these prescriptions. The following examples will illustrate the various forms of metric prescriptions in general use, but it is very important that but *one* of these forms should be adopted and *adhered to* if the merits of this system are to be fully realized. We decidedly prefer form Number 1.

PILLS.

Form Number 1.

	Gramma.
℞ Pulv. Aloes	2
Pulv. Rhei	1·5
Olei Caryophylli	·6
Saponis	1·25

Make twenty pills.

The advantages of the decimal line are that the decimal dot is abolished with its dangerous complications, for a spot or a fly-speck on the prescription paper may increase or decrease the quantity of an ingredient *ten times*, and the use of the decimal line is familiar to all who use a dollar and cents column.

Form Number 2.

℞ Pulv. Aloes	2·
Pulv. Rhei	1·5
Olei Caryophylli	·6
Saponis	1·25

Make twenty pills.

This form is used frequently, because of the familiarity with the arithmetical method of using a dot to denote a decimal fraction; and where metric prescriptions are altogether in use, as in Continental Europe, there is no necessity for indicating the denomination, gramme being always understood.

Form Number 3.

℞ Pulv. Aloes	2	Gm.
Pulv. Rhei	1·5	Gm.
Olei Caryophylli	·6	Gm.
Saponis	1·25	Gm.

Make twenty pills.

This form is an improvement on Number 2, and would be far superior to it for use in this country, where prescriptions written in the old systems will long continue to be used; for next to writing out in full the word *gramme*, the indication of the unusual quantity by underscoring will prevent its being mistaken for *grain*.

LIQUIDS.

Form Number 1.

(*Volumetric.*)

	Gm. C.c.
℞ Magnesiæ Sulph.	30
Acid. Sulph. Dil.	6
Syrup. Limonis	30
Aquæ	180

Make a draught.

Form Number 2.

(*Gravimetric.*)

℞ Magnesiæ Sulph.	30·
Acid. Sulph. Dil.	·6
Syrup. Limonis	30·
Aquæ	180·

Make a draught.

Form Number 3.

(*Volumetric.*)

℞ Magnesiæ Sulph.	30	Gm.
Acid. Sulph. Dil.	·6	C.c.
Syrup. Limonis	30	C.c.
Aquæ	180	C.c.

Make a draught.

TABLES OF WEIGHTS AND MEASURES.

APOTHECARIES' WEIGHT. *U. S.*

Pound.		Troyounces.		Drachms.		Scruples.		Troy Grains.
℔ 1	=	12	=	96	=	288	=	5760
℥ 1			=	8	=	24	=	480
				ʒ 1	=	3	=	60
						℈ 1	=	gr. 20

The Imperial Standard Troy weight, at present recognized by the British laws, corresponds with the Apothecaries' weight in pounds, ounces, and grains; but differs from it in the division of the ounce, which, according to the former scale, contains twenty pennyweights, each weighing twenty-four grains.

AVOIRDUPOIS WEIGHT. *Br.*

Pound.		Ounces.		Drachms.		Troy Grains.
℔ 1	=	16	=	256	=	7000
		oz. 1	=	16	=	437·5
				dr. 1	=	gr. 27·34375

Relative Value of Troy and Avoirdupois Weights.

Pound.		Pounds.		Pound.	Ounces.	Grains.
1 Troy	=	0·822857	Avoirdupois —	0	13	72·5
1 Avoirdupois	=	1·215277	Troy —	1	2	280

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APOTHECARIES' OR WINE MEASURE. *U. S.*

Gallon.		Pints.		Fluidounces.		Fluidrachms.		Minims.		Cubic Inches.
Cong. 1	=	8	=	128	=	1024	=	61440	=	231
		O 1	=	16	=	128	=	7680	=	28·875
				℥ 1	=	8	=	480	=	1·8047
						ʒ 1	=	♏ 60	=	·2256

IMPERIAL MEASURE.

Adopted by the British Pharmacopœia.

Gallon.		Pints.		Fluidounces.		Fluidrachms.		Minims.
1	=	8	=	160	=	1280	=	76800
		1	=	20	=	160	=	9600
				1	=	8	=	480
						1	=	60

Relative Value of Apothecaries' and Imperial Measure.

APOTHECARIES' MEASURE.		IMPERIAL MEASURE. Pints.	Fluidounces.	Fluidrachms.	Minims.
1 gallon	=	6	13	2	23
1 pint	=		16	5	18
1 fluidounce	=		1	0	20
1 fluidrachm	=			1	2·5
1 minim	=				1·04

IMPERIAL MEASURE.		APOTHECARIES' MEASURE. Gallon.	Pints.	Fluidoz.	Fluidr.	Minims.
1 gallon	=	1	1	9	5	8
1 pint	=		1	3	1	38
1 fluidounce	=				7	41
1 fluidrachm	=					58
1 minim	=					0·96

Relative Value of Weights and Measures in Distilled Water at 60° Fahrenheit.

1. Value of Apothecaries' Weight in Apothecaries' Measure.

				Pints.	Fluidoz.	Fluidr.	Minims.
1 pound	=	0·7900031 pints	=	0	12	5	7·2238
1 ounce	=	1 0533376 fluidounces	=	0	1	0	25·6020
1 drachm	=	1·0533376 fluidrachms	=	0	0	1	3·2002
1 scruple	=			0	0	0	21·0667
1 grain	=			0	0	0	1·0533

2. Value of Apothecaries' Measure in Apothecaries' Weight.

				℔	℥	ʒ	℈	Gr.		Grains.
1 gallon	=	10·12654270 pounds	=	10	1	4	0	8·88	=	58328·886
1 pint	=	1·26581783 pounds	=	1	3	1	1	11·11	=	7291 1107
1 fluidounce	=	0 94936332 ounces	=	0	0	7	1	15·69	=	455·6944*
1 fluidrachm	=	0·94936332 drachms	=	0	0	0	2	16·96	=	56·9618
1 minim	=	0·94936332 grains	=							·9493

3. Value of Avoirdupois Weight in Apothecaries' Measure.

				Pints.	Fluidounces.	Fluidrachms.	Minims.
1 pound	=	0·9600732 pints	=	0	15	2	53 3622
1 ounce	=	0·9600732 fluidounces	=	0	0	7	40·8351

4. Value of Apothecaries' Measure in Avoirdupois Weight.

1 gallon	=	8·33269800 pounds.
1 pint	=	1·04158725 pounds.
1 fluidounce	=	1·04158725 ounces.

* Dr. W. H. Pile, in a communication to the *American Journal of Pharmacy*, gives the following weights of the fluidounce of water, on different authorities, at 60° F.: United States standard 455·6216 grains; Sir G. Shuckburg (U.S.D.) 455·6944; British standard 455.6910; average weight 455·6690.

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5. Value of Imperial Measure in Apothecaries' and Avoirdupois Weights.

Imperial Measure.		Apothecaries' Weight.		Avoirdupois Weight.		Grains.		Cubic Inches.
1 gallon	=	12 ℔ 1 ℥ 6 ʒ 2 ℈ 0 gr.	=	10 ℔ 0 oz.	=	70,000	=	277·27384
1 pint	=	1 6 1 2 10	=	1 4	=	8,750	=	34·65923
1 fluidounce	=	7 0 17·5	=	1	=	437·5	=	1·73296
1 fluidrachm	=	2 14·69	=			54·69	=	0·21662
1 minim	=					·91	=	0·00361

In converting the weights of liquids heavier or lighter than water into measures, or conversely, a correction must be made for specific gravity. In converting weights into measures, the calculator may proceed as if the liquid was water, and the obtained measure will be to the true measure *inversely* as the specific gravity. In the converse operation, of turning measures into weights, the same assumption may be made, and the obtained weight will be to the true weight *directly* as the specific gravity.

METRIC WEIGHTS AND MEASURES.

The French *metrical* system is based upon the idea of employing, as the unit of all measures, whether of length, capacity, or weight, a uniform unchangeable standard, adopted from nature, the multiples and subdivisions of which should follow in decimal progression. To obtain such a standard, the length of one-fourth part of the terrestrial meridian, extending from the equator to the pole, was ascertained. The ten-millionth part of this arc was chosen as the unit of measures of length, and was denominated *metre.** The cube of the tenth part of the metre was taken as the unit of measures of capacity, and denominated *litre*. The weight of distilled water, at its greatest density, which this cube is capable of containing, was called *kilogramme*, of which the thousandth part was adopted as the unit of weight, under the name of *gramme*. The multiples of these measures, proceeding in the decimal progression, are distinguished by employing the prefixes, *deca*,† *hecto*, *kilo*, and *myria*, taken from the Greek numerals; and the subdivisions, following the same order, by *deci*, *centi*, *milli*, from the Latin numerals. Since the introduction of this system it has been adopted by the principal nations of Europe, excepting Great Britain, and in many of them its use is compulsory. It is in general use in France, Germany, Austria, Italy, Spain, Norway, Sweden, Netherlands, Switzerland, Greece, and British India. It was legalized in Great Britain in 1864, and in the United States by an act of Congress in 1866.

The *metre*, or unit of length, at 32°,	=	39·370432 inches.
The *litre*, or unit of capacity,	=	33·816 fluidounces. *U. S.*
The *gramme*, or unit of weight,	=	15·43234874 Troy grains.

Upon this basis the following tables have been constructed.

MEASURES OF LENGTH.

		English Inches.		Miles.	Rods.	Yards.	Feet.	Inches.
Millimetre (mm.)	=	·03937						
Centimetre (cm.)	=	·39370						
Decimetre (dm.)	=	3·93704						
Metre (m.)	=	39·37043	=	0	0	1	0	3·370
Decametre (Dm.)	=	393·70432	=	0	0	10	2	9·704
Hectometre (Hm.)	=	3937·04320	=	0	0	109	1	1·043
Kilometre (Km.)	=	39370·43200	=	0	160	213	1	10·432
Myriametre (Mm.)	=	393704·32000	=	6	40	156	0	8·320

MEASURES OF CAPACITY.

		English Cubic Inches.		Apothecaries' Measure.
Millilitre (C.c.)	=	·061028	=	16·2318 minims.
Centilitre (cl.)	=	·610280	=	2·7053 fluidrachms.
Decilitre (dl.)	=	6·102800	=	3·3816 fluidounces.
Litre (l.)	=	61·028000	=	2·1135 pints.
Decalitre (Dl.)	=	610·280000	=	2·6419 gallons.
Hectolitre (Hl.)	=	6102·800000		
Kilolitre (Kl.)	=	61028·000000		
Myrialitre (Ml.)	=	610280·000000		

* There are two methods of spelling the metric units in common use, one, the original, *metre*, *litre*, *gramme*; in the other, these are spelled *meter*, *liter*, and *gram*. The U. S. Pharmacopœia of 1880 sanctions both methods, which, in our opinion, is unfortunate. *Metre* and *litre* are spelled meter and liter, whilst the original orthography is retained for *gramme*.

† Deca and hecto are sometimes written deka and hekto.

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MEASURES OF WEIGHT.

		Troy Grains.		℔ (Troy).	℥	ʒ	Gr.
Milligramme (mg.)	=	·0154					
Centigramme (cg.)	=	·1543					
Decigramme (dg.)	=	1·5432					
Gramme (Gm.)	=	15·4323					
Decagramme (Dg.)	=	154·3234	=	0	0	2	34·3
Hectogramme (Hg.)	=	1543·2348	=	0	3	1	43·2
Kilogramme (Kg.)	=	15432·3487	=	2	8	1	12·3
Myriagramme (Mg.)	=	154323·4874	=	26	9	4	3·4

Value of Avoirdupois Weights and Imperial Measures, in Metrical Weights and Measures, as stated in the British Pharmacopœia.

Avoirdupois Weights.		Metrical Weights.	Imperial Measures.		Metrical Measures.
1 pound	=	453·5925 grammes.	1 gallon	=	4·543487 litres.
1 ounce	=	28·3495 "	1 pint	=	0·567936 "
1 grain	=	0·0648 "	1 fluidounce	=	0·028396 "
			1 fluidrachm	=	0·003549 "
			1 minim	=	0·000059 "

Relative Value of United States and Metric Measures of Length.

Inches.		Centimetres.	Inches.		Centimetres.	Inches.		Millimetres.	Inches.		Millimetres.
12	=	30·48	6	=	15·24	$\frac{1}{25}$	=	1·00	$\frac{5}{8}$	=	15·85
11	=	27·94	5	=	12·70	$\frac{1}{12}$	=	2·11	$\frac{2}{3}$	=	16·92
10	=	25·40	4	=	10·16	$\frac{1}{8}$	=	3·17	$\frac{3}{4}$	=	19·05
9	=	22·86	3	=	7·62	$\frac{1}{4}$	=	6·35	$\frac{5}{6}$	=	21·15
8	=	20·32	2	=	5·08	$\frac{1}{3}$	=	8·46	$\frac{7}{8}$	=	22·19
7	=	17·78	1	=	2·54	$\frac{1}{2}$	=	12·70	$\frac{11}{12}$	=	23·28

Relative Value of Apothecaries' and Metric Fluid Measures.

Minims.		Cubic Centimetres.	Minims.		Cubic Centimetres.	Fluid-ounces.		Cubic Centimetres.	Fluid-ounces.		Cubic Centimetres.
1	=	0·06	25	=	1·54	**1**	=	**30·00***	21	=	621·00
2	=	0·12	**30**	=	**1·90**	2	=	59·20	22	=	650·00
3	=	0·18	35	=	2·16	3	=	89·00	23	=	680·00
4	=	0·24	40	=	2·50	4	=	118·40	24	=	710·00
5	=	0·30	45	=	2·80	5	=	148·00	25	=	740·00
6	=	0·36	50	=	3·08	6	=	178·00	26	=	769·00
7	=	0·42	55	=	3·40	7	=	207·00	27	=	798·50
8	=	0·50	Fluid-drachms.			8	=	236·00	28	=	828·00
9	=	0·55				9	=	266·00	29	=	858·00
10	=	0·60	**1**	=	**3·75**	10	=	295·70	30	=	887·25
11	=	0·68	$1\frac{1}{4}$	=	4·65	11	=	325·25	31	=	917·00
12	=	0·74	$1\frac{1}{2}$	=	5·60	12	=	355·00	32	=	946·00
13	=	0·80	$1\frac{3}{4}$	=	6·51	13	=	385·00	48	=	1419·00
14	=	0·85	2	=	7·50	14	=	414·00	56	=	1655·00
15	=	0·92	3	=	11·25	15	=	444·00	64	=	1892·00
16	=	1·00	4	=	15·00	**16**	=	**473·11**	72	=	2128·00
17	=	1·05	5	=	18·50	17	=	503·00	80	=	2365·00
18	=	1·12	6	=	22·50	18	=	532·00	96	=	2839·00
19	=	1·17	7	=	26·00	19	=	562·00	112	=	3312·00
20	=	1·25				20	=	591·50	**128**	=	**3785·00**

* The more accurate equivalent is 29·57 C.c.

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Relative Value of Metric Fluid and Apothecaries' Measure.

Cubic Centimetres.		Fluid-ounces.	Cubic Centimetres.		Fluid-ounces.	Cubic Centimetres.		Fluid-drachms.	Cubic Centimetres.		Minims.
1000	=	33·81	400	=	13·53	25	=	6·76	4	=	64·8
900	=	30·43	300	=	10·14	10	=	2·71	3	=	48·6
800	=	27·05	200	=	6.76	9	=	2·43	2	=	32·4
700	=	23·67	100	=	3·38	8	=	2·16	**1†**	=	**16.00**
600	=	20·29	75	=	2·53	7	=	1·89	0·09	=	1·46
500	=	16·90	50	=	1·69	6	=	1·62	0·07	=	1·14
473	=	16·00	**30**	=	**1·00***	5	=	1·35	0·05	=	0·81

* Or, more exactly, 1·01. † Or, more exactly, 16·23.

Relative Value of Apothecaries' and Metric Weight.

Grains.		Grammes.	Grains.		Grammes.	Grains.		Grammes.	Drachms.		Grammes.
$\frac{1}{100}$	=	0·00065	1	=	0·065	24	=	1·55	1	=	3·9
$\frac{1}{64}$	=	0·00101	2	=	0·130	25	=	1·62	2	=	7·8
$\frac{1}{60}$	=	0·00108	3	=	0·195	26	=	1·70	3	=	11·65
$\frac{1}{50}$	=	0·00130	4	=	0·260	27	=	1·75	4	=	15·50
$\frac{1}{48}$	=	0·00135	5	=	0·324	28	=	1·82	5	=	19·40
$\frac{1}{40}$	=	0·00162	6	=	0·400	29	=	1·87	6	=	23·30
$\frac{1}{36}$	=	0·00180	7	=	0·460	30	=	1·95	7	=	27·20
$\frac{1}{32}$	=	0·00202	8	=	0·520	31	=	2·00	Ounces.		
$\frac{1}{30}$	=	0·00216	9	=	0·600	32	=	2·10	**1**	=	**31·10‖**
$\frac{1}{25}$	=	0·00259	10	=	0·650	33	=	2·16	2	=	62·20
$\frac{1}{24}$	=	0·00270	11	=	0·715	34	=	2·20	3	=	93·30
$\frac{1}{20}$	=	0·00324	12	=	0·780	35	=	2·25	4	=	124·40
$\frac{1}{18}$	=	0·00360	13	=	0·845	36	=	2·30	5	=	155·50
$\frac{1}{16}$	=	0·00405	14	=	0·907	37	=	2·40	6	=	186·60
$\frac{1}{15}$	=	0·00432	15	=	0·972	38	=	2·47	7	=	217·70
$\frac{1}{12}$	=	0·00540	**‡15.5**	=	**1 000**	39	=	2·55	8	=	248·80
$\frac{1}{10}$	=	0·00648	16	=	1·040	40	=	2·60	9	=	280·00
$\frac{1}{8}$	=	0·00810	17	=	1·102	42	=	2·73	10	=	311·00
$\frac{1}{6}$	=	0·01080	18	=	1·160	44	=	2·86	11	=	342·14
$\frac{1}{5}$	=	0·01296	19	=	1·240	48	=	3·00	12	=	373·23
$\frac{1}{4}$	=	0·01620	20	=	1·300	50	=	3·25	14	=	435·50
$\frac{1}{3}$	=	0·02160	21	=	1·360	52	=	3·40	16	=	497·60
$\frac{1}{2}$	=	0·03240	22	=	1·425	56	=	3·65	24	=	746·40
$\frac{3}{4}$	=	0·04860	23	=	1·460	58	=	3·75	48	=	1492·80
									100	=	3110·40

‡ Or, more exactly, 15·432+gr. = 1 gramme. ‖ Or, more exactly, 31·10349 grammes.

Relative Value of Metric and Apothecaries' Weight.

Grammes.		Grains.	Grammes.		Grains.	Grammes.		Grains.	Grammes.		Grains.
0·0010	=	$\frac{1}{64}$	0·065	=	1·003	1	=	15·43	100	=	1543·23
0·0020	=	$\frac{1}{32}$	0·100	=	1·543	2	=	30·86	125	=	1929·04
0 0040	=	$\frac{1}{16}$	0·130	=	2·006	3	=	46·30	150	=	2314·85
0·0065	=	$\frac{1}{10}$	0·150	=	2·315	4	=	61·73	175	=	2700·65
0·0081	=	$\frac{1}{8}$	0·180	=	2·778	5	=	77·16	450	=	6944·55
0·0108	=	$\frac{1}{6}$	0·200	=	3·086	6	=	92·60	550	=	8487·78
0·0162	=	$\frac{1}{4}$	0·300	=	4·630	7	=	98·02	650	=	10031·01
0·0324	=	$\frac{1}{2}$	0·500	=	7·716	8	=	123·46	750	=	11574·26
0·0486	=	$\frac{3}{4}$	0·700	=	10·803	9	=	138·90	850	=	13117·49
0·0567	=	$\frac{7}{8}$	0·900	=	13·890	10	=	154·32	1000	=	15432·35

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Relative Value of Avoirdupois and Metric Weight.

Avoir. Ounces.		Grammes.	Avoir. Ounces.		Grammes.	Avoir. Ounces.		Grammes.	Avoir. Pounds.		Grammes.
$\frac{1}{16}$	=	1·772	5	=	141·75	13	=	368·54	3	=	1360·78
$\frac{1}{8}$	=	3·544	6	=	170·10	14	=	396·90	4	=	1814·37
$\frac{1}{4}$	=	7·088	7	=	198·45	15	=	425·25	5	=	2267·96
$\frac{1}{2}$	=	14·175	8	=	226·80	Avoir. Pounds.			6	=	2721·55
1	=	28·350	9	=	255·15				7	=	3175·14
2	=	56·700	10	=	283·50	1	=	453·60	8	=	3628·74
3	=	85·050	11	=	311·84	2	=	907·18	9	=	4082·33
4	=	113·400	12	=	340·20	2·2	=	1000·00	10	=	4535.92

Relative Value of Metric and Avoirdupois Weight.

Grammes.		Oz.	Gr.	Grammes.		Oz.	Gr.	Grammes.		Oz.	Gr.	Grammes.		Oz.	Gr.
28·35	=	1		38	=	1	149	125	=	4	179	600	=	21	72
29	=	1	10	39	=	1	164	150	=	5	127	650	=	22	405
30	=	1	25	40	=	1	180	200	=	7	24	700	=	24	303
31	=	1	41	50	=	1	334	250	=	8	358	750	=	26	198
32	=	1	56	60	=	2	50	300	=	10	255	800	=	28	96
33	=	1	72	70	=	2	205	350	=	12	152	850	=	29	429
34	=	1	87	80	=	2	360	400	=	14	48	900	=	31	326
35	=	1	103	85	=	3		450	=	15	382	950	=	33	222
36	=	1	118	90	=	3	76	500	=	17	279	1000	=	35	120
37	=	1	133	100	=	3	230	550	=	19	175				

APPROXIMATE MEASUREMENT.

For the sake of convenience, in the absence of proper instruments, we often make use of means of measurement, which, though not precise nor uniform, afford results sufficiently accurate for ordinary purposes. Of this kind are certain household implements, of a capacity approaching to uniformity, and corresponding to a certain extent with the regular standard measures. Custom has attached a fixed value to these implements, with which it is proper that the practitioner should be familiar; although their capacity, as they are now made, with the exception of the wineglass, generally somewhat exceeds that at which they were originally and still continue to be estimated.

A *tea-cup* is estimated to contain about four fluidounces, or a gill.
A *wineglass*..... two fluidounces.
A *tablespoon* (cochlear magnum)..... half a fluidounce.
A *teaspoon* (cochlear parvum).. ..... a fluidrachm.

In reading French medical works, if unacquainted with their customary expressions of measure, we are often left in great uncertainty as to the precise quantity indicated by the names. The following table, translated from the French Codex of 1866, will obviate this difficulty. (See Metric Table, page 1803.)

	Grammes.
A coffeespoon (*cuillerée à café*, Fr., *teaspoon*).....	5
A common spoon (*cuillerée*, Fr., *tablespoon*), 4 coffeespoons, or...	20
A glass (*verre*, Fr.), 8 common spoons.....	160
A handful (*poignée*, Fr.) of barleyseed.....	80
" " " flaxseed.....	50
" " " flaxseed-meal.....	150
" " " dried mallow leaves.....	40
" " " " chicory "	30
A pinch (*pincée*, Fr.) of chamomile flowers.....	2
" " " arnica "	1
" " " marshmallow "	2
" " " mallows "	1
" " " linden "	2
" " " fruits of anise.....	2
" " " " fennel.....	2
A hen's egg, newly weighed, has the mean weight of	64
" the white alone.....	40
" the yellow alone	20
Blanched almonds have the mean weight, each, of.....	1

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