

W. E. Hauke
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THE
UNIVERSAL CAMBIST
AND
Commercial Instructor.

SECOND EDITION.

THE
UNIVERSAL CAMBIST

AND

Commercial Instructor;

BRING A FULL AND ACCURATE TREATISE ON THE

EXCHANGES, MONIES, WEIGHTS, AND MEASURES,

OF ALL

TRADING NATIONS AND THEIR COLONIES;

WITH

AN ACCOUNT OF THEIR BANKS, PUBLIC FUNDS, AND PAPER CURRENCIES.

BY P. KELLY, LL.D.

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AND MATHEMATICAL EXAMINER TO THE TRINITY HOUSE.

VOL. I.

The Second Edition,

INCLUDING

A REVISION OF FOREIGN WEIGHTS AND MEASURES,

FROM AN ACTUAL COMPARISON OF THEIR STANDARDS,

BY THE ORDER AND AID OF THE BRITISH GOVERNMENT.

LONDON:

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TO

THE RIGHT HONOURABLE.

**THE LORDS OF HIS MAJESTY'S MOST HONOURABLE PRIVY COUNCIL
FOR TRADE AND FOREIGN PLANTATIONS;**

THE HONOURABLE

THE DIRECTORS OF THE BANK OF ENGLAND;

AND THE HONOURABLE

THE DIRECTORS OF THE EAST INDIA COMPANY;

THIS SYSTEM OF COMMERCIAL SCIENCE

IS MOST RESPECTFULLY DEDICATED

BY THE AUTHOR,

IN GRATEFUL ACKNOWLEDGMENT OF THE

EARLY ENCOURAGEMENT, IMPORTANT INFORMATION, AND LIBERAL PATRONAGE,

WITH WHICH

THEY HAVE HONOURED AND PROMOTED

THE UNDERTAKING.

PREFACE.

THE present Edition of this Work contains the result of an extensive and important operation—that of determining the relative Contents of Foreign Weights and Measures by an actual comparison of their several Standards. This comparison, which has long been considered a *desideratum* in the commercial world, has been effected under the sanction and aid of the British Government; by whose order Foreign Standards, duly verified, have been transmitted to London by the British Consuls abroad, and have been compared with English Standards at His Majesty's Mint.

When this publication was originally undertaken, the Author had three important purposes to accomplish, namely, the *Correction of the Tables of Foreign Coins; of Foreign Exchanges; and of Foreign Weights and Measures*. The two former objects were effected in the First Edition; but Weights and Measures could be corrected only by a reference to their Standards which were not then to be obtained in consequence of the war that universally prevailed. When peace, however, was restored, and a New Edition called for, the above Plan of Revision was adopted: but before the particulars are stated, a general view of the Work may be useful.

This Work is divided into Two Volumes. The FIRST is founded on the celebrated publication of *Elert Kruse*, entitled the *Hamburgh Contorist*, which is here modernized and considerably enlarged. It contains a statement of the divisions and proportions of the *Monies, Coins, Weights and Measures*, of all Trading Countries, with an account of their *Banks, Public Funds, Paper Currencies, Commercial Allowances*, and various other mercantile regulations.

The **SECOND VOLUME** is chiefly new both in substance and arrangement. It commences with an **Exposition** of the **Principles and Laws of Exchange**; after which a regular **System** is introduced, wherein all the foreign **Quotations** are explained, and the calculations performed by different methods. *Arbitration of Exchange* is included; and it is presumed, that this ingenious and useful branch of science will be found greatly simplified by illustrations from actual and recent operations. *Arbitration of Bullion and Merchandise* follows, with examples of the use of *Logarithms* and *Fixed Numbers* in abbreviating the calculations of Exchange. This extensive article concludes with **Tables of the Pars of Exchange** and the **Mint Proportions** between **Gold and Silver** in different countries—documents which were first computed by the Author in 1810, by order of the **Bullion Committee of the House of Commons**, and which were revised in 1819 for a **Committee of the House of Lords**.

Tables are next given of the intrinsic value of the **Monies of Account** of all nations; and these are succeeded by **SIR ISAAC NEWTON'S Tables of Assays**, which are inserted as an **Introduction** to the **New Tables of Gold and Silver Coins** that have been computed expressly for the present Work. When **SIR ISAAC NEWTON** was **Master of the Mint**, he caused the principal coins of **Europe** to be assayed; and his **Tables**, which were published by order of the **Privy Council** in 1719, served long as a guide to **Bullion Merchants**, and as a **Standard** from which the **Par of Exchange** was computed: but several of those coins have been since altered, or wholly withdrawn from circulation, and various new ones have been supplied; and even some, that have undergone no change, have been found by modern assays to vary considerably from the original reports.

The *New Tables of Gold and Silver Coins* which follow may be considered as a revision of **SIR ISAAC NEWTON'S Tables**, and a continuation of his plan. They are computed from **Assays** made both at **London** and **Paris**, which have been, in

general, found to verify each other. The London Assays have been made by **ROBERT BINGLEY, Esq. F.R.S.**, the King's Assay Master of the Mint; and those at Paris by **PIERRE FREDERIC BONNEVILLE, *Essayeur du Commerce***, as published in his elaborate work on the Coins of all Nations. Most of the Foreign Coins, assayed at the London Mint, were supplied for this Work from the Bullion Office, by order of the Bank Directors, and were selected as proper average specimens by **JOHN HUMBLE, Esq.**, the Head of that Office.

An *Explication of Coins* follows, which it is hoped may prove useful to Bullion Merchants, Travellers, and Collectors of Coins in general. Here all the various impressions are explained; and the Legends and other Inscriptions rendered into English, from the Latin, Persian, Arabic, Russian, and other languages. This, it is believed, is the first general Translation of the kind ever published, and has therefore the greater claim to indulgence.

Tables of the Proportion between the Weights and Measures of all Trading Countries are next given, as deduced from the experiments already mentioned. The erroneous state of the old Tables has been always a source of perplexity to merchants, as might indeed be expected from the uncertain manner in which they have been formed. Their origin cannot be traced; it can only be conjectured that they have been gradually collected through a long course of ages from doubtful authorities in different countries; and there is no account that they have ever been corrected or compared on any general or systematic plan. The only attempt of the kind upon record was made by order of the French Government, in 1747, by **M. TILLET**, at the Paris Mint; but his experiments were confined to a limited number of Money Weights, and there is reason to believe that the standards which he tried were not all duly attested. As to Commercial Weights and Measures, they appear to have been left chiefly to the casual reports of merchants, who could not be supposed always to possess the best means of making accurate experiments.

The great difficulty of effecting a general comparison may account for its omission. It is evident that no individual exertion could accomplish such a task without the aid of a Government possessing very extensive means, and applying them at a moment of universal peace. The present period has proved favourable for the undertaking; and it was reserved for the British Government to avail itself of that peace which its power had established, in thus promoting a plan, which, if duly executed, must be of essential benefit to the commercial world in general. The following account of the origin, progress, and execution of the plan will, it is presumed, shew that it has been undertaken with due deliberation, and conducted with an attention to accuracy commensurate with the importance of the object.

In 1818 the Author of this Work addressed a Letter to the Board of Trade, shewing the erroneous state of the Tables of Foreign Weights and Measures, and submitting a Plan of Correction.* The subject was taken into consideration by the Lords of His Majesty's Privy Council for Coins; and in consequence of their Lordships' recommendation, the following *Circular Dispatch* was issued by *Viscount Castlereagh*, as Principal Secretary of State for Foreign Affairs:—

* The plan submitted to the Board of Trade corresponded in substance with the instructions contained in the following Circular; with the addition that the Foreign Weights transmitted by the Consuls should be compared at the London Mint, as an Office of the highest authority for such comparison.

It may be proper further to state, that before this plan was submitted to the Lords of Trade, it was examined and approved by other eminent judges of the subject, particularly by *The Earl of Rosse*, who strongly recommended it to the attention of Government. It was also sanctioned by *The Right Hon. William Wellesley Pole*, Master of the Mint, who, it is well known, zealously promotes all improvements connected with the important establishment over which he presides. Other individuals of high authority on such questions have since recommended and aided the undertaking; among whom should be mentioned *The Earl of Lauderdale*.

It is also important to observe that the East India Company have followed the example of Government in adopting this plan for the comparison of Asiatic Metrology, a Court of Directors having, on the 10th of January, 1821, issued a Circular Letter to the proper authorities throughout India, ordering them to transmit to London verified standards of the weights and measures used in the principal trading places of Asia, as far as their influence may extend. This operation will necessarily be a work of time; and the results must prove a valuable accession to the general stock of commercial knowledge.

COPY OF LORD CASTLEREAGH'S CIRCULAR TO THE BRITISH CONSULS ABROAD.

“ Foreign Office, March 10th, 1818.

“ SIR,

“ His Majesty's Government being desirous of obtaining every information as to the Standards, in use, for the various weights and measures in Foreign Countries, with a view to ascertain their relative bearings to those in use here, for the benefit of the Commercial Interests of this Country :

“ I am to desire, that you will use your endeavour to procure, with as little delay as may be, two sets of models, being counterparts in every respect, of the standard pound or mark used at your place of residence for weighing Gold and Silver, and also of other lesser weights used for that purpose.

“ If, in any place within your Consulate, the standard pound or mark, with its lesser weights, used for weighing Gold or Silver, should differ from those in use at your place of residence, you will procure also two sets of the weights so differing.

“ You will have the accuracy of all these weights regularly attested by the proper authorities.

“ You will pack up carefully, and separately, these two sets of weights, complete.— and you will send them to me by separate conveyances, accompanying each set by an explanatory letter, written in duplicate. In that letter you will give a list and description of the weights sent.

“ You will state the difference and proportion between the pound which is used for weighing Gold and Silver, and that pound used for ordinary articles, which is generally known by the name of the ‘ commercial pound.’

“ You will state the contents of the principal measure, used at your place of residence, and at other places within your Consulate, for the measure of Corn, and of the principal measure for Wine, and also of their lesser measures.

“ You will be so good as to describe the contents of these measures, by stating how many cubic Inches of the place they contain, or how many English Gallons, or how many French Litres.

“ You will add in your letter such other information as you can collect, or may be in possession of, for throwing light upon the general subject of this instruction.

“ You will keep an account of the expense to which you may be subjected in the execution of this instruction, and you will send such account, made out in duplicate, in a letter marked ‘*Separate*,’ which letter and account may accompany the weights, and the dispatch explanatory of the subject.

“ CASTLEREAGH.”

“ To — His Majesty’s Consul at ———.”

The orders contained in the foregoing *Circular* were executed in due time, in a very correct and satisfactory manner. The packages thus transmitted contained, besides the required Standards, very ample specifications of the divisions and proportions of Weights and Measures, with much new and valuable information on various other commercial subjects. Several of the Consuls likewise sent home Measures of Capacity and of Length from places where their dimensions could not be accurately determined. The dispatches and standards received on this occasion (from upwards of sixty Consuls) were first delivered at the Foreign Office, and thence sent by *Joseph Planta, Esq.*, Under Secretary of State, to the Royal Mint, through the medium of the Board of Trade.

In the beginning of the year 1820 the intended comparisons were carried into effect. These experiments were made by *Robert Bingley, Esq.* who had assayed the Coins, as before stated, and who on every occasion evinced the most zealous attention to scientific accuracy. The apparatus chiefly used for this purpose was the Balance made by *Mr. Bird* in 1758, by order of the House of Commons; and the Standard Weight was the Pound, with its subdivisions, which was adjusted at the same time, and which is commonly called the *Parliamentary Pound*. (See *Introduction*, p. xxiii.)

The Author attended this course of experiments at the Mint; and having registered the results, obtained permission to remove the Standards to his House,

with a view of having the comparisons repeated; and, as a further means of verification, to compare the subordinate weights or divisions, the *units* only having been compared at the Mint.

This second course of experiments was made with a fine Balance, recently constructed by *Mr. Troughton* for the London Institution, and with attested standards, both French and English. These comparisons, which were repeated by several competent persons, proved highly satisfactory as corresponding with the Mint experiments. The Measures of Capacity were also carefully ascertained by gauging, and afterwards proved by water measure at Guildhall, by an order from the Lord Mayor, *George Bridges, Esq.*

The results of all the fore-mentioned experiments are inserted in the present Work in their proper places; and in order to render those operations more extensively useful, the contents are computed and expressed in French as well as in English denominations.

The utility of this general comparison will appear manifest, when it is stated that, in almost every article throughout the Work, corrections of Weights or Measures have been found necessary; and considerable errors have been discovered even where least expected, such as in the established proportions between the Weights of England and those of France and Spain. (See *Notes*, Vol. I. pp. 140 and 321; also *Introduction*, p. xxv.)

Besides the revision of Foreign Weights and Measures, the present Edition contains many other corrections and augmentations, rendered necessary by the alterations that have recently taken place in the Monetary Systems, Banking Operations, and Financial Plans, of the different States of Europe.

Much new matter will be likewise found under the extensive articles *East Indies* and *West Indies*, which has been supplied from official documents, and other authentic communications; and here it may be finally observed that although the most approved written authorities have been consulted on all occasions, yet no articles of importance have been committed to the press, without the inspection and approbation of experienced merchants of the different countries to which those articles respectively relate.

Such is the outline of this publication, and such the peculiar nature of the undertaking, that it could be accomplished only by the co-operation of many men in many countries, and by the sanction and support of a powerful Government.

The Author cannot conclude these remarks without expressing his grateful acknowledgments to the many able and eminent persons who have honoured him with their assistance in the progress of his Work. He would likewise wish to mention their names, and specify their important services; but the list would be inconveniently numerous, and might not be approved by all. He begs only to add, that the valuable time and attention which they so liberally bestowed, and the zeal which they manifested to promote accuracy, besides impressing him with gratitude, constantly stimulated his exertions to render the Work worthy of such distinguished support.—How far his endeavours have been successful, he now with all due deference submits to the decision of the Public.

Finsbury Square,
May 1, 1821.

INTRODUCTION,

CONTAINING AN EXPOSITION OF THE PRINCIPLES OF THE DIFFERENT SUBJECTS
COMPRISED IN THIS WORK.

IN attempting to explain systematically the theory of *Monies, Coins, Weights,* and *Measures,* the order in which they are generally arranged should be reversed; as it is from Measures that Weights are properly deduced, and Coins are adjusted by Weights; while Imaginary Monies, whether of Account or of Exchange, are valued from their established relation to Coins.

MEASURES.

Measure, in a commercial sense, signifies the dimensions of any thing bought, sold, or estimated.

Measures are of three sorts, namely, **Linear, or Long Measure;** **Square, or Superficial Measure;** and **Solid, or Cubic Measure.**

1. *Linear Measure* is applied to lines; as roads, and distances of all kinds.

2. *Square Measure* is applied to superficies, having both length and breadth; as land, flooring, &c.

3. *Solid Measure* determines the contents of bodies that have length, breadth, and thickness, or depth; as marble, timber, and vessels of all sorts; which last are also called measures of capacity.

Linear Measure is the element of all other measures. (a)

Square Measure is determined by multiplying length and breadth together; and Solid Measure, by multiplying length, breadth, and depth together.

(a) The Long Measures of all nations appear from their names to have been taken from some part of the human body, as the Foot, the Fathom, &c.; and the following are the proportions generally observed. The Fathom of a well-proportioned man is reckoned to equal his height or stature; the Girth, or the Pace, $\frac{1}{2}$ of his stature; the Cubit, $\frac{1}{4}$; the Foot, $\frac{1}{6}$; and the Span, $\frac{1}{8}$. The Foot is reckoned equal to 3 times the breadth of the Hand, and 12 times that of the Thumb. Other proportions are occasionally reckoned, as the Nail, the Arm, &c.; and these natural measures are often found convenient where artificial measures are wanted.

WEIGHTS.

Weight may be defined a natural property of matter, proportioned to its bulk and the density of its parts. It is determined by being balanced in a scale against some known or acknowledged weight placed in the opposite scale.

A standard for length being once determined, a standard for weight may be thence deduced: as a vessel of any certain dimensions filled with distilled water, or other homogeneous liquid, will always weigh the same in the same latitude.

The following are the chief properties of weight, as demonstrated by *Sir Isaac Newton*:

1. That the weights of all bodies, at equal distances from the centre of the earth, are directly proportional to the quantity of matter that each contains.

2. On different parts of the earth's surface the weight of the same body is different, increasing from the Equator to the Pole, in proportion to the square of the sine of the latitude.

3. That the weights of the same body, at different distances above the earth, are inversely as the squares of the distances from the centre of the earth.

4. That at different distances within the earth, or below its surface, the weights of the same body are directly as the distances from the earth's centre; so that at half way toward the centre a body would weigh but half as much, and at the very centre it would have no weight at all.

5. That a body immersed in a fluid which is specifically lighter than itself, loses so much of its weight as is equal to the weight of a quantity of the fluid of the same bulk as the body. (*b*)

(*b*) From the importance of Weights and Measures as the foundation of law, with respect to property, their adjustments must have been among the first regulations of civil society. *Paucton* observes (in the Introduction to his *Metrologie*) that Standards were generally held sacred by the Ancients, and were therefore deposited in the Sanctuary of the Jews, the Temples of the Heathens, and the Churches of the Primitive Christians. He further states that ancient Standards were generally adjusted by the dimensions of some durable buildings; and thus the base of the largest Pyramid in Egypt was applied, being the 500th part of a degree of the meridian, which had been previously measured for this purpose. He adds, that many of the neighbouring countries of Asia and Europe took their Measures from the Egyptians; and that throughout the Roman Empire uniform Standards were established from the Archetype kept in the Capitol at Rome.

In modern times the general practice has been to commit Standards to the care of the Chief Magistrate of each Government, who sends copies to certain officers of districts, investing them with power to distribute the same and to enforce uniformity.

STANDARDS.

Standards, in a commercial sense, signify any measures or weights of acknowledged authority, by which others are sized or adjusted. They are generally distinguished into *Arbitrary Standards*, and *Invariable Standards from Nature*. The former are those almost universally adopted, and the latter are intended to restore them if lost, or to serve as models for new Systems of Metrology.

From the vague and uncertain origin of Arbitrary Standards, a diversity universally prevails; and this variety has a constant tendency to increase, from the fallibility of workmanship as well as from the decay of all material substances.

With a view to remedy these inconveniences, different methods have been proposed for establishing Standards from some unalterable property in nature; such as the law or force of terrestrial gravitation; the motions of the heavenly bodies; or the measure of some arc or portion of a meridian circle.

Among the various plans tried for this purpose, the two following only have been acted upon with any degree of success, namely—

1. *The length of a pendulum, that vibrates seconds of mean solar time: (c).*
2. *The length of an arc, or portion of the meridian circle.*

If the earth had been a perfect sphere and at rest, these measures would have been the same on all parts of its surface; but its figure is a kind of oblate spheroid, having its equatorial diameter longer than its axis or polar diameter.

From this cause the gravity at the poles is greatest, being nearest to the centre

(c) *Length of the Pendulum vibrating Seconds in different Latitudes.*

Names of Places.	Latitude.	Length of Pendulum.	Names of Observers.
	° /	<i>Eng. Inches.</i>	
Equator	0 0	38,989	Bouguer.
Porto Bello	9 34 N.	38,997	Bouguer.
Jamaica	18 00	39,019	Campbell.
Cape of Good Hope	33 25 S.	39,070	La Caille.
Paris	48 50 N.	39,134	Borda.
Gotha	50 57	39,121	Zach.
London	51 31	39,126	Graham.
London	51 31 8"	39,13929	Kater, 1817.
Petersburg	59 56	39,163	Mallet.
Lapland	66 48	39,172	Academicians.
Lapland	67 04	39,181	Mallet.

of the earth; and it gradually diminishes to the equator. Hence the vibrations of a pendulum are quickest at the poles, and slowest on the equator; and therefore, in order to measure equal portions of time, the pendulum must be gradually lengthened from the equator to the poles. The weight of bodies on the earth is also affected by centrifugal motion, which at the poles is nothing; but it thence increases to the equator, where the force is greatest; and hence the diminution of gravity is proportioned to the distance of bodies from the poles.

From the spheroidal figure of the earth, too, the degrees of the meridian increase from the equator to the poles, in consequence of the increasing curvature of the quadrantal arc.

In order to ascertain the true figure of the earth, and thence to determine an Invariable Standard for Measures, numerous calculations and experiments have been made by the greatest Mathematicians of modern times; and it may be observed that nature seems to oppose great obstacles to the undertaking.

Sir Isaac Newton computed the equatorial diameter to exceed the polar axis in the ratio of 230 to 229, or in other words, that the earth's *ellipticity* was $\frac{1}{230}$; but this calculation, having been made on the supposition that the earth is an entire fluid, is not quite accurate. By actual measurements, the ellipticity has been found to lie between $\frac{1}{231}$ and $\frac{1}{238}$.

The most approved measurements of the Pendulum are contained in the preceding Note (*c*), and those of the meridian arc in the following Table (*d*).

(*d*) Length of a Degree of the Meridian in different Latitudes.

Countries.	Mean Latitude.	Length of Degree.	Measurers.	Dates.
	° /	Eng. Miles.		
Peru	0 0	68,713	Condamine	1744
India	12 32 N.	68,743	Lambton	1803
Cape of Good Hope	33 18 S.	69,076	La Caille	1752
America	39 12 N.	68,895	Mason and Dixon....	1768
Italy	43 00	68,998	Boscovich	1755
France	44 52	68,769	Biot and Arago	1808
France	46 12	69,052	Delambre and Mechain	1793
France	49 22	69,121	Cassini	1740
England.....	51 30	69,146	Mudge	1802
Lapland.....	66 20	69,292	Swanberg	1803

From the foregoing measurement of the meridional arc in France, (Table *d*,) the length of the quadrantal arc was computed; and the ten-millionth part of this Quadrant is the *Metre*, which has been adopted as the standard *unit* for all measures, in the new system in that country.

The standard unit for all weights is the *Gramme*, which is the weight of a cubic vessel of water of the greatest condensation and purity; the side of such cube being the hundredth part of the *Metre*.

From these two units the other measures and weights are derived by decimal division or multiplication, as explained in this Work under the article *France*.

It should be stated that although the Mathematicians of France chose the meridional arc as the basis of their metrical system, they also recommended the Pendulum as an accurate Standard, and as the most practical means of restoring or repairing the *Metre*, should it ever be lost, or require correction.

The *Marquis Laplace*, in the *Connoissance des Temps* of 1820, has given the results of *Borda's* experiments on the Pendulum, and of *Mathieu's* investigations of the same, in the following *Formula*, from which the subsequent Table (*e*) is computed:

$$0.990787 + 0.0053982 \text{ Sin}^2 \text{ Lat.}$$

(e) Table, shewing the comparative Weight of Bodies on different parts of the Earth's Surface; with the proportionate Length of the Seconds Pendulum.

	Degrees of Latitude.			Weight of 100lb. in different Latitudes.	Length of the Pendulum.	
	°	'	"		Metres.	English Inches.
	0	0	0	100,0000	0.990787	39,0083
	10	0	0	100,0165	0,990950	39,0147
	20	0	0	100,0637	0,991418	39,0331
	30	0	0	100,1362	0,992136	39,0614
	40	0	0	100,2251	0,993017	39,0961
Paris Observatory	48	50	14	100,3088	0,993846	39,1287
	50	0	0	100,3108	0,993955	39,1330
Greenwich Observatory	51	28	40	100,3335	0,994091	39,1383
London, St. Paul's	51	30	49	100,3338	0,994094	39,1385
	60	0	0	100,4087	0,994836	39,1677
	70	0	0	100,4812	0,995554	39,1960
	80	0	0	100,5284	0,996022	39,2144
	90	0	0	100,5449	0,996185	39,2208

By the foregoing *Formula* it appears that the earth's ellipticity is $\frac{1}{217}$, and the increase of weight from the equator to the pole, $\frac{1}{118}$; that is, a body weighing 180lb. at the equator would weigh 181lb. at the pole.

Here it is satisfactory to observe, that the results with respect to the length of the Pendulum, thus finally determined at Paris, perfectly correspond with those ascertained in London, in 1817, by *Captain Henry Kater, F.R.S.*; making allowance for the difference of latitudes. These important operations are fully explained in the *Philosophical Transactions* of 1818 and 1819.

STANDARDS OF ENGLISH WEIGHTS AND MEASURES.

The original Standards of English Weights and Measures, like those of most other countries, are extremely vague and uncertain. Thus the Standard for Long Measure is said to have been fixed in 1101 by Henry I., who commanded that the ancient *Ulna* or Arm, which answers to the modern Yard (the Saxon *Gyrd* or Girth), should be adjusted to the length of his Arm.

The original Standards of Weights, and Measures of Capacity, are equally uncertain. It was enacted in 1266, (3 Edw. 51), "that an English Penny, called a Sterling, round and without clipping, shall weigh thirty-two wheat corns, from the midst of the ear; and Twenty Pence to make an Ounce; and Twelve Ounces, One Pound; (f) and Eight Pound do make One Gallon of wine; and Eight Gallons of wine do make a London Bushel, which is the eighth part of a Quarter."

Standards of a more uniform description were established in subsequent reigns: that for long measure, however, has undergone no alteration, except occasional revisions, which time might have rendered necessary; but measures of capacity have been frequently altered. It appears by the above law, that their contents were originally ascertained by weight, which is a practice still used in some countries, and is the most correct method, but not the most convenient.

(f) The Pound (called by the Romans the *Pondus* or Weight, and also the *Libra* or Balance), is the most general standard or unit for weights, as the Foot is for measures; and it is to be observed that both have been generally divided into the same number of equal parts, and their divisions were anciently called by the same name, *Uncia*, which signifies the twelfth part of a whole. Hence, the Ounce and Inch have one common derivation, the former being called *Uncia Libra*, and the latter, *Uncia Pedis*.

As to the original standards of weight, namely, *wheat corns*, it appears that they were, soon after the above period, represented by metallic grains, which are supposed to be the same as the modern Troy Grains. It is however unimportant what their origin might have been; provided that the established standards were kept uniform.

The English standard unit for weight is the Troy Pound; which is one-fourth less than that stated in the foregoing law; the Pennyweight having been reduced to 24 Grains instead of 32. (g)

In 1526 (18 Henry VIII.) the Troy Pound was made the Mint weight, in the room of the Moneyer's Pound or the Pound Tower, which was one-sixteenth less, or 5400 Grains. The weights which were then used for common purposes, were the old Commercial Pound (described Vol. I. page 221); the *Libra Mercatoria* of 15 Ounces; and Avoirdupois Weight. The latter was ordered, by the 24th of Henry VIII. (1532), to be used for meat and other provisions; but this law was repealed in 1541.

In 1588, Queen Elizabeth ordered the Avoirdupois Pound to be placed in the Exchequer as a standard, without any new law on the subject. Her Majesty also directed that a copy of the Troy Pound, belonging to Goldsmiths' Hall, should be deposited at the Exchequer; where it is still used as the legal standard. Copies of this weight were likewise sent to the Mint, and to other Public Offices.

In the year 1758, a select Committee of the House of Commons was appointed to enquire into the state of English Weights and Measures, and to report accordingly. They were assisted in their researches by several eminent Mechanists; among whom may be mentioned *Mr. Bird*, the celebrated Optician, and *Mr. Harris*, the King's Assay Master of the Mint. This Committee, with *Lord Carysfort* at their head, pursued their enquiry with great system and ability, as their Report fully evinces. Their labours, however, were not confined merely to researches and reports: they prepared with great accuracy two standards, namely,

(g) There are in most countries two sorts of Pounds, one for the precious metals, and the other for common articles. The former is generally divisible ^{etc.} into 12 Ounces, and the latter into 16. The duodecimal scale has the advantage of being divisible by 3 and 6, without remainders; but the binary system, that is, dividing into halves, quarters, eighths, sixteenths, &c. is considered the most simple and convenient, especially in all common operations of domestic trade. It should however be observed that for foreign commerce and scientific calculations, decimal divisions possess superior advantages.

the Yard, and the Pound Troy, which are still carefully preserved, and justly considered of the highest authority.

The Long Measure was adjusted by Mr. Bird from the standards used at the Exchequer, and those belonging to the Royal Society; and the Weight was adjusted by Mr. Harris from the standard Troy Pound kept at the Mint. On this subject a difficulty occurred, as this weight was found to be $1\frac{1}{4}$ Grain heavier than the Exchequer Pound; and in order to know which was correct, the Committee sent to Goldsmiths' Hall for the original Pound, from which both had been copied, but they were informed that no such Standard was known or recollected there. They then resolved to adopt the Mint Standard, as they considered the deficiency of the Exchequer Pound to be the effect of wear. The following are the words of the Report:—

“ And considering that the Exchequer weights have been used ever since the
 “ 30th of Queen Elizabeth, 1588 (one hundred and seventy years), to size other
 “ weights by, it is highly probable that the difference may have been occasioned
 “ by the frequent use of the Standard.”—(See *Reports from Committees of the
 House of Commons*, Vol. II. p. 419.)

On the question whether Troy or Avoirdupois Weight should be adopted as the Standard, the former was preferred by the Committee, for the following reasons:

“ Because it is the weight best known to our law; that which hath been longest
 “ in use; that by which our coins are measured; that which is best known to the
 “ rest of the world; that to which our learned countrymen have referred, and
 “ compared ancient and modern weights; the weight which hath been subdivided
 “ into the smallest parts. On the other hand, the Avoirdupois Weight is of doubt-
 “ ful authority; and, though unfit to be made a Standard, yet the frequent use of
 “ it renders it necessary to ascertain and declare how many Ounces, Pennyweights,
 “ and Grains, Troy, the Pound Avoirdupois ought to weigh.”

The Committee having found the divisions of the Mint Standard inaccurate, caused them to be corrected; and the following is their account of this important operation:

“ Your Committee thought it necessary in the first place to obtain, with the
 “ utmost possible exactness, standard weights of the several parts of the Pound
 “ Troy, in order that from thence such other combinations, or proportions of
 “ weight might be formed, as the business or necessities of the subject should

“ hereafter require. And Mr. Harris was employed to make these several parts,
 “ who accordingly did so, with great skill and attention, by a very curious and
 “ accurate apparatus contrived by Mr. Bird. It was adapted to five different
 “ beams, which ascertained the weights from twelve ounces, or one pound, down
 “ to a grain inclusive; and that with so great exactness as to discern any error in
 “ the pound weight to the 230400th part of the weight, and to the 2000th part
 “ of a single grain.

“ By these beams the several parts of the standard Pound were examined and
 “ adjusted by Mr. Harris, in the presence of your Committee, and were found to
 “ be what their denominations import. These several parts were tried in every
 “ progressive combination necessary to discover their proportions to each other;
 “ and appeared so exact, that no greater degree of correctness could, in the nature
 “ of the thing, be expected.”

A copy of this standard Pound was delivered to the House of Commons, and another to the King's Assay Master of the Mint, in whose office it is still carefully preserved, with Mr. Bird's weighing apparatus. With this apparatus the late comparisons of Foreign Standards have been made at the Mint, as stated in the foregoing Preface: but it should be observed that certain Standards, which were too heavy for this beam, were weighed by a new Hydrostatic Balance of great accuracy, invented by *John Barton, Esq.* Deputy Comptroller of the Mint.

Before the general comparison was begun, it was deemed proper to compare the Parliamentary Pound with the Exchequer Standard; and for this purpose the latter was taken to the Mint, by an order from the Chancellor of the Exchequer, where it was found to be $1\frac{1}{2}$ Grain lighter than the Parliamentary Pound: and its divisions proved to be still more inaccurate. (*h*)

It should be observed that *Lord Carysfort's* Committee intended to correct this Standard, as appears by their Report; but in 1760, before their plans were completed, Parliament was dissolved—and thus ended their useful labours.

Since that period no alteration has been made in the Standards, though much attention has been paid to the subject, both in and out of Parliament, especially since the adoption of the Metrical System in France.

(*h*) This comparison between the English standard Weights was made on the 22d of October, 1818, in the presence of the principal Officers of the Mint, and the Chamberlain of the Exchequer; and the results were registered by *James William Morrison, Esq.* Deputy Master of the Mint.

In 1816, in consequence of an Address from the House of Commons to the Prince Regent, His Royal Highness appointed a Commission, to consider the subject of English Weights and Measures; to determine the length of the Pendulum vibrating Seconds in the latitude of London; and to settle the proportion between the Long Measures of England and France.

The Commissioners appointed on this occasion were selected from the Royal Society, and their Reports on the various subjects of enquiry shew them to have been well qualified for the undertaking. The First Report, which was made in June, 1819, contains a comparative view of different systems and standards of Weights and Measures: and appears to be the result of extensive research and mature consideration. No alteration is here proposed to be made in the English Standards of Long Measure or of Weight, those established by the Committee of 1758 having been found quite accurate.

The following opinion of the Commissioners on the Plan which has been often proposed of adopting Foreign Standards, for the purpose of assimilating the systems of different countries, well deserves attention:

“ With respect to the actual magnitude of the Standards of Length, it does not appear to us that there can be any sufficient reason for altering those which are at present generally employed. There is no practical advantage in having a quantity commensurable to any original quantity, existing or which may be imagined to exist, in nature, except as affording some little encouragement to its common adoption by neighbouring nations. But it is scarcely possible that the departure from a Standard universally established in a great country, should not produce much more labour and inconvenience in its internal relations, than it could ever be expected to save in the operations of foreign commerce and correspondence.”

The Second Report contains the final determination of the Commissioners on the Standard of Long Measure, the length of the Pendulum, and of that of the Metre. The following are the concluding words of this decision:

“ We prefer the Parliamentary Standard executed by Mr. Bird, in 1760; both as being laid down in the most accurate manner, and as the best agreeing with the most extensive comparisons, which have been hitherto executed by various observers, and circulated throughout Europe; and in particular with the scale employed by the late *Sir George Shuckburgh*.

“ We have therefore now to propose that this Standard be considered as the foundation of all legal weights and measures; and that it be declared that the length of the Pendulum vibrating seconds in a vacuum, on the level of the sea, in London, is 39,1393 Inches, and that of the French Metre, 39,37079 Inches, the English Standards being employed at 62° of Fahrenheit.”

The Third Report of the Royal Commission contains a confirmation of the other two Reports, with respect to Measures of Length: and as to Weights, the Parliamentary Troy Pound of 1758 is recommended to remain unaltered, and the Pound Avoirdupois to continue at 7000 Troy Grains. (*h*)

FRENCH STANDARDS.

The basis of the Metrical System established in France has been already explained in page xix. It remains here to specify the principal Standards, and to shew their proportion to those of England. These are, the *Metre*, the *Kilogramme*, and the *Litre*, which are kept, with other Standards, in the Office of Weights and Measures at Paris.

The length of the Metre, as determined by the Commissioners above-mentioned, may be considered as agreeing with the measurement made by *Professor Pictet*, in 1802, viz. 39,371 Inches (see Vol. I. p. 134); and the contents of the Litre are of course equally correct. Thus it appears that the ratio between the Measures of England and France has been long accurately determined; but the same cannot be observed of the Weights, as an error of considerable magnitude in their established proportion has been discovered by the late comparisons at the London Mint. The particulars of this extraordinary circumstance are fully explained in a Note, under the article *France*, Vol. I. p. 140: but as certain comparisons and verifications have since taken place on the subject, some further explanation seems necessary.

By that Note it will be seen, that in 1742, the Royal Society of London and the Academy of Sciences at Paris undertook to determine the relative contents of their Weights and Measures, for which purpose they exchanged Standards; and they perfectly agreed in all their experiments, but they had not correct weights to

(*h*) This important document is dated March the 31st, 1821, and signed by the Commissioners—namely, *Sir George Clerk*, Bart. M. P.; *Davies Gilbert*, Esq. M. P.; *William Hyde Wollaston*, M. D.; *Thomas Young*, M. D.; and *Captain Henry Kater*.

compare, for it has been recently ascertained that the English Pound sent to France, as well as its duplicate kept by the Royal Society; was nearly 4 Grains too light; and this made the French Pound with which it was compared appear 5 English Grains too heavy—an excess which was afterwards transferred by calculation to the Kilogramme, making it about 11 English Grains too much.

That an error of such magnitude should have remained so long undiscovered, seemed incredible: and it was therefore deemed expedient to submit the question to the official authorities of France. For this purpose, an English Troy Pound was verified at the London Mint, by the request of *Thomas Lack, Esq.* Secretary to the Board of Trade; and it was transmitted by *Lord Castlereagh* to Paris to *Count Simeon*, the Minister of the Interior, with the Report of the Mint experiments made on the several Kilogrammes that had been sent to England. By this Report it appeared that their general weight was 15434 Grains each: some were found rather heavier, but none lighter, except the Paris Kilogramme, which weighed only 15433 Grains. Hitherto it had been reckoned at 15444 Grains.

Count Simeon's answer, dated Feb. 28, 1821, contains an official statement of the experiments made on the said English Pound at the Office of Weights and Measures at Paris; and the result perfectly corresponds with that determined at the London Mint respecting the Paris Kilogramme. Thus the Pound was found to weigh 373 Grammes 233 Milligrammes, though hitherto reckoned only at 372,919.

The reason given in this Official Dispatch, why the Kilogrammes from other cities of France were found heavier than the Paris Standard, is as follows:—
“ Because they were adjusted according to the laws prescribed for commercial weights, that is to say, with *an allowance over.*” (i)

From this law of sizing weights, it is evident that those used in actual business are something heavier than the original standard; and hence, 15434 Grains may be considered the *Commercial Kilogramme*, and is therefore the Weight adopted in this Work, as that which Merchants universally act upon.

(i) The following are the words of *Count Simeon's* Dispatch: “ *Si les résultats obtenus en employant les kilogrammes que votre gouvernement avait tirés de quelques autres villes de France, ne donnent pas aussi exactement la valeur de ces poids en grains Anglais, ce ne peut être que parcequ' ils étaient ajustés suivant les règles prescrites pour les poids du commerce, c'est à dire avec une tolérance en plus.*”

By “ *tolérance en plus*” is to be understood what is commonly called in England *the turn of the scale*, or *the cast of the beam*; and this allowance in the weight of the Kilogramme may be fairly estimated at 1 Grain troy.

COINS.

COINS are pieces of metal, mostly of a round and flat shape, stamped by authority with certain impressions, which are intended to give them a legal and current value, and also to serve as a guarantee for their weight and fineness.

Gold and Silver are the principal metals of which coins are made, being found the fittest for that purpose, both on account of their qualities and their scarcity.

Copper and Billon are likewise used, but always for coins of inferior value.

Gold is the most valuable of all metals, and the most difficult of imitation. It is the least liable to rust or to be altered by fire: it is perfectly malleable, and so ductile, that gold leaf can be reduced to the 300-thousandth part of an inch, and gold gilding to the 10-millionth part.

Silver is next to gold, in value, and in all the above qualities. Silver leaf can be reduced to the 170-thousandth part of an inch: its divisibility is to that of gold as 170 to 300; and the specific gravity of these metals is nearly in the same proportion, being as 105 to 193.

The proportional value of gold and silver is, however, variable; for although they are generally considered as equivalents of other property, and standard measures of value, by which commodities are bought, sold, and estimated, yet, being themselves also saleable articles, they are liable to constant fluctuation in price, as exchanged for each other, as well as with respect to all property. (*h*)

(*h*) The relative value of gold to silver has varied considerably in different ages, and in different countries at the same period of time. The following may serve as an average statement of those proportions:

	Silver.	Gold.
In Ancient Greece;	between 15 and 12	to 10 to 1.
In Ancient Rome,	between 12 and 10	to 7 to 1.
In England, from the time of the Saxons to the discovery of America,	between 12 and 10	to 1.
Since that period, the proportion throughout the world has been	between 17 and 14	to 1.

It should be observed that there have been very great variations from the above average proportions, but not of long continuance. Thus, at some periods of the ancient world, 1 pound of gold was worth nearly 40 of silver; and in England, in the reign of Edward VI., the Mint proportion was as 1 to 5. These extraordinary fluctuations were from political convulsions; but the common cause is the proportional supply from the Mines, which has been computed in modern times at an average of 52lb. of silver for 1lb. of gold. See the Note under the article *Mexico*, Vol. I. p. 254.

For an accurate statement of the relative value of the precious metals, in the principal Mints of the world, see Vol. II. p. 147; and for the periodical variations in the English Mint proportions, see Vol. I. p. xxxi.

Pure gold and silver are invariable in their qualities, from whatever mines they are produced. In their fine state they are considered too flexible to make coins fit for general wear; and hence the practice of mixing with them a certain proportion of harder metal, which is called *Alloy* or *Allay*.

In all regular Governments, there has been a Standard for Coins fixed by law; that is, a certain proportion between the quantity of pure metal and its alloy. Thus, the legal standard for gold in England is $\frac{22}{24}$ or $\frac{11}{12}$; that is, eleven parts of pure metal, and one of alloy. The fineness of gold is generally expressed in Carats; the whole weight being supposed to be divided into 24 equal parts or Carats, 22 of which are of pure metal and 2 of alloy: and hence, English standard gold is said to be 22 Carats fine; and the Carat is divided into 4 parts, called Grains: but these proportions differ in other countries.

The English standard for silver is $\frac{225}{240}$ or $\frac{5}{6}$; that is, 11 oz. 2 dwt. of pure, and 18 dwt. of alloy, making together 1 Pound troy.

The alloy of silver is mostly copper, and that of gold, both silver and copper; but in the computation of coins, the alloy is never reckoned of any value.

Besides this standard fineness of coins, there is also a legal weight fixed according to the Mint Regulations or Rate of Coinage of each country. Thus, in England a Pound troy of standard gold is coined into 44½ guineas, and a Pound of standard silver into 66 shillings; and hence, the Mint price of standard gold is £3 17s. 10½d. per Ounce, and that of standard silver, 66d. per Ounce. Before the year 1816, silver was coined at the rate of 62d. per Ounce; and this is still reckoned the standard price in the valuation of foreign silver coins.

According to the Mint Regulations of most countries, there is an allowance for deviation from the standard weight and fineness of coins, which is called the *Remedy of the Mint*. In some places the Remedy is allowed in the weight, in others in the fineness; but mostly in both weight and fineness. It is considered generally as an allowance for the fallibility of workmanship. In some Mints, however, it is made a source of emolument; and where Governments issue coins at a rate above their intrinsic value, or the market price of the metal, the profit thus made is called *Seignorage*, and charges for Mint expenses are called *Brassage*.

In order further to illustrate the principles and practice of Coinage, and particularly to explain the present state of the English Monetary System, the following historical outline is attempted.

ENGLISH COINS.

The origin of Coins, in almost every country, is involved in great obscurity. In England it has been a question much disputed, and not yet clearly decided, whether the ancient Britons minted any Coins before the arrival of the Romans. It is agreed, however, that the Saxons improved the Roman Coinage, and were authors of the standard of silver, called *Sterling*, (*l*) which has remained since their time unaltered, except some variations, for about ten years, as stated in the following Table, p. xxxi.

The Coinage of William the Conqueror was after the plan established by Charlemagne, in France, in the eighth century, and is supposed to be derived from the Romans, with respect to dividing the Pound into 20 Shillings and the Shilling into 12 Pence. The same proportions are still preserved in the *Lira* of Italy, the *Libra* of Spain, and the *Livre* of France.

The Saxon Pound weight was adopted by King William, and was called the Moneyer's Pound (explained p. xxi.); and from it 20 Shillings were coined, which made $21\frac{1}{3}$ to the Pound troy. This number was increased in succeeding reigns until the year 1665 (18th Charles II.), when it was settled at 62 Shillings, at which it continued until the year 1816. It was then altered to 66 Shillings, its present rate.

In the early coinages the Silver Penny or Sterling was minted with a deep cross. When it was broken into two parts, each was called a *Half-penny*, and when into four, each part was called a *Fourth-thing*, or Farthing. Larger silver pieces of Four-pence were also coined, which were called *Greats*, or Groats, and also *Grosses*. There were besides, silver Half-pence and Farthings minted; but no Shillings until the reign of Henry VII. (1504), nor copper coins until the reign of Charles II. (1665).

(*l*) This is called *Old Sterling*, to distinguish it from *New Sterling*, which is 8 dwt. better. The latter is seldom used, and only in wrought silver.

The name *Sterling* was also given both to the Silver Penny and to the Penny Weight; and it has been since applied to all lawful money of Great Britain. According to *Camden*, *Sterling* is derived from the *Easterlings*, who were expert Refiners from the Eastern parts of Germany, and who first established the standard proportion of silver. The other derivations offered by various authors are numerous, perhaps, beyond the example of any other word; for which, see *Ruding's Annals of the Coinage of Britain*, Vol. I. pp. 21—24.

As to gold coins, the first after the Norman Conquest, according to *Snelling*, was struck by order of Henry III. in the year 1257. It weighed two silver Pence, passed for twenty Pence, and was called the *Gold Pennie*. The same Author observes, "that the King tried this expedient of coining gold through necessity, "and that the City of London made a representation against this measure."

The next gold coinage in England was in the year 1344, when the Florin was struck, which took its name from *Florence*, where it had been first minted in 1252. It was afterwards coined in most countries of Europe. In Germany and Holland it was called the *Gulden*, on account of its having been originally gold. The Florin, however, has been long a silver coin, and also a money of account.

The above Coins are supposed to have been of pure gold; but those minted in the subsequent reigns down to that of Henry VIII. were 23 Carats $3\frac{1}{2}$ Grains fine, with $\frac{1}{2}$ Grain of alloy. This was called the Old Standard to distinguish it from the New or the present Standard, which was first called *Crown Gold*, as being minted into Crown Pieces in 1527.

The principal gold coins of the Old Standard were Nobles of 6s. 8d. each, with halves and quarters: the latter were called *Farthing Nobles*. There were also Marks of 13s. 4d.; Angels of 10 Shillings; and Sovereigns of 20 Shillings each. Sovereigns were first minted by Henry VII. and were frequently altered during the four subsequent reigns; but in the 2d of James I. they were fixed at 22 Carats, at which fineness all gold coins have since been minted. The 20 Shilling Pieces first coined at this rate were called *Unites*, and $33\frac{1}{2}$ Pieces were struck from the lb. Troy; but in the reign of Charles II. (1666) a new coinage of $44\frac{1}{2}$ to the lb. was minted, and these were called *Guineas*, on account of the country from which the gold was originally brought. The Guinea varied in its current price from 20 Shillings up to 30, until the year 1717, when, by the recommendation of Sir Isaac Newton, it was fixed at 21 Shillings, its present rate.

In 1816 a new coinage of 20 Shilling Pieces, called *Sovereigns*, was minted, in due proportion to the Guinea, viz. $46\frac{2}{3}$ Sovereigns to the Pound Troy.

At the same period an extensive Silver coinage took place, at the new rate already stated p. xxix, which affords a *Seignorage*, but its amount must always depend on the market price of the metal.

The following Table may serve to illustrate the foregoing statements.

AN HISTORICAL TABLE OF ENGLISH COINS,

Shewing the Alterations they have undergone from the Reign of WILLIAM the CONQUEROR to that of GEORGE IV., with respect both to their Weight and Fineness. Also a Statement of the comparative Value of Gold and Silver, at different periods.

Date.	Reign.	SILVER.			GOLD.			Comparative Value of fine Gold and Silver.					
		Fineness of Silver Coins.		Pound Troy of such Silver coined into	Fineness of Gold Coins.		Pound Troy of such Gold coined into						
		Oz.	Dwt.	£.	s.	d.	Car.	Gr.	£.	s.	d.	Gold.	Silver.
1066	William I.	11	2	1	1	4	-----	-----	-----	-----	-----	-----	-----
1280	8 Edward I. ..	—	—	1	1	4	-----	-----	-----	-----	-----	-----	-----
1344	18 Edward III.	—	—	1	1	6	23	3½	14	0	10	1 to	12,584
1349	23 —————	—	—	1	3	0	—	—	14	18	8	1 —	11,571
1356	30 —————	—	—	1	6	8	—	—	16	0	0	1 —	11,158
1421	9 Henry V. ..	—	—	1	12	0	—	—	17	16	0	1 —	10,331
1464	4 Edward IV.	—	—	2	0	0	—	—	22	4	6	1 —	10,331
1465	5 —————	—	—	2	0	0	—	—	24	0	0	1 —	11,158
1470	49 Henry VI. :	—	—	2	0	0	—	—	24	0	0	1 —	11,158
1482	22 Edward IV.	—	—	2	0	0	-----	-----	24	0	0	1 —	11,158
1509	1 Henry VIII.	—	—	2	0	0	-----	-----	24	0	0	1 —	11,158
1527	18 —————	—	—	2	2	8	22	0	24	0	0	1 —	11,268
1543	34 —————	10	0	2	8	0	23	0	28	16	0	1 —	10,434
1545	36 —————	6	0	2	8	0	22	0	30	0	0	1 —	6,818
1546	37 —————	4	0	2	8	0	20	0	30	0	0	1 —	5,000
1547	1 Edward VI.	4	0	2	8	0	20	0	30	0	0	1 —	5,000
1549	3 —————	6	0	3	12	0	22	0	34	0	0	1 —	5,151
1551	5 —————	5	0	3	12	0	23	3½	34	0	0	1 —	11,000
1552	6 —————	11	1	3	0	0	22	0	36	0	0	1 —	11,050
1553	1 Mary	11	0	3	0	0	23	3½	36	0	0	1 —	11,057
1560	2 Elizabeth ...	11	2	3	0	0	22	0	36	0	0	1 —	11,100
1600	43 —————	—	—	3	2	0	23	3½	36	10	0	1 —	10,904
1604	2 James I. ...	—	—	3	2	0	22	0	33	10	0	1 —	12,109
1626	2 Charles I. ..	—	—	3	2	0	—	—	41	0	0	1 —	13,346
1666	18 Charles II. .	—	—	3	2	0	—	—	44	10	0	1 —	14,485
1717	3 George I. ..	—	—	3	2	0	—	—	46	14	6	1 —	15,209
1816	56 George III. .	—	—	3	6	0	—	—	46	14	6	1 —	14,287
1821	2 George IV. .	—	—	3	6	0	—	—	46	14	6	1 —	14,287

By the above Table it appears that Silver Coins have been diminished in value, during the last 500 years, in the ratio of 99 to 32, and Gold Coins nearly as 3½ to 1. It may be remarked, that within the same period the Silver Coins of France and Spain have been debased in the ratio of about 17 to 1.

Seignorage was charged, but very unequally, until the year 1666, when a law was enacted that any person bringing gold or silver bullion to the Mint, might have it coined free of expense; and this law is still continued with respect to gold, but in 1816 the coinage of silver was wholly undertaken by Government.

Before this change took place, the supply of silver currency was very irregular, and the coins, however correctly minted, soon became greatly deteriorated, in-somuch that in the year 1774 they were declared to be no longer a legal tender for more than £25, although they had been previously unlimited in this respect.

The system of both metals being standard measures of value (which they were in virtue of each being a legal tender to any amount), was the source of much disorder; for as their market prices were always subject to variation, one kind of coin had a constant tendency to drive the other out of circulation.

To remedy this great inconvenience, various plans were proposed by different Statesmen. *Sir William Petty* was the first who recommended that “one metal only should be made the uniform measure of the value of commodities.” *Mr. Locke* supported this opinion, and proposed silver. Others recommended gold; and some, both metals, as approved of by *Sir Isaac Newton*.

Such was the diversity of opinion, when, in 1805, a very able Work appeared, which seems to have decided the question. This important publication was *A Treatise on the Coins of the Realm*, by *Charles, Earl of Liverpool*, in which His Lordship maintains, “that coins which are the principal measure of property should be composed of one metal only; that this metal should be gold (being that in which the principal payments in England are made); and that the expenses of fabrication should be taken out of the silver and copper coins.”

This is in substance the Monetary System established in 1816, at which time the following law was enacted—“That gold coins shall be in future the sole standard measure of value, and legal tender of payment, without any limitation of amount, and that silver coins shall be a legal tender for the limited amount of forty shillings only, at any one time.” (*m*)

(*m*) In the history of the English Mint, the Coinage of 1816 will be memorable, not only on account of the important alteration then made in the monetary system, but also for the great accommodation afforded to the public. Thus, after a long period of disorder in the currency, the new silver coins were exchanged for the old on very liberal terms; and, although they amounted to several millions of pounds sterling, the exchange was effected simultaneously throughout the kingdom. The supplies too from the Mint have been since continued, to all parts of the British dominions, with a degree of regularity and dispatch unknown at any former period.

MONIES.

Money is a general term for coin, paper, or any other representative of property that passes current from hand to hand as a circulating medium. (*n*)

Monies are distinguished into *real* and *imaginary*.

Real monies are coins, bank notes, or any other tokens of credit that have a currency, and are understood to be convertible into property.

Imaginary monies, also called *ideal monies*, are not represented by any coin, but are used in keeping accounts: they are understood to have had their foundation in real coins or in weights, which were the original units adopted as measures of value, and which have been continued under the same denominations, notwithstanding the changes that may have taken place in their intrinsic value.

Although monies of account be not represented by real coins, yet their intrinsic value may be determined by their known relation or proportion to certain coins.

Monies of account may be considered with respect to coins, as weights and measures with respect to goods, or as a mathematical scale with respect to maps, lines, or other geometrical figures. Thus they serve as standards of the value both of merchandize and of the precious metals themselves. It should, however, be remarked, that monies of account, though they are uniform as a scale of divisions and proportions, yet they fluctuate in their intrinsic value with the fluctuation of the coins which they measure or represent.

Monies are further distinguished, in different countries, by particular denominations, as *Cash*, *Specie*, *Effective*, *Currency*, *Banco*, *Giro*, *Moneta di Cambio*, *Valuta*, &c.; and connected with these are the terms *Agio*, *Discount*, *Interest*,

(*n*) It is worthy of observation, that the progress of metals as representatives of property seems to have kept pace with the increase of wealth and commerce. Thus, iron, brass, and copper, first answered the purposes of money. Silver next succeeded, after which gold was adopted: but the great increase of business in modern times has rendered even the precious metals insufficient as a circulating medium. Paper, therefore, has been substituted in various ways; and it is generally found more convenient and manageable than specie. Where credit cannot be given, the precious metals are necessary; but where well-founded credit exists, paper is greatly preferable: it is exempt from most of the imperfections and disorders of coins, and in many other respects it greatly facilitates the operations of trade and commerce.

Rebate, Exchange, Commission, and Brokerage, which may therefore require some explanation.

Cash is a general term for all monies in England, but is a coin in China, Japan, and other countries.

Specie and *Effective* generally mean coin; but in some parts of Germany the word *Specie* is applied to the Rixdollar and its divisions.

Currency generally signifies the common or current money of a place, which in Holland is called *Cassa*; in Venice, *Moneta Piccola*; and in other parts of Italy, *Moneta Lunga*: but in some parts of Germany, and particularly in Augsburg, *Currency* means the money of account, and it has the same meaning in America and the West Indies, where it derives its name from a paper currency, which has been long discontinued.

Banco is the money which is placed in Banks of Deposit, and which is not drawn out, but transferred in the payment of debts and contracts.

Giro, in most parts of Germany, means Money of Exchange, which is called *Moneta di Cambio* in Italy.

The word *Valuta* or *Valeur* is applied on the Continent to the prices or rates at which different kinds of monies are reckoned in commercial transactions.

The difference of one sort of money compared with another is mostly reckoned at so much per cent. When a better sort is given for a worse, the premium or per-centage is called *Agio*: but when the difference or per-centage is considered with regard to the inferior sort of money, it is called *Discount*. Thus formerly, when 100 Florins Banco were given for 104 of Currency, the *Agio* on Banco was 4 per cent.; but, when the same sum was given for 95 Florins Currency, then Banco was said to be at a discount of 5 per cent.

Discount is likewise a term applied to an allowance of so much per cent. per annum for the payment of money before it becomes due; and this *Discount* differs from Banco as *Agio* differs from Interest.

Interest is an allowance of so much per cent. per annum for the use of money, and is therefore an addition to the Principal; but *Agio* adds nothing to the Capital, being only the actual difference in value between two kinds of money. In the same manner, *Discount* between various sorts of monies, and *Discount* for prompt payment, differ. In the former case there is no loss or diminution, but in the latter there is a deduction from the Principal.

There is a third kind of **Discount**, which is a deduction of so much per cent. from the stipulated price of goods: this is sometimes called **REBATE** or *Rabbatt*. In many countries there are fixed periods of several months for the payment of certain kinds of goods; and when such contracts are discharged within one month, the *Rabbatt* is mostly 8 per cent. per annum. This, however, is differently reckoned: in some places 100 is paid for 108, and in others, 92 for 100; the latter is the most general method of deducting all kinds of **Discounts**. Thus, in England, where the legal interest for money is 5 per cent. per annum, this sum is the **Discount** taken from a bill of £100 due at twelve months. This is in reality £5 for £95, which is £5 5s. 3d. per cent. per annum.

It should be observed, that the rate of interest in discounting bills on the Continent is not limited by law as in England, but fluctuates according to the plenty or scarcity of money.

Compound Interest is that which arises from any principal and its interest put together, which charge in England is illegal for money lent. It is, however, used in computing annuities, and is also charged on mercantile balances in the ledger when they are not regularly settled, but carried from one year's account to another.

When a sum of money of one kind is given for its amount or equivalent in another sort, the transaction is called an *Exchange*, of which there are two kinds; the one, when the monies are immediately bartered, which is called, in Italy and in many other parts of the Continent, "*Cambio Comune*," or *Common Exchange*, also *Dry Exchange*: but, when a sum of money is paid in one place for a written order for its equivalent in the money of another place, the operation is called "*Cambio Reale*," or *Real Exchange*: and this is what is commonly understood by **Foreign Exchange**.

Commission is a charge, generally, of so much per cent. or per mille, made by a Merchant or Factor for any commercial transaction; and *Brokerage* is a similar charge made by a Broker. These charges are either added or subtracted, according to the nature of the transaction. Thus a commission of 1 per cent. on Sales of Goods, or on a Bill of Exchange, will reduce £100 to £99 to the Seller of the Goods, or the Drawer of the Bill: and the like charge on an Invoice, or on a Bill of Exchange, will increase £100 to £101 to the Purchaser of the Goods, or the Remitter of the Bill.

PAPER MONEY, BANKS, AND PAPER CREDIT.

Paper Money or *Paper Currency* consists of promissory notes, bills, or other written obligations or securities, which pass current from hand to hand in payment of debts and contracts, till they are ultimately redeemed by the Issuer.

Paper currency is distinguished into *forced* or *free*, according as it is forced into circulation by authority, or received without any compulsion. Of the former sort are emissions of government paper in some countries; and of the latter, are bank notes and other such issues which are payable to bearer on demand.

Banks are offices for keeping and circulating money: they are generally distinguished into *Banks of Deposit* and *Banks of Circulation*.

Banks of Deposit are so called, because the money lodged in them is not drawn out, but transferred from one person to another: such is the Bank of *Hamburgh*.

Banks of Circulation are such as issue their own notes, and such also as pay the money lodged in them to the order of the owners, as the Bank of England, &c. Such are distinguished into *Public* and *Private Banks*, according as they may have been constituted by public companies and incorporated by law, or established on private credit, without any charter.

Paper Credit is a term which generally comprehends all kinds of paper currency and other written obligations; such as *Bank Notes*, *Exchequer Navy and Ordnance Bills*, *Bonds*, *Promissory Notes*, *Mortgages*, *Transfers of Stock*, *Bills of Exchange*, *India Bonds*, and in short, all paper securities, both public and private, by which property is transferred from hand to hand, and from nation to nation. Thus, Paper Credit may be considered the instrument by which all the great operations of Trade, Commerce, Banking, Finance, Subsidies, and other Government transactions, are carried on throughout the world.

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ERRATA, VOL. I.

Page.	Line.		Page.	Line.	
xxi.	2	In the Note, <i>for</i> divisible <i>read</i> divided.	168	3	from the bottom, <i>for</i> Sols Banco <i>read</i> Shillings Lubs.
6	6	<i>for</i> 3s. 6d. <i>read</i> 3s. 3d.	208	24	<i>for</i> 22,692 <i>read</i> 24,041.
8	6	from the bottom, <i>for</i> 5s. 10d. <i>read</i> 5s. 6d.	208	24	<i>for</i> 0,8931 <i>read</i> 0,6104.
11	16	<i>for</i> 6 Perches <i>read</i> 1 Perch.	217	12	<i>for</i> ,9125 <i>read</i> 9,25.
18	9	<i>for</i> 5238,5 <i>read</i> 5231.	219	24	<i>for</i> Decigrammes <i>read</i> Milligrammes.
18	12	<i>for</i> 73,75 <i>read</i> 72,77.	220	4	<i>for</i> Decigrammes <i>read</i> Milligrammes.
25	11	from the bottom, <i>for</i> 10 <i>read</i> 105.	222	2	<i>for</i> 88 <i>read</i> 38.
28	10	<i>for</i> the Ecu, the Rixdollar, and the Patagon, <i>read</i> the Ecu or Patagon, and the Rixdollar.	240	30	<i>for</i> reduced <i>read</i> redeemed.
35	1	<i>for</i> 0,468 <i>read</i> 46,8.	242	15	<i>for</i> 98 <i>read</i> 96.
35	6	<i>for</i> 3189 <i>read</i> 3180.	243	2	<i>for</i> 65,93 <i>read</i> 57,37.
39	6	from the bottom, <i>for</i> 4500 <i>read</i> 45000.	243	3	<i>for</i> 249,56 <i>read</i> 217,19.
40	11	<i>for</i> 815½ <i>read</i> 814.	244	9	<i>for</i> Litres <i>read</i> Decilitres.
47	11	<i>for</i> 0,1195 Metres <i>read</i> 1,195 Metre.	255	7	from the bottom, <i>for</i> 41,5 <i>read</i> 4,15.
52	8	<i>for</i> Litres <i>read</i> Decalitres.	255	7	from the bottom, <i>for</i> 11,621 <i>read</i> 1,462½.
54	10	from the bottom, <i>for</i> 4668 <i>read</i> 466,8.	278	6	<i>for</i> 149 <i>read</i> 151.
55	2	<i>for</i> 3669 <i>read</i> 3,669.	278	17	<i>for</i> 6,286 <i>read</i> 5,564.
57	2	<i>for</i> 124 <i>read</i> 127½.	278	19	<i>for</i> 0,529 <i>read</i> 0,657.
63	4	<i>for</i> Pagoda <i>read</i> Mohur; <i>after which insert</i> , Pagoda 8s. or 16 Schillings.	280	10	<i>for</i> 4,19 <i>read</i> 0,419.
99	12	<i>for</i> Cutcha Seers <i>read</i> Pucca Maunds.	280	10	<i>for</i> Litres <i>read</i> Decilitres.
120	10	<i>for</i> 100 <i>read</i> 400.	283	3	<i>for</i> 467,711 <i>read</i> 233,834.
129	11	from the bottom, <i>for</i> ½ <i>read</i> ⅓.	286	20	<i>for</i> 3791 <i>read</i> 3797.
131	2	<i>for</i> Bushels <i>read</i> Gallons.	336	15	<i>for</i> Litres <i>read</i> Decilitres.
137	7	<i>for</i> 35,2466 <i>read</i> 35,236.	336	16	<i>for</i> Litres <i>read</i> Decilitres.
161	3	<i>for</i> "the first called Kaysergroshen," &c. to the end of the sentence, <i>read</i> "and also into 30 Kaysergroshen of 3 Creutzers, and into 22½ Batzen of 4 Creutzers."	336	18	<i>for</i> Litres <i>read</i> Decilitres.
			342	2	from the bottom, <i>for</i> 5494 <i>read</i> 5484.
			360	5	<i>for</i> £5 <i>read</i> £5 6s. 8d. and the divisions of the Doubloon in proportion.
			369	2	<i>for</i> 28 Shillings <i>read</i> 60 Creutzers.
			373		last line, <i>after</i> Auditor General <i>insert</i> at Corfu.

N. B. It is recommended that the above errors be corrected with the pen before the Work is consulted on any question of business.

Explanation of certain Characters used in this Work.

+ signifies Addition, as $6 + 2$ denotes that 2 is to be added to 6.

— signifies Subtraction, as $6 - 2$ denotes that 2 is to be subtracted from 6.

\times signifies Multiplication, as 6×2 denotes that 6 is to be multiplied by 2.

\div signifies Division, as $6 \div 2$ denotes that 6 is to be divided by 2 or $\frac{6}{2}$.

= signifies Equality, as $6 + 2 = 8$; $6 - 2 = 4$; $6 \times 2 = 12$; and $6 \div 2 = 3$.

: :: : signifies Proportion, as $2 : 4 :: 6 : 12$ denotes that 2 is to 4 as 6 to 12.

The Comma (,) placed before any Figure shews that the Number is a decimal Fraction: thus .5 denotes $\frac{5}{10}$ or $\frac{1}{2}$; also, $6,25$ means $6\frac{25}{100}$ or $6\frac{1}{4}$.

AN ACCOUNT

OF THE

MONIES, COINS, WEIGHTS, MEASURES, BANKS, EXCHANGES,

AND SUNDRY

COMMERCIAL REGULATIONS, OF ALL TRADING COUNTRIES.

ABYSSINIA (*in Africa*)

THERE are no coins minted in Abyssinia, but those of other countries circulate ^{Monies and} here, particularly Venetian Sequins, and Imperial or Austrian Dollars. The ^{Coins.} latter are called *Patakas* or *Patacks*. Spanish Dollars also pass at *Massuah* on the Red Sea, the principal port with which the English have commercial intercourse.

Large payments are generally made in Ingots of Gold, which are weighed by the *Wakea* or Abyssinian Ounce; and for small payments Salt Bricks dug out of the mines are adopted, about 80 of which are valued at a *Wakea* of Gold. Glass Beads also of all colours, perfect and broken, pass for small money, and are called *Borjookes*.

The relative value of monies at *Massuah* is as follows:

3 Borjookes or Grains	make 1 Kibear.
10 Kibears.....	1 Diwani or Para.
4 Diwanis.....	1 Harf or Dahab.
23 Harfs.....	1 Pataka or Dollar.
2 $\frac{1}{4}$ Patakas	1 Sequin.

The Pataka is also a money of account, but of fluctuating value. In 1771, according to *Mr. Bruce*, 10 Patakas were worth a *Wakea* of Gold; but in 1806, according to *Lord Viscount Valentia*, 11 $\frac{3}{4}$ Patakas were reckoned as the price of the *Wakea*.

Weights & Measures.

The weights are the Derime or Drachm, the Wakea or Ounce, the Mocha, and the Liter, Rottolo or Pound.

10 Drachms make 1 Wakea,

12 Drachms 1 Mocha.

12 Wakeas 1 Rottolo or Liter.

The Wakea weighs 400 Grains English troy weight, and the Rottolo is therefore 4800 Grains, or 10 Ounces troy, which equal 10 Ounces $15\frac{1}{2}$ Drachms avoirdupois.

The measure for grain is the Ardeb, which, at Gondar, is composed of 10 Madegas, each weighing 12 ounces Cairo weight, answering to about $\frac{1}{3}$ of an English Bushel. But the Ardeb at Massuah contains 24 Madegas, and is therefore $\frac{1}{3}$ of an English Bushel nearly.

The Cuba, a measure for honey and other articles, contains 62 English cubic Inches, or $2\frac{1}{2}$ English Pints, being very nearly equal to the French *Litre*.

The principal long measure is the Turkish Pic, which is $\frac{2}{3}$ of an English Yard.

AIX LA CHAPELLE (*in Germany*).

Monies of Account.

Accounts are kept here in Reichsthalers or Rixdollars current of 54 Marks, each Mark being subdivided into 6 Busches, and each Busche into 4 Hellers.

This Rixdollar is also worth $1\frac{1}{2}$ Gulden or Florin of the empire, and 6 Schillings or 9 Guldens of Aix la Chapelle.

The Rixdollar Specie, or Effective Rixdollar of the Empire, is worth 72 Marks, and the Schlechthaler 26 Marks.

Coins.

The gold coins of the city are Ducats worth $3\frac{1}{2}$ Rixdollars current; and the silver coins, double, single and half Pieces, called Rathspraesentgers or Presences, of 32, 16, and 8 Marks; also Pieces of 1, 2, and 3 Marks.

The Rixdollar current is equal in value to 303 Dutch Asen, or $224\frac{1}{2}$ English Grains of fine silver; it is therefore worth $31\frac{1}{2}$ pence sterling, and the Rixdollar specie, 8s, 6d. sterling. Other coins, particularly those of France and Prussia, circulate here,

Weights.

The weight for merchandise is as follows:

A Shipfund contains 3 Centners, or 300 lb. but in the carriage of goods it is

reckoned at 318lb. 1lb. = 2 Marks 16 Ounces, 32 Loths, 128 Quentins, or 512 Weights Pennings,

30lb. of Aix la Chapelle are nearly equal to 31lb. avoirdupois,

A Malter of Corn contains 6 fasses; a fass of Wheat is 4 Kops; a Fass of Measures Oats 6 Kops—a Kop is nearly one-sixth of an English Bushel.

An Ahm of Wine contains 130 Kannes.

The Ell of Aix la Chapelle measures $26\frac{1}{2}$ English Inches; the Foot $11\frac{1}{2}$ English Inches.

The French decimal system of weights and measures has been introduced here, but not fully established

Aix la Chapelle exchanges with and gives—

Exchanges

Amsterdam 165 Rixdollars current more or less, for 100 Rixdollars current

Antwerp. . . 118 Rixdollars specie more or less, for 100 Rixdrs. of exchange.

Frankfort 120 Rixdrs, curr. more or less' for, 100 Rixdrs. convention curr.

Paris 69 Rixdrs, specie, more or less, for 100 Ecus of 60 Sous Tournois.

Vienna 120 Rixdrs. current, more or less, for 100 Rixdrs, Vienna curr.

The exchanges of Aix la Chapelle with other places are made chiefly through Amsterdam.

ALEPPO (*in Syria*),

And its sea port Alexandretta or Scanderoon, keep accounts in Piastres of 80 Monies Aspers; the Piastre is also divided into 24 Siania. Other coins, however, circulate here at a variable rate. particularly Spanish dollars, 17 of which should weigh 150 Drains, which makes the Dollar worth 2 Piastres.

For the coins of Aleppo, see *Constantinople*.

The weights are, the Cantaro of 100 Rottoli, each subdivided into 12 Ounces Weights, or 720 Drains; the great Cantaro of Tripoli, of 175 Rottoli; and the Zurlo, of $27\frac{1}{2}$ Rottoli. This Rottolo, with which most sorts of goods are weighed = 5lb avoirdupois nearly

The Rottolo, with which the silks from Tripoli and other parts of Syria are weighed, is 700 Drains, answering to $4\frac{1}{8}$ lb, avoirdupois.

The Rottolo used in weighing the Persian silks is 680 Drains or $4\frac{3}{8}$ lb, avoirdupois nearly.

Weights. The Rottolo of Damascus, with which brass camphor, benzoin, spikenard, balsam of Mecca, and other drugs, are weighed, contains 600 Drams, or $4\frac{1}{6}$ lb. Avoirdupois nearly.

Five Rottoli, or 3600 Drams, make what is called a Vesno; and 7 Vesnos make a Cola. A Batman contains 6 Okes, each weighing 400 Drams.

A Metical, with which pearls and ambergris are weighed, is $1\frac{1}{2}$ Dram, or 73 English Grains.

Measures. The long measure, called a Pic, is equal to $26\frac{2}{3}$ English Inches.

Road measure here, and in other parts of the Levant, is estimated by time, that is, the number of hours or days in which a camel, at the ordinary pace, would travel a certain distance.

ALEXANDRIA (*in Egypt.*)

Monies and Coins. Accounts are kept in Piastres current of 40 Medini, each Medino being subdivided into 8 Borbi, or 6 Forli, or 3 Aspers.

A Ducatello is reckoned at 10 Medini; a Griscio Abuquelp, at 30; and a Zenzerli, at 107 ditto. These are real Egyptian coins.

A Purse is composed of 25000 Medini, or 75000 Aspers.

The Borbi and Forli are copper coins.

The Sequin, called Fundeclee, is worth 146 Medini; that called Zumabob, 120 Medini,

Weights. Goods are sold by the Cantaro, of 100 Rotoli; but the Rotolo is of different sorts. The Rottolo Forforo answers to almost 15 Ounces, or 100 of them to $93\frac{3}{4}$ lb. avoirdupois. The Rottolo Zaydino weighs $21\frac{1}{2}$ Ounces, or 100 such = $133\frac{3}{4}$ lb. The Rottolo Zauro weighs a little more than 33 Ounces, or 100 = 207 lb. The Rottolo Mina weighs $26\frac{2}{3}$ Ounces, or 100 = 167 lb. avoirdupois..

A Quintal of coffee from Cairo weighs $103\frac{3}{4}$ lb. avoirdupois nearly.

An Oke contains 400 Drams, and the Dram 16 Carats, or 64 Grains; the whole answering to about $42\frac{2}{3}$ Ounces avoirdupois.

Measures. Corn is measured by the Rebebe and the Kisloz; the former $4\frac{1}{2}$ Bushels, the latter $4\frac{2}{3}$ Bushels, English measure.

The Pic or Ell equals $26\frac{2}{3}$ English Inches.

For further particulars, see *Grand Cairo*.

ALGIERS (*on the Coast of Barbary*),

Keeps accounts in Saimes or Doubles, of 50 Aspers; also in Patacas Chicas, Monies and of 8 Tomins . or 232 Aspers.

A Piastre or Pataca Gourda contains 3 Patacas Chicas; a Tomin, 2 Carubes or 29 Aspers.

A Sultanin passes for 8½ Patachas Chicas, more or less; a Sequin for 10 ditto, a Portuguese Dobraon, or Joanese of 6400 Rees, for 36 ditto

A Spanish Dollar is worth from 4¼ to 4¾ Patacas Chicas; hence the said Pataca—11½d. sterling nearly.

The weight called Cantaro is of different sorts. A Cantaro of flax contains ^{Weights.} 200 Bottoli; of butter, honey, fruit, oil, and soap 166 Rottoli; of iron, lead, and wool, 150 Rottoli; of almonds, cheese, and cotton, 110 Rottoli; and of copper, brass, wax, and drugs, 100 Rottoli.

The Rottolo contains 16 Ounces; and 100 Rotoli = 119lb, a voidupois.

Gold, silver, pearls, and diamonds, are weighed with the Metical, which=73 Grains troy.

The measure for corn and dry goods is called Tarrie and contains something ^{Measures.} less than 2¼ Pecks English measure; 16 Taries make a Caffise.

The measure for oil, called Metalli, weighs 37 lb. 6 oz. avoirdupois.

The measure for cloth, called a Pic, is of two sorts; the Turkish Pic is equal to 24,⁸ English Inches, the Moorish Pic to 18¾ English Inches; the former being to the latter as 4 to 3. The Turkish Pic, divided into 8 Robi, is used in measuring cloth; but linen is measured by the Moorish Pic.

ALICANT (*in Spain*)

Accounts are kept in Libras of 20 Sueldos; each Sueldo being divided ^{Monies and} into 12 Dineros. ^{Coins.}

The Libra, also called the Peso, is worth 10 Reals, and is equal to the Peso de Plata (or of Exchange) of 128 Quartos, which in Spain is reckoned at 272 Maravedis de Plata, or 512 Maravedis de Vellon; hence a Real of Alicant = 27½ Maravedis of Plate, or 51½ Maravedis Vellon.

Monies and Coins. 11 such Reals make a Ducat of Alicant; and $13\frac{1}{2}$ a Ducat of Exchange; or, more exactly, 272 Ducats of Exchange = 375 Libras of 10 Reals.

A Spanish Doubloon passes here for $5\frac{1}{2}$ Libras.

A Peso Duro, or Hard Dollar, equals $13\frac{2}{3}$ Reals, or $26\frac{2}{3}$ Sueldos of Alicant; that is, 32 Dollars are worth 425 Reals; or 42 Libras = 10 Sueldos.

The Libra of Alicant may be valued at 3s. 6d. sterling; and the Real at $4\frac{1}{2}$ d. nearly. $\frac{3}{4}$

Weights. The Carga of Alicant is $2\frac{1}{2}$ Quintals, or 10 Arrobas or Arroves.

The Quintal is composed of 4 Arrobas, and the Arroba of 24 great Libras, or Pounds of 18 Ounces, or of 36 small Pounds of 12 Ounces each, Castilian weight. The Pound of 18 Ounces is used for weighing wool, fruit, &c.; the Pound of 12 Ounces for spices; but where tolls and other duties are to be paid, the Castilian Pound of 16 Ounces is always used. See *Castile*.

The Ounce is divided into 16 Adarmes, and the Adarme into 36 Grains, $15\frac{1}{2}$ Ounces of the above weight make 16 Ounces of Castilian weight.

The Arroba equals 27lb. 6 oz. avoirdupois.

The King's Weight at the Custom House at Alicant is the Castile Quintal of 4 Arroves; and the Arrove contains 25 Pounds of 16 Ounces each, gold and silver weight.

Corn Measures. The corn measure is called the Caffise, and contains 12 Barchillas; the Barchilla 8 Medios; and the Medio 2 Quartillos. 1 Caffise equals 7 Winchester Bushels nearly.

Liquid Measure. Liquors are measured by the Cantaro of 8 Medios; each Medio contains 2 Quartillos. The Cantaro contains $3\frac{1}{2}$ English Wine Gallons. The Tonelada or Tun, contains 2 Pipes, 80 Arrobas, or 100 Cantaros.

Long Measure. The measure for cloth is called the Vara, which is subdivided into 4 Palmos; and equals $29\frac{2}{3}$ English Inches. For further particulars, see *Spain*.

ALTONA (*in Danish Holstein*).

Monies and Coins. Accounts are kept here in Marks of 16 Shillings Lubs, each subdivided into 12 Pence Lubs, the same as in Hamburgh.

Merchants' books, since the year 1777, must be kept in Marks, Shillings ^{Monies and} and Pence Banco; the Specie Thaler, or Rixdollar, being valued at 3 Marks ^{Coins.} Banco.

By a royal edict of 1776, a bank was erected. This bank neither gives Bank. nor takes any thing in payment but Fine Silver, or whole and half Danish Specie Rixdollars, each of which must weigh from 537 to 538 Eschen, Cologne weight, or about 445½ English Grains.

No silver is received or paid under 15 Loths 12 Grains German, or 11 oz. 15 dwts. English.

For every Specie Rixdollar, the person who deposits it, is inscribed for 3 Marks Banco; and for every Mark of Fine Silver, he is inscribed for 27 Marks 12s. Banco.

All bills of exchange, or accounts of any sort, expressed in Altona Banco money, above the value of 100 Marks, cannot be paid any where but at the bank; and in all transactions in current money, the buyer is free to make the payment in Banco, reckoning the Rixdollar Specie at 3 Marks 11s. current, which gives a difference or aigo of 22½ per cent

The bank shuts every year on the 11th of October, and opens again on the 19th; and any bill becoming due during that interval, must be paid before the bank is shut, or be protested

When the bank directors think proper, they may lend out money on gold, silver, or copper, at 2 per cent. per annum; and then they pay, for gold 15 Carats fine, at least 375 Marks Banco per Mark fine; and for silver from 12 to 15 Loths fine, 27 Marks per Mark fine; for silver from 4 to 12 Loths fine, 26 Marks 12 Shillings per Mark fine; and for a Shippfund, or 280lb. of copper, 120 Marks.

The exchanges, weights, and measures, of Altona, are similar to those of ^{Exchanges} ^{Weights&c} Hamburg.

AMERICA

For the Spanish Colonies in South America, see *Mexico*; for those of Portugal, see *Brazil*; and for other places, see *United States*, *Canada*, and *West Indies*.

AMSTERDAM (*Old System*).*

Monies. Accounts are kept here in florins or Guilders, also called Gulden. The Florin is divided into 20 Stivers; the Stiver into 16 Pennings, and sometimes into 12 Deniers; it has been also recently divided into Centimes.

Accounts are likewise kept, especially in the business of exchange, in Pounds, Shillings, and Pence Flemish.

The Pound Flemish, or Pondt Vlaams, is divided into 20 Schillings, or Sols de Gros, and the Schilling into 12 Pence, Groots, or Deniers de Gros. 2 Groots = 1 Stiver, 6 Stivers = 1 Schilling Flemish, 40 Groots = 1 Florin, and 6 Florins = 1 Pound Flemish.

The Rixdollar or Daelder, of 50 Stivers or 2½ Guilders, is a money of exchange, and also a coin; and the gold Guilder of 28 Stivers is a money of account, especially in the corn trade.

The monies of Holland were formerly considered under two values, viz. Banco and Currency; but this distinction no longer exists. See *Bank*.

Coins. The gold coins are:

The Ryder, which mostly passes for 14 Florins, or for 29 Francs 40 Centimes, French money, with double and half nearly in proportion. It is worth about £1. 5s. sterling.

The Ducat, which generally passes for 5 Florins 5 Stivers, or 11 Francs, 025 Centimes, with double Ducats in proportion, is worth about 9s. 4d. sterling.

It is to be observed that the gold coins in Holland are subject to variation in their current value, according to the market price of that metal; silver being considered the standard of value. Gold is sold at 355 Florins current per Mark fine, with a fluctuating agio of about 12 per cent. Silver is sold in Florins current per Mark fine, the average price being nearly 26 Florins.

The principal silver coins are:

The Ducatoon or silver Ryder, which passes for 3 Florins 3 Stivers, and is worth 5s. 10d. sterling nearly.

The 3 Florin piece, worth 5s. 6¼d. sterling; and the Florin, worth 1s. 9¼d.

The Florin passes for 2 Francs 10 Centimes French money, with all its multiples and divisions in proportion.

* A new system of monies, weights, and measures, similar to that of France, has been decreed for Holland, Brabant, and Flanders, for which see the article *Netherlands*.

There are, besides the above, the piece of 50 Stivers, and pieces of 30 and 10; Coins. the Rixdollar of Zealand of 52 Stivers; the coin of 28 Stivers, the Schilling of 6 Stivers, the Dubbeltje of 2 Stivers, and the Stiver piece.

The Fineness of Gold is reckoned in Carats and Grains, the weight being di- Fineness of Gold and Silver. vided into 24 Carats, and the Carat into 12 Grains.

The Fineness of Silver is reckoned in Pennyweights, Deniers, and Grains, the Pennyweight being divided into 12 Deniers, and the Denier into 4 Grains.

Gold and Silver are weighed by the Mark of 8 Ounces; the Ounce is divided Troy weight into 20 Engels or Esterlins, and the Engel into 32 Az, Azen, or Aas. Thus the Mark contains 5120 Aas, and weighs 246,084 Grammes, or 3798 Grains, English troy weight.*

In weighing diamonds or pearls, this Mark is divided into 1200 Carats. Thus Diamond weight. 1 Engel = $7\frac{1}{2}$ Carats, which are each subdivided into halves, quarters, eighths, &c.

Apothecaries' weight is the pound of 12 Ounces or $1\frac{1}{2}$ Mark; but arsenic is Apothecaries' weight. weighed by the troy Pound of 16 Ounces, and the Ounce is divided into 8 Drams 24 Scruples, or 480 Grains.

The Commercial Pound is 40 Aas heavier than the above Pound troy, and Commercial weight. therefore weighs 10280 Aas. Hence 256lb. commercial weight = 257lb. Dutch troy. This Pound is divided into 2 Marks, 16 Ounces, 32 Loots, or 128 Drams. Its multiples are 8lb. = 1 Stone, 15lb. = 1 Shipfund, 100lb. = 1 Centner, and 300lb. = 1 Ship-pound. This is commonly called the Amsterdam weight.

The Commercial Pound weighs 494,09 Grammes, or 7625 English troy Grains. Hence 100lb. of Amsterdam = 108,93lb. avoirdupois.

* Although the Dutch Mark is frequently referred to as a standard of comparison, yet its contents are variously given in works of high authority. It seems therefore proper here to state that the above proportion has been recently determined at the *London Mint* from attested standards transmitted to *Lord Castlereagh* by His Majesty's Consuls, *Mr. Melville* of Amsterdam, and *Mr. Ferrier* of Rotterdam.

It may be added that those standards have been found perfectly to agree with one adjusted at Amsterdam in 1817, for the Author of this work, by *Professor Van Swinden*; and the same proportion is further verified by the publications of this eminent Mathematician and experienced Metrologist.