500 Quattrini, or 1000 half Quattrini. The Louis d'or is worth 44 Paoli; Napoleons 36 Paoli; Spanish Dollars 10 Paoli.

RAGUSA.—Grossette, $0\frac{1}{2}d.$—6 Grossettes, silver, 2*d.*—12 Grossettes, 4*d.*—Ducat, 1*s.* 1*d.*—Half Ragusa, or Half Talaro, 1*s.* 6*d.*—1 Ragusa, or Talaro, 3*s.*

RUSSIA.—The value of money of the same denomination varies much, there is also great difference in the value of paper money and coins of the same name. The following is the principal coinage in use:—

Ruble of 100 Kopecks, 1763 to 1807, silver, 3*s.* 2*d.*—Ruble of 1750 to 1762, 3*s.* $7\frac{3}{4}d.$—Half Imperial, since 1763, 10 rubles, gold, 16*s.* $4\frac{1}{2}d.$—1 Imperial, since 1763, £1. 12*s.* 9*d.*—Half Imperial from 1755 to 1763, 10 Rubles, £1. 0*s.* $9\frac{1}{4}d.$—Imperial from 1755 to 1763, £2. 1*s.* $6\frac{1}{2}d.$—Ducat of 1763, 9*s.* $2\frac{1}{4}d.$—Ducat from 1755 to 1763, 9*s.* $4\frac{1}{4}d.$

Accounts are reckoned in Rubles and Kopecks, when, for common purposes a Kopeck may be accounted as the 10th of a penny, and a Ruble at $10\frac{1}{2}d.$ The small monies are called Poluscas, Denuscas, Kopecks, Altins, Grievenes, and Polpolitans.

SARDINIA.—The copper coins are Half Soldi, Cagliaresi, and Denari.

Half Real, base silver, $2\frac{1}{4}d.$—Real, $4\frac{1}{2}d.$—Quarter Scudo, $11\frac{1}{2}d.$—Half Scudo, 1*s.* $10\frac{1}{4}d.$—Scudo since 1768, 3*s.* $8\frac{3}{4}d.$—Scudo, 1816, 3*s.* $11\frac{1}{2}d.$—Doppietta, or gold Scudo, 7*s.* $8\frac{1}{2}d.$—Half Pistole, 11*s.* $3\frac{1}{4}d.$—Pistole, £1. 2*s.* $6\frac{1}{2}d.$—Half Carlino, 19*s.* $6\frac{3}{4}d.$—Carlino, since 1768, £1. 19*s.* $1\frac{1}{2}d.$

SAXONY.—Multiples of the Penning and divisions of the Dollar and Rix Dollar serve as the small coinage.

Groschen, 24 to the Thaler, 32 to the Rix Dollar, 1½*d.*—Thaler, of 24 Groschen *a*, 3*s.* 1*d.*—Half Rix Dollar, or Florin, 1763, 2*s.* 0½*d.*—1 Rix Dollar specie conventional, 4*s.* 1½*d.*—Half Augustus, gold, 8*s.* 2¾*d.*—1 Augustus, 5 Thalers, 16*s.* 5½*d.*—Augusta, double, £1. 12*s.* 9*d.*—Ducat, 9*s.* 5*d.*

SICILY, MESSINA, &c.—Neapolitan coins are current.

Half Carlino, 5 Grani, 1$\frac{1}{10}$*d.*—1 Carlini, 10 Grano, 2½*d.*—Taro, 4¼*d.*—Scudo of 12 Tari, 4*s.* 0½*d.*—Onza of 3 Ducati, or 30 Tari, 1785, 10*s.* 10½*d.*—Onza, double, £1. 1*s.* 8½*d.*

Accounts at Messina and Palmero are kept in Onzie, Tari, and Carlini. The Onza contains 30 Tari, and the Tarro, 2 Carlini.

SPAIN.—Reallillo $\frac{1}{20}$ Piastre (Peninsula), silver, 2½*d.*—Real of 1, or Half Peseta $\frac{1}{10}$ Piastre, silver, 5¼*d.*—Real of 2, or Peseta $\frac{1}{5}$ Piastre, 10½*d.*—Piastre, since 1772, 4*s.* 2¾*d.*—Half Pistole, or Crown, gold, 8*s.* 1*d.*—Doubloon, 2 Crowns, 16*s.* 2*d.*—Doubloon 4 Crowns, £1. 12*s.* 4*d.*—Doubloon 8 Crowns, since 1786, £3. 4*s.* 8*d.*—Half Pistole or Crown, 1772 to 1786, 8*s.* 3¾*d.*—Doubloon or 2 Crowns, 1772 to 1786, 16*s.* 7¾*d.*—Doubloon or 4 Crowns, ditto, £1. 13*s.* 3½*d* —Doubloon or 8 Crowns, ditto, £3. 6*s.* 7*d.*

SWEDEN.—The Runstick, Stiver, copper Marc, silver Marc, and copper Dollar are the small coins.

One-third Rix Dollar, or 16 Shillings, silver, 1*s.* 6*d.*—Three-eighths Rix Dollar, or 32 Shillings, 3*s.*—1 Rix dollar, or 48 Shillings, from 1720 to 1802, 4*s.* 6*d.*—Quarter Ducat, gold, 2*s.* 3¾.—Half Ducat, 4*s.* 7½*d.*—1 Ducat, gold, 9*s.* 3¼*d.*

SWITZERLAND.—1 Franken piece, 1*s.* 2½*d.*—2 Franken piece of Switzzerland, 1803, 2*s.* 4½*d.*—4 Franken piece of Switzerland, 1803, 4*s.* 9*d.*—4 Franken piece of Berne, 1799, 4*s.* 8*d.*—Crown of 40 Batz, Basle and Soleure, since 1798, 4*s.* 8*d.*—Half Crown or Florin, since 1781, 1*s.* 10¼d.—1 Crown of Zurich of 1781, 3*s.* 8½.—Franken of Berne, since 1803, 1*s.* 2½*d.*—Half Crown, or Florin of Basle, 1*s.* 9¼*d.*—1 Crown, 30 Batz, or 2 Florins, 3*s.* 7½*d.*—Pistole of Berne, gold, 18*s.* 10*d.*—Ducat of Berne, gold, 9*s.* 2¾*d.*—Ducat of Zurich, 9*s.* 5*d.*—16 Franken piece, 18*s.* 10½*d.*—32 Franken piece, £1. 17*s.* 9*d.*

The value of money differs in various parts, which will be seen by referring to many of the Cantons placed in these tables. Note also what is stated of the Louis neuf, page 6½.

TURKEY.—The small coins are the Mangar, 4 of which are an Aspre, 3 Aspers are 1 Para, and 40 Paras 1 Piastre; there are also coins called the Bestic, Ostic, and Solota.

Aspres, 120 to the Piastre, are silver; Rouble of 10 Paras, or 30 Aspres, 4½*d.* Yaremlec of 20 Paras or 60 Aspers, 9¼*d.*—Piastre of 40 Paras, 1*s.* 7*d.*—Altmichlec of 60 Paras, since 1771, 2*s.* 9½*d.*—5 Piastre piece, 3*s.* 3¾*d.*—Zecchin zermahboub Selim III, 5*s.* 9½*d.*—Half Zechin zermahboud Selim III, gold, 2*s.* 4¾*d.*—Quarter Zechin zermahboub, 1*s.* 2¼*d.*—1 Zechin zermahboub, Hamet 1774, 6*s.* 11*d.*—Half Zechin zermahboub, ditto, 3*s.* 5½*d.*—Roubbie, or Quarter Zecchin Fondoukli, 1*s.* 11*d.*

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TUSCANY, FLORENCE, LEGHORN, PISA, &c.—The copper coins are Soldi, two-thirds of a Soldo, and Quatrini, one-third of a Soldo.
Crazia, base silver, 0¾*d.*—Quarter Paolo, 1½*d.*—Half Paolo, silver, 2½*d.*—Paolo, 5*d.*—Lira of 20 Soldi, 9*d.*—2 Paolo piece, 10*d.*—Quarter Tallaro of 1½ Lire, 1*s.* 1½*d.*—3 Paoli piece, 1*s.* 3*d.*—Half Tallaro of 3 Lire, 2*s.* 3*d.*—Franceschino, or Leopoldino 5 Paoli, 2*s.* 2½*d.*—Tallaro of 6 Lire, 4*s.* 6*d.*—Francescone, or Leopoldo, or Scudo of 10 Paoli, 4*s.* 5½*d.*—Half Rosina, 8*s.* 6½*d.*—1 Rosini, 17*s.* 1*d.*—Zecchino, with effigy, 9*s.* 6½*d.*—Half Zecchino, with effigy, 4*s.* 9*d.*—One-third Ruspone, or Zecchino, 9*s.* 6½*d.*—1 Ruspone, or 3 Zecchino, lily, £1. 8*s.* 7*d.*

Accounts are kept in Lire, each worth about 8½*d* to 9*d.*; it is divided into 12 Crazie, or 20 Soldi; the Soldo into 3 Quattrini, and the Quattrino into 4 Denari. The Spanish Dollar is worth about 6½ Lire. Roman money is less by a Half Bajoccho in a Paolo. The new money is of 5 and 10 Livres, and of $\frac{1}{10}$ of a Livre, or 2 Sous.

VENICE.—The copper coins are Picoli, Soldi, and half Soldi, or Baggatina.
5 Soldi piece, base silver, 1¼*d.*—10 Soldi piece, 2½*d.*—15 Soldi piece, 3¾*d.*—20 Soldi piece, 5*d.*—30 Soldi piece, or Lirazzo, 7½*d.*—Lira, silver, 5*d.*—Quarter Ducato, 2 Lire, 10*d*—Quarter Scudo, 1*s.* 3¾*d.*—Osello (rare), 1*s.* 7½*d.* Half Ducato, 4 lire, 1*s.* 8*d.*—Half Scudo, 2*s.* 7*d.*—Ducatone, 3*s.* 4*d.*—Scudo, or Talaro, 4*s.* 2*d.* Ducatone, or Giustina of 11 Lire, 4*s.* 8¾*d.*—Scuda Veneto, or Della Croce, 5*s.* 3¾*d.*—Quarter Zecchino, gold, 2*s.* 4½*d.*—Half Zecchino, 4*s.* 9*d*—Zecchino or Sequin, 9*s.* 6*d.*—Ducato, 5*s.* 11½*d.*—Doppia, or Pistole, 15*s.* 11½*d.*—Ozella, £1. 17*s.* 4*d.*

Accounts are kept in Italian Lire and Soldi; the Lire contains 20 Soldi, and the Soldo 12 Denari. The Talaro only circulates in the Levant.

VAUD (*Switzerland*).—12 Deniers=1 Sou; 10 Rappen or 20 Sols=1 Batz; 10 Batzen=1 Swiss Livre, 1*s* 2¼*d.*—Old Crown, 1812, 4*s.* 10*d.*

POPULAR COMMERCIAL TERMS.

Abandonment. To abandon or surrender a ship, or goods insured to the insurer.

Advance. The consignee paying a half or two-thirds of the value on receiving invoice or bill of lading.

Adventure. Goods consigned to a party to be made the most of.

Average. A sacrifice made to prevent a total loss of a ship or cargo; an average of the loss insured for the benefit of all concerned, to be made good proportionately.

Barratry. A fraudulent act on the part of the master or crew of a vessel, against the interest of the owners. Insurances are effected against barratry.

Bill of Entry. An account of goods entered at a custom-house.

Bill of Lading. An acknowledgment of the receipt of goods and undertaking to deliver them where consigned

Bill of Sight. The particulars not being known, an account given to the custom-house as nearly as can be, to obtain a warrant for landing them previous to examination for more perfect entry.

Bill of Store. A licence for stores, duty free, necessary for a voyage.

Bill of Sufferance. A licence to English merchants to trade from one British port to another, custom free.

Bottomry. Money borrowed on a ship's bottom or hull, to be repaid with interest if the ship return in safety, but if not to be lost or forfeited. Sometimes it is raised on the lading and master's personal security; it is then termed *Respondentia.*

Broker. A person who transacts business between other parties.

Charter Party. The instrument of freightage, or articles of agreement for the hire of a vessel.

Credit, Letter of. A letter written by one party to another, requesting the party addressed to advance the bearer or person named a certain sum of money.

Debenture. An instrument of the nature of a bill or bond, by which a debt is claimable. May bear interest or confer some peculiar advantage. It is given at the custom-house to claim a drawback.

Demurrage. Allowance made by a freighter for detention of a ship.

Dereticts. Goods cast away, or relinquished by wreck or otherwise. Reductions in duty are also made proportionate to the damage on them.

Dunnage. Things placed in the bottom and against the sides of a ship's hold to protect the cargo against leakage. The vessel is then deemed sea-worthy.

Draft. A deduction from the gross weight, which varies according to the class of goods.

Drawback. An allowance granted by Government to encourage exportation of an article, or a return of duties paid upon certain articles on exportation.

Earnest. For bargains above £10. a part of the goods bought must be retained, an agreement in writing, or an earnest in part payment given to bind the bargain. If part of the goods bought be retained, the whole must be paid for. The whole must be returned, or the whole paid for, if the party be dissatisfied with a portion.

Embargo. An order issued by government to prevent vessels sailing.

Factor. A person to whom goods are sent for sale, he is a general dealer, and generally buys and sells in his own name.

Flotsam. Goods floating after a wreck. *Jetsam*, are those sunk. *Lagan*, are those sunk, but secured by a buoy.

Freight. The hire of a ship, or part of it, for the conveyance of goods from one port to another.

Garble. The refuse and dirt of spices, drugs, dyes, &c.

Groundage. Money paid in some parts for permission to anchor.

Kentlage. Pigs of iron, used for ballast, laid on the floor of a ship near the kelson, fore and aft.

Lastage. Sand or ballast to keep a ship steady.

Leakage. An allowance of 12 per cent. on the duty to importers of wine, for waste and damage by keeping.

Letters of Marque. A power granted to individuals to fit out vessels to act against an enemy.

Letters of License. Permission to an embarrassed person by the creditors, to conduct his business without molestation.

Net Weight. The exact weight after deducting for package, &c. see *Tare.*

Post Entry. When too small an entry has been made at the custom-house, and an additional one is found necessary.

Primage. An allowance paid to the master of a vessel over and above his freight, for stowage, &c.

Pro Rata. A proportionate profit or loss upon an adventure, according to each person's interest.

Salvage. An allowance to those who save property from the dangers of the sea.

Ship's Husband. A person who manages the affairs and business of a ship.

Stoppage. Is the person consigning goods on credit, resuming possession until they are paid for.

Ship's Manifest. An account of the cargo of a ship, delivered by the master both before the vessel sails, and on her arrival at port.

Storage. Charges for warehousing.

Super-cargo. A person sent with a vessel, to dispose of its cargo to the best of his abilities.

Ship's Papers. Certificate of registry, Licence, Charter-party, Bill of health, Bills of lading, Passport, Muster-roll, &c.

Tare. A deduction for the weight of the covering of the Goods. *Real Tare* is the actual weight of a package; *Customary Tare* is the weight

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usually allowed on such packages; *Average Tare*, is a medium weight of a few of the packages applied as a rule to the rest.

Tret. Is an allowance for waste or dirt that may be with any commodity; it is usually 4 lbs. in 104 lbs.

Tonnage. Is the quantity, or weight of cargo that a ship is capable of carrying. The tonnage of a vessel is found by multiplying the length of the keel, measured inside the ship, or as much as treads on the ground, by the length of the midship beam, taken also within, from plank to plank, and that result by half the breadth taken as the depth; then divide the last product by 94, and the answer will be the tonnage.

Ullage. So much of a cask or other vessel, as it may want of being full.

Underwriter. Is one who insures ships or cargoes.

Wharfage. An allowance for landing, weighing, or shipping goods, and for the use of the wharf.

Warrantry. An undertaking that the article sold is as stated by the seller to the buyer.

ARITHMETICAL SIGNS.

= *Equal.* The sign of Equality; as 4 quarters=1 cwt. that is 4 quarters are equal to 1 cwt.

— *Minus* or less. The sign of Subtraction; as 8—2=6, that is 8 lessened by 2 is equal to 6.

\+ *Plus* or more. The sign of Addition; as, 4+4=8, that is, 4 added to 4 is equal to 8.

× *Multiplied by.* The sign of Multiplication; as 4×6=24, that is 4 multiplied by 6 is equal to 24.

÷ *Divided by.* The sign of Division; as 8÷2=4, that is, 8 divided by 2 is equal to 4.

: *As*, :: *So.* The signs of Proportion; thus, 2 : 4 :: 8 : 16, that is, as 2 is to 4, so is 8 to 16.

Numbers placed like a Fraction likewise denote Division, the upper number being the dividend, and the lower the divisor, as $\frac{3}{4}$, that is, 3 divided by 4, or 3 fourths.

A line drawn over two or more figures, as $\overline{2+3}$, shows that they are to be regarded as one quantity.

7—2+5=10. Shows that the difference between 2 and 7 added to 5 is equal to 10.

9—2+5=2. Shows that the sum of 2 and 5 taken from 9 is equal to 2.

$\surd$ Sign of the *Square Root;* as $\surd 16=4$; that is the square root of 16 is 4.

$^3\surd$ Sign of the *Cube Root;* for example, $^3\surd 64=4$: that is, the cube root of 64 is equal to 4.

A dot placed before a figure shows it is a Decimal Fraction; as ·3, which is the same as 3÷10, or $\frac{3}{10}$.

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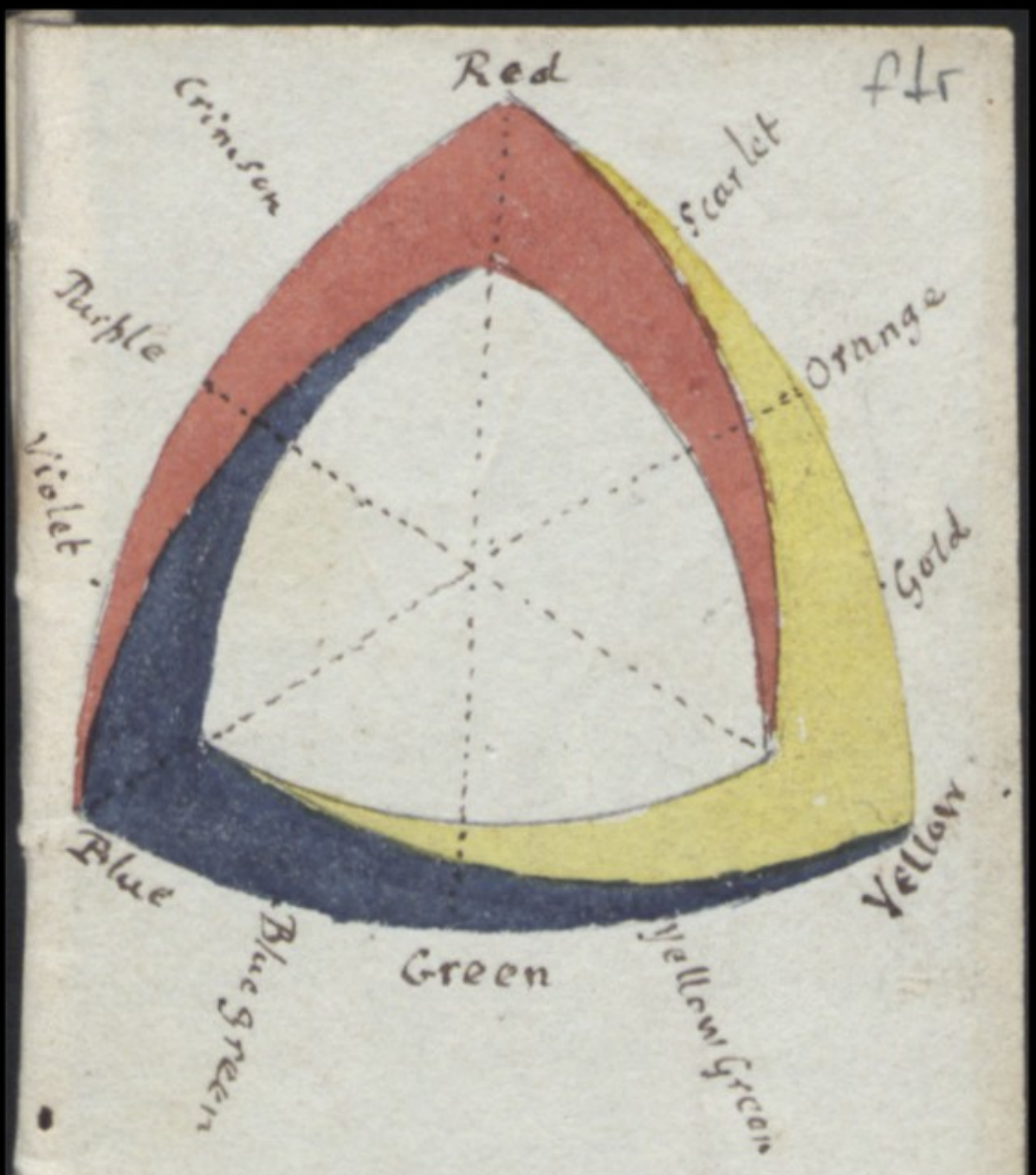
PAPERS
2/10/1/2



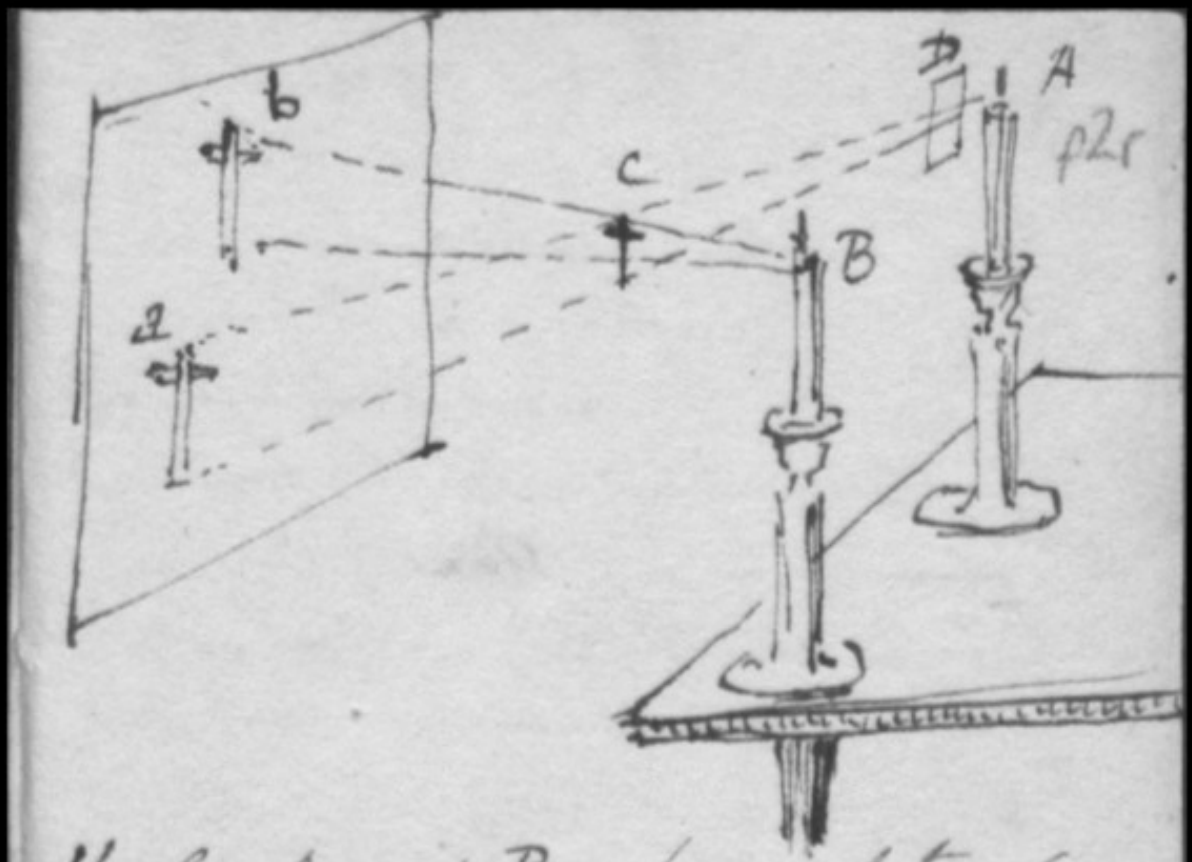
ftr.

Light and Colour.

The ordinary light of the Sun or (as it is called) white light is compounded of

f1v three colours, Red, Blue and Yellow, combined ~~with each other~~ in such proportions as to neutralise each other's effect. This appears by the well-known experiment of the prism.

These are called Primitive Colours, because from the combinations of these all other secondary shades and hues of colour may be produced. They are ~~all~~ easily distinct from each other: i.e. the colour formed from the combination of any two of them, having nothing whatever in common with the third, may be properly called it opposite or antagonist colour. Thus Green is the opposite of Red, Yellow of Purple, &c.



1/ Let A and B represent two candles, C an opake object, held up in such a way as to receive the light of each of them, & thereby cast two shadows, (a the shadow from A, and b from B,) upon a white sheet of paper or linen.

In this case the entire sheet is covered with ~~a stream~~ ordinary candle light, i.e. of a mixture of Red, Yellow, & blue light, in which

combination, the red & yellow are rather predominant over the blue. Each shadow, receiving the light of only one candle, is but half as bright as the rest of the sheet, wch is illuminated by the two candles.]

2/ Cover the flame of the Candle A with a piece of coloured glass D; immediately the shadow b becomes tinged of that colour, and the shadow a of the opposite or antagonist colour. Thus if D be red, b will be red and a green; if D be yellow, b will be yellow and a purple; &c.

3 N.B. In order to shew the Experiment to advantage, it is necessary, that the in order to continue an equal depth of colour in the two coloured shadows, that the Candle, before which the coloured

glass is held, be much nearer than they are both to the opake object C and to the White Sheet: And this difference of position must be increased in proportion as the glass by its greater darkness of colour intercepts more of the light of the candle A. All the other lights besides A & B must be removed.

Explanation of the above Phaenomenon.

Of this Phaenomenon two Explanations are given.

2. It is generally supposed that the removal of one vivid sensation produces a sensation of its contrary. When we have dazzled our sight by looking at a red object in a strong light, if we close our eyes, we seem to see a spectre of the same shape like the former object, but

of the opposite colours: thus the spot of a Ten of hearts will be seen with closed eyes, as if ~~the spot was~~ green: and so of the other colours. Hence the absence of the coloured Beam of light from the shadow suggests the idea of the opposite colour: ...

1. Before the intervention of the coloured glass, the entire ~~shadow~~ is covered with a stream of ordinary Candle light, ~~which~~ i.e. with a mixture of Red, Yellow & Blue light, in which combination, the red & yellow are rather predominant, so as to give a slight tinge of Orange to the whole sheet. Each shadow receives the light of only one Candle, it but half as bright as the rest

f3v

of the sheet, which is illum.d by the two candles,

f.45

Now when you advance the coloured glass to A, a shadow b falls [illegible] the shadow b and deeply coloured light a — you see it [illegible] over the whole sheet with the exception of the shadow b, which it cannot reach: as regards b, the integrity of the [illegible] (tells, as the painters would [illegible] it) the slightest portion of the same colour, which existed in the shadow b: that shadow therefore now presents itself to the eye tinged only (as to appearance) with the two remaining colours. Thus if the glass be red, the shadow b will appear red, and the shadow a green. And so of the other colours.

And This explanation may

appear to be satisfactory as regards the shadow a. But ~~a question~~ it may be asked how happens it that the shadow b appears of a deeper tinge than the rest of the sheet, upon the whole of which the stream of coloured light is poured?

It is a known fact in paint[ing] that if with indian ink (or any other colourless dye substance) you shadow out any object upon a sheet of white paper, and then wash the whole surface of that paper with an uniform coat of transparent colour, — this new colour will shew itself with greater intensity upon the shaded object than upon the rest of the

f4v

paper: the shade gives (what painters would call) a body to the new colour, which is wanting in the other parts of the paper. Those other parts are indeed of a brighter & purer hue: but, from the want of that "body", they have a less substantial depth of colouring. Though pure & unmixed colours, they make a slighter impression upon the eye.

45

Three armed Dinner Table

(M North)

71

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PAPERS
2/10/1/13

Dinner table

1^d = 5 quints 1^s = 60 quints £ $\frac{1}{100}$ = 2^d + 2 quints = 1 groat
= 12 quints
6 quints = $\frac{1}{2}$ groat

fraction of £	s	pence	groats	quints	
$\frac{1}{240}$		1	5	5	
$\frac{1}{120}$		2	10	10 (12)	
$\frac{1}{80}$ — 2.24		3	1.3	15	
$\frac{1}{60}$		4	1.8	20	
		5	2.1	25	
$\frac{1}{48}$		6	2.6	30	$2\frac{1}{2}$
		7	2.11	35	
$\frac{1}{30}$		8	3.4	40	
		9	3.9	45	
		10	4.2	50	
		11	4.7	55	
$\frac{1}{20}$	0	12	5	60	5
	1	1	5.5	65	
	1	2	5.10	70	
	1	3	6.3	75	
	1	4	6.8	80	
	1	5	7.1	85	
	1	6	7.6	90	
	1	7	7.11	95	
	1	8	8.4	100	
	1	9	8.9	105	
	1	10	9.2	110	
	1	11	9.7	115	
	2	—	10	120	

£3. 17. 6 = gr 387/6

3,87,6

60 = 1 × 2 × 2 × 3 × 5
reply farth halfpen penny shill

1 penny = 2 halfpence + 2 farthings

$\frac{1}{2}$	1	
$1\frac{1}{2}$	3	
1	5	$\frac{1}{24}$ $\frac{1}{10}$
$1/2$	12	$\frac{1}{5}$
3	15	$\frac{1}{4}$
4	20	$\frac{1}{6}$
8	40	$\frac{1}{3}$
1^s	60	$\frac{1}{2}$

quints	pence	½	far
1			1
2			2
3		1	
4		1	1
5	1		
6	1		1
7	1		2
8	1	1	2
9	1	1	1
10	2	1	1
11	2	2	1

utmost 3 ciphers

	pen	quint
1 groat	2 .	2
2	4 .	4
$2\frac{1}{2}$	6	
3	7 :	1
4	9	3
5		

= one 3^d — one halfpenny
1 farthing piece shall be ... called ½ 1/4 of a penny
1 halfpenny piece — ... ½ of a penny

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f25

N.° 211

J.F.

Hôtel de L'OURS à Grindelwald

tenu par

PIERRE BOHREN.

NOTE

1863.		Fr.	Cent.
Sept. 20	2 Dîners	6.	»
	1 Cont. ord.	1.	50
	1 Tasse Café	»	50
	2 Thés	3.	»
21.	2 Dej:	3	
	1 Pyramide Bourgès	6.	»
	19	19	»
	Divers	2.	
	pr. acquis	Fr.	30.50
	Bohren		

f2v

0	quints	12 quints = 1 cent
1	= 5	
2	= 10	
3	= 15	= 1 1/4 cent
4	= 20	= 1 1/2 cent a 2 quints
5	= 25	
6	= 30	= 2 1/2 cent

1 quint New coin 1/10 1/10 1 cent

3 cent

2 cent 4d

12 = 60 = 5 Cents

24 = 120 = 10 Cents.

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1d & 3
1/4 = 2.

One penny 5 quints

1 quint

1 cent 12 quints

3 Cents

5 Cents

Threepence 1 1/4 Cent

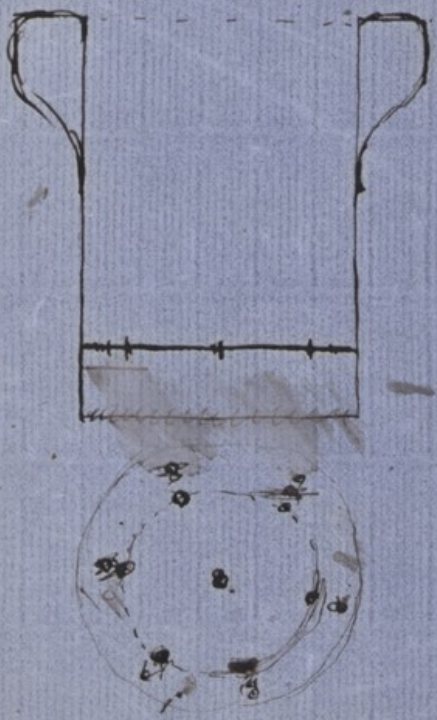
Sixpence 2 1/2 Cents

1 Shilling 5 Cents

10 Cents

6 1/4

farthings
2
3
1



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f45

L.d Overstreet

12. 37 1/2 — 6d 2s 1 1/2 or 1/- 2:13. Eventually much the same – a picked face for the pence because the [struck: quint] 1/2 cent scheme has doubtful accuracy to pence.
62 1/2
6. 1/4
3 1/4

Again 18. 1/4 — easier
6. 1/4 — easier

7 at 5	35	
7 1/2	38 1/2	
12 1/2	87 1/2	much the same in all but the shilling
8 — 5	40	cases – the case of 10 cents a yard would
7 1/2	60	be as easy as the shilling cases.
12 1/2	100	
9 — 5	45	
7 1/2	67 1/2	
12 1/2	112 1/2	

Take [struck: 37 1/2] dollars [struck: 7] 28
half a crown [struck: 2/6] do this that or the other cannot be done by any person in his head in the midst of confusion – neither can 12 1/2
the half crown is a very favorable example [struck: an easy one] not to be puzzled about because it is a definite coin having many well known factors. [struck: I had rather coin] Comparison should be made between that say, 30 cents supposing we had a 30 cent piece.
[illegible]
The calculation with 30 cents is identically the same [struck: just as easy] as with 30 pence

12 lb boxes at 5 1/2 cent each box = 1 lb at 6 [struck: quints] cents
or at 5 1/2 quints
1 lb at 4 cents and $\frac{7 \times 12}{12}$ or 7 quints

		Pence		Cents
1 yard or [struck: lb]	= 2 1/2	= 30	=	12 1/2
1/2	1. 3	= 15	=	6 1/4
1/3	=	10	= 10	= 4 / 2 quints
1/4	=	7 1/2	= 7 1/2	= 3 & between 1 & 2 quints
1/5		impossible	=	2. 1/2
1/6	=		5	= 2 / 1 quint
1/8			5 3/4	= 1 / 7 quints nearly
1/10	=		3	= 2 1/4
1/15	=		2	= 10 quints
1/24 1/30	=			5

Loss to decimal scale
deficiency of 3 but there are of [illegible] factors of this quints [illegible] very near approximations

2/4 & 1/3 can still be paid by 1 or 2 coins respectively

f42v

5		5	9
1.	12		
	11	4	7
	10	4	2
	9	3	9
	8	3	4
	7	2	11
	6	2	6
	5	2	1
	4	1	8
	3	1	3
	2		10
	1	5	5
		11 = 5.3	
		1 . 3 . 4	

$x = \frac{a \times 12}{10}$

$\frac{a}{10} = \frac{x}{12}$

7

$\frac{1}{3}$ cent = 4 qrs

$\frac{1}{4}$ cent = 3 qrs

1	05
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50
11	55
12	60
13	65
14	70
15	75
16	80
17	85
18	90
19	95

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£ pence

£ 1 = 5 × 4 × 3 × 4
= 5 × 3 × 2^4

in pence	$5^2 \times 2^4 \times 3$	$5 \times 3 \times 2^4$
in halfpence		
in farthings	$5^2 \times 2^6 \times 3$	$5^2 \times 3 \times 2^6$

£ 1 in cents	$5^2 \times 2^2$	$5^2 \times 2^2$
in quarters	$5^2 \times 4^2$	$5^2 \times 2^4$
in quints	$5^2 \times 2^4 \times 3$	$5^2 \times 2^4 \times 3$
	$5^2 \times 2^2 \times 3 \times 2^2$	

in cents & quarters	$5 \times 5 \times 2^4$
in cents & quints	$5 \times 5 \times 3 \times 2^4$

Coins { $\frac{1}{4}$ a cent or 3 quint pieces.
1 cent

f5

12. 12 boxes at 11^d each = 550 groats

1 = $4\frac{gr}{1}$/7 quints

1 yard = 2^s/6^d = 12.5 or 12/6 quints

$\frac{1}{2}$	6/3
$\frac{1}{3}$	= 4/2
$\frac{1}{4}$	= 3/1$\frac{1}{2}$
$\frac{1}{8}$	= 1/$\frac{1}{4}$ near
$\frac{1}{10}$	= 1.25
$\frac{1}{12}$	= 1/$\frac{1}{2}$

7/6	= 37.5	37/6
2/6	= 12.5	12/6
1/3	= 6.25	6/6
9	= ~~8~~	4/6

50/4

60/

720

70

21

1lb = 1^s	60
$\frac{1}{2}$ 6^d	30
$\frac{1}{4}$	15
$\frac{1}{8}$	~~8 near~~
$\frac{1}{16}$	4 near

14	100/
17–8	88/4
15–6	[illegible]/6
9–9	48/9
6–3	31/3
5–7	27/11
4–10	24/2
3–8	18/4
2–4	11/8
1–5	7/6
	483/4

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question 14

Lord Overstone continued

A £	c	q		B £	$\frac{1}{4}$
1. 0	0	0	1 00	1.00	
	.88	4	88 $\frac{1}{4}$ *	88	1
	77	6	77 $\frac{1}{2}$	77	2
	48	9	48 $\frac{3}{4}$	48	3
	.31	3	31 $\frac{1}{4}$	31	1
	27	11	28 * +	28	
	24	2	24 $\frac{1}{4}$ * +	24	1
	18	4	18 $\frac{1}{4}$ * -	18	1
	11	8	11 $\frac{3}{4}$ *	11	3
	07	1	7	7	
	435	0	435. $\frac{1}{4}$	435	1

Ld Overstone's power 27 — 35 [4] — 35 counting fractions as single figures they would be written as quarters

	B $\frac{1}{4}$ cents	A
1	31 against 27	35. against 27
2	conciseness in same proportion	ditto
3	decidedly inferior in mine	inferior in mine
4	equal	equal
5	more in superior	~~Inferior~~ mine is the best for
6	close in plan B ~~accurate in A.~~	accurate

£4-7 =	£ c	q		£ s d
	435	4		4 7
$\frac{1}{3}$	145			1 . 9
$\frac{1}{4}$	108	3		1 . 1 9
6	72	2		14. 6
mine 5	87			impossible
12	36	1		7 . 3

More divisible & more easily divisible than the proposed same

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(1st question) £ – Questions continued

The table clearly is maintained in cents & merely for the divisibility of 2/6 in cents (see below)

for divisibility of 10 cents (2d) to halfpence: 2×12×2 in halfpence $= 2^4 \times 3$

to ¼ cents $= 2^3 \times 5$

to cents $= 2^3 \times 3 \times 5$ better than $2^4 \times 3$

So with the shilling

s	d	£ c	¼
20	0	1.00	
10	0	50	
5	0	25	
4	0	20	
2	6	12	2
2	0	10	
1	0	5	
		222	2

(Counting zeros)

19 £–0   19 Fig.

21) the $\frac{1}{8}$th & $\frac{1}{16}$ are lost $\frac{1}{5}$ $\frac{1}{10}$th $\frac{1}{15}$th & $\frac{1}{20}$th are gained

halves thirds quarters (eighths) & twelfths are not ~~necessarily~~ I gain fifths & tenths

28) a cumbrous sum. I should like to decimalise the measures in order to work it.

Quarts quarter fourths ¼ pints

~~Quarto~~

~~Cuarto~~

~~Costo~~

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f 85

Shillings Pence	Marks	exact equivalents £	exact equivalents ¼	approx: £ one ~~Guinea~~ £	approx: £ one ~~Guinea~~ ¼
1	5		5		2
2	10		10		3
3	15	1	3	1	1
4	20	1	8	1	3
5	25	2	1	2	0
6	30	2	6	2	2
7	35	2	11	3	0
8	40	3	4	3	1
9	45	3	9	3	3
10	50	4	2	4	1
11	55	4	7	4	2
1 0	60	5	0	5	0

Shillings	
1	– 5
2	– 10
3	– 15
4	– 20
5	– 25
6	– 30
7	– 35
8	– 40
9	– 45
10	– 50
11	– 55
12	– 60
13	– 65
14	– 70
15	– 75
16	– 80
17	– 85
18	– 90
19	– 95
1 0	100

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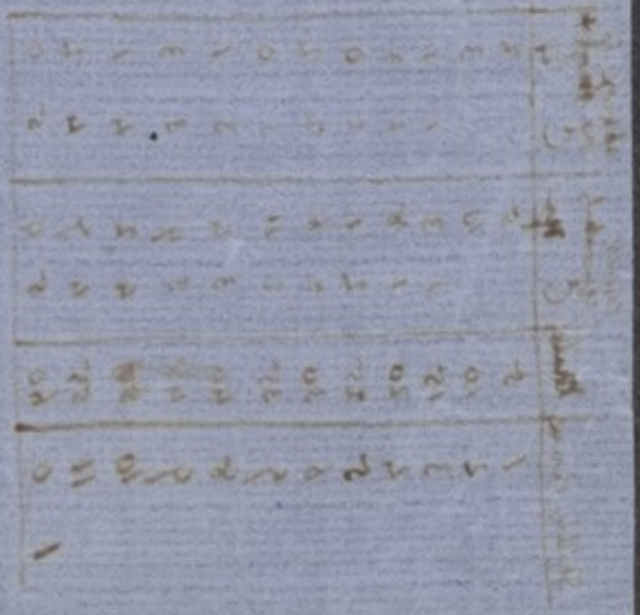
* average Wt = 0

f8v

Pound & Inch disadvantages | advantages

(no relation to weight or measure)
limited factors - bad for multiplying
low unit - too many figures
inconvertible to pence - tells us
non centesimal

accounts
foreigners



f.9r
UNIVERSITY COLLEGE LONDON
GALTON PAPERS
173

Fordanhill
Glasgow.
2 Oct. 1863

My dear Galton

I have received your letter describing your proposed new system of Currency

For the considerations on which my observations on it are founded I must beg leave to refer you to my paper of "observations" appended to the Official Report of the Decimal Coinage Commission.

I think the observations will are that the lowest decimal unit the cent = 2d. 4 is too high. It should I think not be higher than the

lowest amount usually written f9v
in accounts which is about 1?

Again in the last subdivision
into 12 = 2. 2. 3 I think
the 3 or the last step is objectionable.
I have no doubt the 12 the last
step ought always to be binary

As regards the fault for a
change given scheme pre-
sents as difficulty as to
Postage stamps &c but
but as to 1/2 payments
however I think very little of
these though they have been
considered difficult

Believe me
Yours very truly
Archibald Smith

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P101

1. Existing coins to remain unchanged.
2. New coins to be issued equal to $\frac{1}{5}$th of a penny (I will call them quints). Also coins of $\frac{1}{100}$th & $\frac{3}{100}$th of £1.: that is to say one cent & three cent pieces. ^also ½ cent & ½ quint It is obvious that one cent = 12 quints. (£ 24 pence = ~~or 120~~ ^120 quints = ~~quints~~ = 2^d = 10 cents)
3. Accounts of public matters to be kept in Pounds, Cents, & ~~half~~ (or quarters?) ~~of cents~~ ~~thus~~ as well as in the ordinary form; thus £1_17^s_4^d or £1_87¼^c

~~It~~ will be observed that the above figures are with the exception of the fraction, united by the decimal link. & the ¼ cent is about the value of a halfpenny.

~~Smaller accounts~~ ^Small sums ~~might~~ ^would omit the ~~fraction~~ and give the ^number of Quints thus: £1.87^c/4^q & if ~~accuracy~~ ^required in approximation decimally as £1|87|5 ~~or if they may be put decimally~~

this decimal conversion cannot introduce a greater error than ½ farthing if one place of decimals be employed or $\frac{1}{80}$ of a farthing if 2 are employed. See the table below.

Merits of the Scheme.

1. No coin need be suppressed ~~& none is~~ ^is altered in value & none
2. ~~A substantial~~ ^The advantages of a decimal currency ^are substantially obtained
~~3 Concurrently with day decimal advantages are attained to a figure of including all sums~~

without the inconveniences of over refinement ~~such as in the pound & mil~~ scheme, a monotony of too many figures introduced by an
~~which consist in an unbroken row of many figures~~

~~whose places are~~ There are in the franc scheme

1st the want of a unit of high value having a distinctive name, like our pound

2 the introduction of a place for centimes which is rarely if ever filled by other figures than 0 or 5,

30 or 35 centimes ~~are~~ a more awkward thing to conceive ~~to~~ lengthy to ~~handle~~ write than 3d or 3½d. Thus to compare my scheme with the pound & mil (One Pound Eighty seven & a half (Centimes) One ~~thousand~~ Pound Eight hundred & seventy five mils is a much more awkward same thing

The experience of all nations (see Evidence a Commission) shows the centesimal division to be the only ~~good~~ acceptable one.
we read off 3.1 as "thirty one" not as "three one."

3. Duodecimal advantages. – exactly the same rules of practice, that ~~the Evidence shows the~~ retail dealers ~~debtors~~ employ ~~to use~~ with shillings & pence apply to ~~are applicable to the same duodecimal division of cent~~ to the duodecimal division in cent & quints. while the awkwardness of the ~~additional~~ occasioned at present by the quaternary division of the penny into farthings, is avoided ~~in the calculation~~

~~4~~

4. Convertibility of quints into decimals of a cent is .. into mils.. — If only one place of decimals be used the error may reach ½ a farthing ~~which in fact equal~~

~~[illegible]~~

to the value of a table spoonful (½ oz) of beer in a pint at 2d a pint. If 2 places of decimals be used the error is reduced to one tenth [twentieth of a [illegible]]

Quints are converted to ~~decimals of~~ units by inspection when one place is used & by a table when 2 are been created. In the first case ~~the~~ rule is subtract ~~one~~ 1 from the ~~number of~~ quints if ~~above 3~~ their number is 3 or above; 2 if 8 or above

or vice versa to reduce ~~quints~~ units to quints add 1 if 2 or above; add 2 if 7 or above.

Table

Quints	units	units	quints
1			
2			
3			

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This ~~exact~~ [easy] convertibility of the decimal ~~into~~ [to] the duodecimal system, [with sufficient precision for all purposes of life,] ~~which is~~ depends on the small value of the cent ~~where differences~~ [If we had to deal with a shilling] ~~Had~~ the cent ~~been~~ ~~too~~ [the value of] a 1 shilling [a cumbersome & troublesome] ~~the~~ additional place ~~of~~ of decimals would have been necessary to arrive at ~~the same~~ [a double amount of] precision. As it is we have [virtually] the advantages of the decimal in addition to those of the duodecimal scale. For ~~in~~ any sum of practice when the division is 2 3 4 or 8 quints can be used; when it is 5 or 6 decimals can be used.

Pounds & cents are immediately turned into francs by dividing by 4 Thus £4.1½ cent (= 41½ cents) = 104 francs

The farthing, a halfpenny is as unconvertible into one cent as a single 3d- piece is to a single 4d- piece but a man who has a penny worth of farthings or halfpence ~~can pay as to~~ has the equivalent of 8 cents & can pay what he wants & receive change in cents.

A sixpence & a threepenny bit scarcely afford means of paying ½ a cent (= 4 cents) & ¼ cent (= 2 cents) as a half crown does so conveniently & ~~pays~~ settling a payment of an odd sixpence.

Farthings will not afford accurate means of turning 1d & 3d pieces into coin cents. They will never become the coin of the higher classes ½ cents will. Cent pieces therefore be coined of a size especially adapted to the purse or pocket of the higher classes - Small light coins - or rather tokens of value. Farthings may & may not retain their places with the poor - a cent is a smaller coin & 3 cents for a "large" or 2 cents for a "small half" a penny's worth is a reasonable bargain. The objects that do not admit of substantially indefinite division - a cent is as good a coin as a farthing - 3 oranges for 2d.

£12s

Proposed new system of coins chiefly on a decimal basis.

1. Existing coins ~~to be~~ remain unchanged in value & find a place in the proposed scheme.
2. Two new denominations of money ~~coin~~ to be issued viz: Cents = $\frac{1}{100}$th of £1; and "Quints", = $\frac{1}{5}$ of a penny; or, in other words, = $\frac{1}{12}$th of a cent. (10 cents = 2 shillings = 24 pence = 120 ~~quints~~ quints; therefore 1 cent = 12 quints).
3. The actual coins to be issued would be; —

1 quint;	$\frac{1}{4}$ cent; or 3 quints	$\frac{1}{2}$ cent; or 6 quints	1 cent; or 12 quints	3 cents.

4. Future issues of coins that already exist would bear respectively the following inscriptions; —

One penny or 5 Quints	Three pence or $1\frac{1}{4}$ cent	Sixpence or $2\frac{1}{2}$ cents	1 shilling or 5 cents	2 shillings or 10 cents

The fourpenny piece (worth 1 cent & 8 quints) not to be issued in the future.

5. Public accounts to be rendered in Pounds, cents, and quarters of cents, in addition to ~~as well as~~ in the ordinary form; thus, £1-17-6 or £1-87$\frac{1}{4}$ cents. Thus, decimal descends to a value little exceeding the half penny; but where more accuracy is desirable, the fraction would be replaced by quints: thus; £1-87 c/12 q. as individual fractions of a penny can be converted into quints it will be necessary when partly the latter an account is made up of farthings & halfpence it would be necessary to keep a separate column for them

£	c	q	farthings
1	87	12	2

Thus After the pound & Cent currency had become established by custom,

Required items to be added in respective places at the bottom of the page

this cent & cent accounts

a mixed records of quints & farthings ~~this description~~, would be probably unheard of.

6. Where it may be advantageous to express ~~an accounts that descends to~~ quints in a purely decimal form, [illegible] can ~~easily~~ be done off hand, ~~[illegible]~~ ~~as [illegible] [illegible], the [illegible] [illegible]~~, no difficulty (quints by ·212) ~~it will be easy to convert~~ (by a table, if not) (mental process or otherwise)

Quints can be converted to one place of decimals ~~of a cent~~ (in ~~fact~~ other words to mils,) (by inspection.) ~~The rule is~~ by, Subtract 1 from the ~~number of~~ quints, if their number is 4 or more; & 2, if 9 or more. ~~For more than one~~ decimal place, when needing accurate conversion a table ~~must be used~~ (is desired). For one decimal place the ~~above~~ case the greatest possible error in any individual case, is only 1/2 a farthing: when the [illegible] error is less than 1/1000 th of a cent [illegible] one with another. If ~~beer~~ Porter be 4 a pint, 1/2 a farthings worth = 1/2 oz = 1 table spoonful.

1 quint	=	·08333	7 quints	=	·58333
2	=	·16666	8	=	·66662
3	=	·25	9	=	·75
4	=	·33333	10	=	·83333
5	=	·41666	11	=	·91666
6	=	·5			

~~7.~~ The new currency coins should have a family likeness & those of the smaller values that are made in bronze should be mere tokens, adapted in shape & weight to the purses ~~& pockets~~ of the higher classes. Quints would be a good deal used by ~~the~~ everybody, until the prices of articles had accomodated themselves to ~~the basis of~~ a cents currency.

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1	= ·0833	·08	·1
2	= ·1666	·17	·2
3	·2500	·25	·3
4	·3333	·33	·3
5	·4166	·42	·4
6	·5000	·50	·5
7	·5833	·59	·6
8	·6666	·67	·7
9	·7500	·75	·7
10	·8333	·83	·8
11	·9166	·92	·9
	54996	5100	54
	43	4996	
		0004	

$x : 12 :: x : 10$

$x = \frac{10x}{12}$

54996
55000
00004

f13r

Remarks.

No coin is altered in value and none need be suppressed

Since ~~the~~ twelve quints make a cent, as ~~in the same way that~~ twelve pence make a shilling, so the same convenient methods of mental calculation, now used by ~~xx~~ retail dealers in finding the prices of halves, thirds, quarters, &c of a given quantity of any article, would still be applicable; whilst the trouble entailed by the farthing ~~being a fourth~~ bearing a different relation to the penny, from that which the penny bears ~~does~~ to the shilling, would now be avoided.

The ready convertibility of quints into sufficiently approximate decimals of ~~a cent~~ £1, affords in a considerable degree ~~gives~~ the advantages of ~~a decimal system of coins~~ the Pound & mil system satisfactory, in addition to that of a ~~the~~ duodecimal currency; a sum of Pounds & cents can be divided by 2 3 4 5 6 & 12.

It being conceded that ~~a half cent~~ (= about 1d/10) or a sum equal to ~~a quarter cent (= about a half penny)~~ should be the lowest figure of account it is impossible to express sums more concisely or clearly than in pounds cents & halves or ~~quarters~~. The insertion of quarter cents gives double precision with little extra trouble, but if the ¼ cent were hereafter found a needless refinement, it might be omitted & the 3 piece or the quarter suppressed. // The evidence taken by the Commission on Decimal Coinage, is unanimous to the effect that centesimal division, like that of the present scheme, is the only popular form of decimal currency. These ~~The~~ quarters of the cents ~~fractions at the end~~ introduce all needful precision & they shorten ~~the~~ and enliven ~~the~~ sums which would be otherwise ~~be~~ inconveniently expressed by three places of figures [illegible] forty five and a half cents is a far

It is a decided advantage not to write £1.87 as a decimal; the use of the unit [illegible] makes the sum [illegible] decimal [illegible]

~~whilst it does [illegible] needful precision [illegible] figures [illegible]~~

more manageable sum for head calculation, than the imagination, & for four hundred & fifty five mils.

There appears no reason to prevent prices gradually accomodating themselves to the cent, & quint currency. ~~& the franc~~. Two quints for a "small half" of any divisible commodity is a practicable arrangement as of more exact half estimates & guesses - few half-worths admit of being weighed or measured. If farthings and half pence continued to among the poor favourites, they would probably be confined to the cheaper ~~poor~~, because they are inconvertible into the proposed ~~silver~~ ~~gold & coin~~ currency.

A person who had only half pence & farthings in his pocket & desired to pay in quints, must grope what he has into pennyworths, to enable him ~~in order~~ to do so. No sum less than a penny, in the present currency, is accurately convertible into quints

To reduce Pounds & cents into French francs, divide by 4. Thus £16-48c = 412 francs

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Proposed new System of ~~Coinage~~ currency. (by F.G.)

1. Existing coins to remain unchanged in value. They will find a place in the proposed system.

2. Two new denominations of money to be issued, viz:

   Cents = $\frac{1}{100}$th of £1

   and "~~Quints~~ mites" = $\frac{1}{5}$th of a penny or $\frac{1}{12}$th of a Cent. (10 cents = 2 shillings = 24 pence = 120 Quints; therefore 1 Cent = 12 ~~Quints~~ mites)

3. The ~~actual~~ new coins to be issued, would be

1 Quint	$\frac{1}{4}$ cent or 3 quints	$\frac{1}{2}$ cent or 6 quints	1 cent or 12 quints	3 cents or 36 quints
	3 ~~quints~~ mites or 1 quarter Cent	6 quints or 2 quarter cents	12 mites or 1 cent	36 quints or 3 cents

4. Future issues of coins that already exist, would bear respectively the following inscriptions

1 Penny or 5 Quints	Three pence 15 quints 1$\frac{1}{4}$ cent	Sixpence 30 quints or 2$\frac{1}{2}$ cents	1 shilling or ~~60 quints~~ or 5 cents	2 shillings or 10 cents

insert all these the Cents in each place

The fourpenny-piece, worth 1 cent and 8 ~~quints~~ mites, would not be issued ~~for the future~~ hereafter.

5. Public accounts to be rendered in Pounds, Cents, and Quarters of cents, in addition to the present method: thus, –

   £1 – 17$\frac{1}{2}$ d or £1 – 87$\frac{1}{4}$ c

this would be available for all commercial accounts which do not descend below the penny - the greatest possible error in conversion is only 1 quint or less than a farthing, whilst the average error is zero. ~~Where more accuracy was required the fractions would be replaced by quints;~~ thus, – £1 – 87c – $\frac{1}{3}$

Persons who dealt in smaller sums would reckon in cents & mites

they would be obliged to keep a separate column for farthings ...

Those who desired it, might ~~decimalise~~ replace the ~~fractions~~ Quarters of Cents or the quints by the decimals of a cent thus £1 – 87c.25 (see tables below)

As individual halfpence & farthings are not convertible into quints, it would be necessary in those accounts where they ~~are to be~~ are included, to keep a separate column for farthings. These would be added up at the bottom of each page & their sum would be reduced into cents & quarters & be carried over to the other columns.

After the new system had been established by custom & prices had accomodated themselves to it, such mixed records would disappear.

~~Decimal Equivalents of~~ Quints & their equivalents in Decimal fractions of Cents

Quints	Decimals of a cent.	to 2 places only	to 1 place only
1	.0833 &c	.08	.1
2	.1666 &c	.17	.2
3	.2500 &c	.25	.3
4	.3333 &c	.33	.3
5	.4166 &c	.42	.4
6	.5000 &c	.50	.5
7	.5833 &c	.59	.6
8	.6666 &c	.67	.7
9	.7500 &c	.75	.7
10	.8333 &c	.83	.8
11	.9166 &c	.92	.9

as a simple method by inspection for converting (Quints) into decimals (of a cent) to one place only, the rule is to subtract one from the number of the quints if it exceeds 3; two, if it exceeds 8. The greatest error here, is in the conversion of 3 & 4 quints & of 8 & 9, when it equals ½ a farthing; the average error, taking one with another & balancing excesses against deficiencies, is less than $\frac{1}{400.000}$ of a farthing.

As 3 mills = ¼ cent. Every sum expressed in mills must either be exactly convertible into ¼ cents or be one mill too much or too little for such conversion. This error is insignificant

f15r

6. The new currency coins should have a family likeness to one another & Those representing the smaller values should be mere tokens of bronze adapted by their size to the purses of the wealthier classes. Quints would be ~~a good deal~~ used, ~~until the prices of articles had accomodated themselves to the new currency~~ by every body, during the transition stage of the currency

7. If a halfpenny or a quarter cent be thought an unnecessarily minute item of account, they need not be introduced; but in that case the threepenny piece, = $1\frac{1}{4}$ cent, should be called in.

7 ~~8~~. A person who had only half pence & farthings in his pocket and desired to pay in quints, must group what he has into pennyworths, to enable him to do so. No sum less than a penny, in the present currency, is accurately convertible into quints

8 ~~9~~. To reduce Pounds and Cents into French francs, simply divide by 4. Thus £16-48^c = 412 francs.

9 ~~10~~. Since the relation of quints to cents is the same as that of pence to shillings, the same short and ready methods of mental calculation used by retail dealers would still apply. ~~without~~ The embarrassment caused by the different relation of farthings to pence, would disappear.

~~10. As it is easy to put quints into decimals of a~~

...ificant in account keeping especially as the accrued such error is zero.

cent, the present system has, to a great extent, the combined advantage of a decimal & of a duodecimal currency, in its smaller coins. A cent can be divided either in respect to decimals of itself or in the form of quints, by the numbers

2 3 4 5 6 10 and 12.

10 ~~9~~. The centesimal division adopted in the present system, is that which experience shews (see Evidence before Commission on Decimal Coinage) to be the only ~~popular~~ approved form of a decimal currency

11 ~~8~~. Sums descending to Even cents or to about 2½ ~~pence or halfpence~~ (¼ ~~cents~~) can be expressed by this system in fewer words & under a form better adapted for recollection, than any other in the present or in proposed scheme. Such also ~~[illegible]~~ the can in form ~~descending~~ to ¼ cents or to about halfpence.

The factors of £1 in present System to pence is 5×3×2×2×2×2

farthings rarely used 5×3×2×2×2×2×2×2

Quints —— 5×5×3×2×2×2×2

Cents & ¼ths — 5×5×2×2×2×2

1s in present system to pence is 3×2×2

halfpence 3×2×2×2

rarely used farthings is 3×2×2×2×2

in cent system to quints is 5×3×2×2

cents & ¼ths is 5×2×2.

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d	C	q	C	¼
1		5		
2		10		
3	1	3	1	1
4	1	8		
5	2	1		
6	2	6	2	2
7	2	11		
8	3	4		
9	3	9	3	3
10	4	2		
11	4	7		

S.	
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50
11	55
12	60
13	65
14	70
15	75
16	80
17	85
18	90
19	95

Approximate to amount

C	q	c	¼
	6		2
	9		3
1	3	1	1
1	9	1	3
2	0	2	
2	6	2	2
3	0	3	0
3	3	3	1
3	9	3	3
4	3	4	1
4	6	4	2

$\frac{3C67}{4}$ $\frac{4C67}{4}$

the average error $= 0$

S.	d	q
1	1	5
	2	10
	3	15
	4	20
	5	25
	6	30
	7	35
	8	40
	9	45
	10	50
	11	55
1	0	60
1	1	65
1	2	70
1	3	75
1	4	80
1	5	85
1	6	90
1	7	95
1	8	100
1	9	105
1	10	110
1	11	115
2	0	120

Smallest number of coins (omit 4's)

S	d	C	q	c	¼
1			3		1
2			3		2
1			2		2
2			4		3
3			3		2
1			3		3
2			6		1
3			3		2
2			4		3
3			4		3
5			4		3
25					25

Exact sum as $2\frac{1}{4}$

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0 £ 1 shilling	old	new
1 2	15	22
2 3	+ 2h × 5	+ 25 × 9
4		
5		

20×12

$5 \times 4 = 5 \times 3 \times 2 \times 2 \times 2 \times 2$

$\times 3 \times 4$

$20 \times 12 \times 5$

$5 \times 5 \times 3 \times 4 \times 4$

100×4

$25 \times 4 \times 4$

73

C

f17

Currency (Decimal)

Weights & Measures

Archey Smith
bill & [illegible] 1863

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f 11

		log
1 cub inch water weighs	252.5 grains	2.4021
Spec grav of gold	19.1	1.2810
number of inches in 1 cubic foot	1728.	3.2375
		6.9206
1 sovereign weighs	113 grains	2.0531
value of 1 cubic foot gold	£73700	4.8675
quantity of gold in world in 1800	225 millions £.	8.3522
number of cubic feet gold in 1800	3053	3.4847

from my dining room in [illegible]

$20 \times 11 \times 13.8 = 220 \times 13.8$ = 3029 cub: feet

	log
220.	2.3424
13.8	1.1399
	3.4823
	4.8675
	8.3498

3029.

the 2 log 11.4

value of gold if my front drawing room was choke full of it

223800000

add for window space & neglected attics height

dimensions of front my dining room are 20 × 11.4 × 13.8.

	log
20	1.3010
11.4	1.0569
13.8	1.1399
	3.4978
	4.8675
	8.3653

cubic feet 3147.

value £231,900,000

say 232 millions

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Revised calculate.

Hence my room without extra window space (allowing disregarding curves at corners of cornice) would holds more gold than was extant in 1800. viz £232 millions as against 225 millions.

or 3147 cubic feet gold as against 3053

3147
3053
94 cubic feet extra.

p1v

72

bulk of Gold in the world

f15

+5.188 + 1.182 1.182. 8.171

7 bad marked 9

4 + 13.180 + 2.185. 17

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f 1v

Tuesday Nov 22/59. 34 | 160 / 36 | 190 — 36 | took off lid for 2a manuka 188 / 43 | 178 — filled af.

Wednesday Nov 23/59. 43 | 184 ÷ 52 | 180.

Thursday 38 | 184 / 45 | 170 — filled and bottled work 45 | 182 / 48 | 180

Friday. 37 | 186 / 43 | 174 — 43. | 180 — Excellent

Tuesday 40 | 73 / 43 | 184 — 43 | 184 / 49 | 173 — 49 | 173

Saturday 36 | 170 ÷ 188 / 45.

46 | 189

Thursday 37 | 184

44 | 184 — 52 | 178

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G good B bad D decocted W weak F flavour C body f 31 a best, b 2nd best c 3rd

Feb 13. 1859
Sandy Evening – heated to 140. put in tea at VI.h 38. a water $\frac{192}{180}$ at VI.h 46. tea good but a little too much of a decoction ‖ $\frac{184}{174}$ at 54m. Tea weaker but decocted Somewhat

Feb 15. Tuesday morn – heat to 174 $\frac{178}{169}$ 4 minutes + $\frac{194}{186}$ 7 minutes hot a decocted
2nd cup $\frac{194}{174}$ 11m hot a weak. – $\frac{173 \text{ to } 4}{190 \text{ to } 7}$

Feb 16. morn L.G. fast. $\frac{172}{\text{[illegible]}}$ 2m + $\frac{192}{187}$ 5m + $\frac{187}{184}$ 3m black not decoct full rich body
fresh hot.
2nd cup $\frac{188}{170}$ 14m fairly good – If more tea had been put in the pot (4 spoonfuls(!) I think the brew would have been successful.

5, 3. of tea to be henceforward used in morning

Feb 16 Evening. 40m $\frac{190}{178}$ Decoct slight flavour Sage fresh & little body. (2 hours a cold ‖ $\frac{48 \text{ m}}{58}$ $\frac{\text{not observed}}{160}$ very good. ‖ 3rd Cup $\frac{}{7\text{m } 142}$ no water had been added Good, a little bitter

Feb 17. Morn $\frac{46\text{m}}{47}$ | $\frac{193°}{190}$ + $\frac{47}{50}$ $\frac{\text{The water did not boil.}}{190}$ $\frac{}{184}$ Average tea alkaline in taste ‖ $\frac{50}{(66)}$ | $\frac{175°}{160}$ Good.

Feb 17 Ev.g. $\frac{45}{52}$ | $\frac{184}{172}$ + $\frac{52}{58}$ | $\frac{180}{168}$ ‖ $\frac{55}{63}$ | $\frac{178}{164}$ + $\frac{3}{5}$ | $\frac{}{170}$
Decided good if poured on cold the cups were not warmed. otherwise excellent. ‖ Excellent not so strong but gentle fresh & good

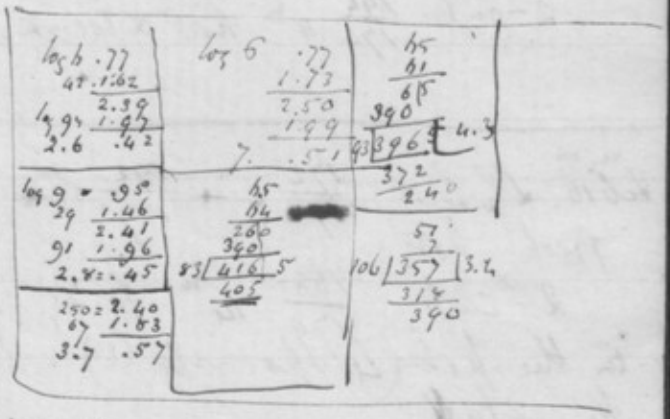
another time try same temperature for 10m & 10m & 13m

f 3v

To find the capacity for heat of the tea pot.

n = N° of ounces of water used
e = excess of its temperature above that of the tea pot
t = temperature attained by the pot after the water has been poured in
C = the required capacity

$$C + ne = (C+n)t$$
$$n(e-t) = C(t-1)$$
$$C = n\,\frac{e-t}{t-1}$$



Experiments.

A original temp. of pot	B temp. of pot attained after mixture	n = N° of ounces boiling water	e = 212° − A.	t additional temp. = B − A	$e-t$	$t-1$		
75°	170°	6	137	95	42	94	$6.\frac{42}{94}$	= 2.6
91	183	9	121	92	29	91	$9\,\frac{29}{91}$	2.8
119	187	10	93	68	25	67	$10\,\frac{25}{67}$	3.7
58	158	6	154	100	54	99	$6\,\frac{54}{99}$	7.
64	148	6½	148	84	64	83	$6.5\,\frac{64}{83}$	5
57	151	6½	155	94	61	93	$6.5\,\frac{61}{93}$	4.3
54	161	7	158	107	51	106	$7.\frac{51}{106}$	3.4

Carter "froth on top of the water."

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f45

Feb 18th morn 46 m | 183 / 52 | 174 + 52 | 185 / 57 | 174 || 57 | 186 / 4 | 172

quite good. I think stewed bear strengthening. L G says not — 2nd cup very good indeed.

Feb 19th morning 44 m | 182 / 49 | 172 + 49 | 189 / 54 | 184 || 54 | 190 / 64 | 178 very good a little decocted

pot when poured out [illegible] strain

19th Evening 52 | 187 / 60 | 176 || 60 | 182 / 8 | 168

admirable strong & fresh & pure (there was plenty of tea) Indian — excellent

---

20 Sunday Morning 40 | 180 (filled up to make it 40) / 44 | 176 + 44 | 186 / 46 | 178 + 46 | 184° / 48 — filled up

very excellent (it is true it had cream)

3½ cups altogether

48 | 189 / 61 | 168 ~~very~~ good, a little flat

---

20 Evening 36 | 140 / 40 + 40 | 180 / 44 | 166 + 44 | 76 / 48 | 174 || 48 | 174 / 57 | 158

Flat, not strong, not bitter — bad & bitter

560
1038
350
12 | 1948
1,62

---

33 | 176 / 39 | 164 + 39 | 180 / 42 + 42 | 184 / 45 bad hot & thin ||

f4v

	1re cusp			2me cusp			
3	$\frac{192}{180}$ ..	186	8	Gb. Gc. Db	$\frac{184}{174}$	179	8 Gc Dc
5	$\frac{178}{169}$ 4m + $\frac{194}{186}$ 7m (or 173°/4 + 190°/7) 184°	11	Ba Da	$\frac{194}{174}$	184	11	B D W.
16	172.2m + 190.5m + 185.3m 185°	10	Gb. Cb	179	14		
	184°	8		166	8	145	9
	3m 191° + 3m 188° 189½	6		169	16		
	2m 178 + 6 174. 176	13		5 171 + 2 170 5m 171 + 2.170 171	7		X

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Thursday morning $\frac{35}{36} \mid 178$ + $\frac{36}{41} \mid \frac{190}{186}$ + $\frac{41}{42} \cdot 182$

Flat + mawkish

p5r

Friday morn. (3 persons) $\frac{35}{37} \mid 144$ + $\frac{37}{40} \mid \frac{182}{178}$ + $\frac{50}{48} \mid$

Flat. tasted like too cold water - too long -

Sunday $\frac{58}{65} \mid \frac{181}{165}$ flat

3 persons

Long delay.

Thursday March 27th
Half a mind to again as usual, by measure)

$\frac{34}{39} \mid 193$ the same. + $\frac{39}{43} \cdot \frac{189}{186}$

regretted I could not wear the second cap

$\frac{34}{42} \mid 184$ Good / v. cup bad.

f5v

179 + 5 179 179°	11	179°	9	XX
5 177 + 5.187 182	10	186	10	
182	8	175	8	X X
178 + 2.182 + 2.184 182	8	175	13	X X
170 + 6.173 + 2.175° 162	12	168	9	Bad

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f65

Tea making experiments

~~Full-bodied but not bitter~~
~~Fresh but full flavoured~~

Flavour, freshness, body & Softness. !!

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f6v

The red teapot holds 2 bounces = 3¼ breakfast cups

1 breakfast cup holds 8 ounces.

The teapot requires 3m to become warmed all through.
It radiates heat at the rate of 2° per minute.

XI. 25.

Spirit Rappings at Mrs Haydens

1853

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2/10/17
173

f1

Schmelen's Hope
Barmen
Iron
Assegai
Sheep
Water
Words

Galton Hahn

| Hogan~~OO~~ |

Mogasen ?

Hanaliot ?

assegai = eanga

iron = gifasara

oba

sheep { öraompu
oraompu
~~oroutu~~

~~[illegible]~~
~~[illegible]~~
~~[illegible]~~

water — lafgmeit

— ameva
~~[illegible]~~

Schmelen's Hope { Karasate
malass.

Gun { nagad
nagiamja

f2

$\frac{2}{6}$

$\frac{1}{5}$

$\frac{}{2}$

$\frac{3}{6}$

$\frac{1}{5}$ kekikenne

$\frac{2}{3}$ kakikene

$\frac{2}{4}$

$\frac{2}{6}$

Bat Chapman

cholomsed

tragedy

Charles

uncle

Brook

James Fr

23

28

omupelsk
otkanden —
gnigt
L
kahakil
L
golggg

under tabl

ikkecnia

naxoro

a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z

~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~

right little finger or
left hand of neighbour

hahfedka

hahn

hadfnq

buhat

haebandara

omagjacerijn

omafgacerijn

~~[illegible]~~

omatadka

Lamafoaraitl

M
les

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K

Oonagafa
ongaoa } Unmoerror

Eohao

Eokehpar

f6

T

Keh

Miliner

Hah

f7

α β ο φ ε

א ב ג ד ה ו ז ח ט י כ ל מ נ ס ע פ צ ק ר ש ת

a
e
i
o
u

b
c
d
f
g
h
k
l
m
n
h
r
s
t

יהוה
θεός

If you nim

If you ~~nim~~ will sit for me half an hour I will rap