



# THE METRIC SYSTEM

BY THE SECRETARY-GENERAL  
OF THE INTERNATIONAL HYDROGRAPHIC BUREAU

---



THE International Hydrographic Conference which met in London during June and July, 1919, made the following resolutions :

SECTION I. — G. & I. (page 27 of the Report of Proceedings).

*Unit of measurement and its subdivision for soundings.*  
*Unit of measurement for heights on land, etc.*

I. That the Conference is unanimous in expressing the wish that all countries should, as soon as convenient, adopt the metric system on their charts.

II. It is agreed in the meantime that the nations which do not use the metre should insert on their charts a table or scale of conversion into metres of the depths given on their charts.

---

SECTION VI.— H. (page 42 of the Report of Proceedings).

*Unit of measurement and its subdivisions for vertical heights of tides.*  
*Unit of measurement and its subdivision for soundings.*

The desirability of the use of an international standard of length, which should be the metre, is recognised ; under present conditions this is not possible, and all nations should continue, to use their present standard. When the standard is the foot, the measurement should be divided into feet and tenths.

These resolutions show that, as the Conference was not in a position to do more than recommend, it was anxious to impress on the world its conviction of the desirability of adopting a universal standard of measurement at any rate for heights and depths and that it considered that this standard should be the metre.

The Metric System is known and used in all civilised States; and this article is the result of an examination conducted for the purpose of ascertaining how far the Metric System had spread at the time of the International Hydrographic Conference of London and what progress it has made since then.

It is stated above that the "System is known and used in all civilised countries" but, though this is a fact, the use is confined, in some States, to certain purposes (*e.g.* Chemistry, Medicine and other sciences); the general public does not accept it; and when the foregoing resolutions were made, a considerable number of Governments had not yet adopted it officially.

At that time however, no less than thirty seven States had passed laws making the Metric System the sole legal system for all purposes, *viz.*

ARGENTINE.	ECUADOR.	PANAMA.
AUSTRIA.	FINLAND.	PERU.
BELGIUM.	FRANCE.	PORTUGAL.
BOLIVIA.	GERMANY.	ROUMANIA.
BRAZIL.	GUATEMALA.	SAN SALVADOR.
BULGARIA.	HONDURAS.	*SIAM.
CHEKO-SLOVAKIA.	HUNGARY.	SPAIN.
CHILE.	ITALY.	SWEDEN.
COLOMBIA.	LUXEMBOURG.	SWITZERLAND.
COSTA RICA.	MEXICO.	URUGAY.
CUBA.	NETHERLAND.	*VENEZUELA.
DENMARK.	NICARAGUA.	YUGO-SLAVIA.
	NORWAY.	

In addition to these, certain colonies and self-governing dependencies had made similar laws :

BELGIAN CONGO.	MAURITIUS.
DUTCH COLONIES — all.	MALTA.
FRENCH COLONIES — all.	PHILIPPINE ISLANDS.
GUAM.	PORTO RICO.
ICELAND.	SEYCHELLES.

\* In SIAM and VENEZUELA laws were promulgated in 1912 and 1914 respectively making the system compulsory for all purposes at dates to be determined later. The Bureau has no information that such dates have been fixed.

Since the close of the London Conference, the following five States have passed laws making the use of the Metric System compulsory:

GREECE.  
HAÏTI.  
JAPAN.  
PERSIA.  
POLAND.

The Director of the INTERNATIONAL BUREAU OF WEIGHTS & MEASURES states that he believes that some of the Baltic States have passed laws making the use of the Metric System compulsory, but that he has no definite information as yet.

In France, where the System originated, various laws were passed by which it was legalised, namely in 1795, 1799 and 1837. This last made it a penal offence to use any other weights and measures on and after 1st January, 1840; nevertheless twenty years later, *i.e.* sixty years after the official adoption of the System, it was found necessary to take further steps to suppress the use of certain old weights and measures.

It is not surprising, therefore, to find that, in spite of legislation, other peoples of the world have shown themselves to be equally conservative by continuing to use certain units of older systems to which they were accustomed.

Thus it is reported that in some of the Central and South American States the units of the old Spanish system, and in certain other States other units, remain in use, not officially of course, but amongst the populace for quoting prices in markets, *etc.*; *e.g.* the arroba and quintal which are practically equal to the U. S. quarter and hundredweight (cental) respectively.

The words *livre* and *libra*, though still in use in various countries, do not necessarily mean that the old pound is used; they are merely convenient terms for the cumbersome expressions "demi-kilo" or "cinq hectos" (French); "mezzo-chilo" or "cinque etti" (Italian) and "medio-kilo" or "cinco hectos" (Spanish), all of course of 500 grammes and not of some weight between 410 and 475 grammes, which represented the pound before the introduction of the Metric System.

In GREECE the use of the System for laws, ordinances, *etc.* was to be compulsory one month after the promulgation of an activating decree and three months thereafter the system was to be used in all documents, and prices were to be quoted for quantities expressed on a metric basis in addition to the older weights and measures. As yet the total abolition of the older system does not appear to have been provided for.

The Bureau has no information as to the date of promulgation of the activating decree.

In HAITI the use of the Metric System became compulsory in October 1921, *i.e.* one year after the promulgation of the law. Within six months of the promulgation all weights and measures in use were to be stamped with their metric equivalents.

An Imperial Decree was issued in JAPAN on 15th May, 1925, putting the provision of the law of 25th March, 1921, into force. This law provides penalties for the use of weights and measures other than metric.

In POLAND a considerable portion of the population had been accustomed to the Metric System which had been introduced under German and Austrian laws. Even in the provinces which had been under Russian law the populace had been, to a certain extent, familiarised with the units of the System owing to its employment in the neighbouring provinces and to the Russian law which permitted its use since 1900. The Decree issued in February, 1919, lays down that the Metric System is the sole legal system but permits, temporarily, the use of the Russian pound (0.410 kg.) and of the *pood* (16.380 kgs.) in the provinces where these weights were legal before the reconstitution of the State.

In ROUMANIA some of the Turkish weights and measures are used in the markets, except in Bessarabia, where Russian standards are still used though officially abolished in 1922.

The States in which the use of the Metric system is legal, but not yet compulsory, are :

STATE	DATE SYSTEM WAS LEGALISED
BRITISH INDIA.....	17th June, 1920,
CANADA .....	28th May, 1871,
CHINA.....	29th August, 1908,
EGYPT .....	8th July, 1873,
PALESTINE .....	1920,
PARAGUAY .....	4th July, 1899,
RUSSIA .....	14th September, 1918,
TURKEY.....	January, 1892,
UNION OF SOUTH AFRICA .....	1922,
UNITED KINGDOM.....	29th July, 1864, (repealed for short period). New law 28th May, 1897
U. S. OF AMERICA .....	28th July, 1866.

In BRITISH INDIA, where each Province and State (and in some cases, each town) has its own standards, the Metric System was made legally utilisable in 1920.

In CANADA the British system of weights and measures is in general use, but the hundredweight and ton are as in the U. S. of America (*q. v.*).

In CHINA, though a native system of weights and measures is in use by the Governmental Services, it is a decimal system and, within recent years (*i. e.* 1914) has been standardised throughout the Republic by Decree which gives to its units a definite relationship to the International Standard Metre and Kilogramme. Thus the Chinese standard foot is fixed at 32 cms. and the standard ounce (Tael) is to be taken as 37.301 grammes. By the Decree the Metric System is given an equal standing with this native system and it is laid down that any Minister may determine which of the two systems shall be in sole use in his Department and the services dependent thereon. The Roads and Railway Service has adopted the Metric System since 1st January, 1921.

EGYPT is in much the same position as China in that there is in use a native system of weights and measures which by Decree issued in April, 1891, (confirmed by the law of 26th September, 1914), is based on equivalents of the Metric System, the use of which has been permitted since 1873.

The Government of the MANDATED TERRITORY of PALESTINE has used the Metric System exclusively since 1920, but local weights and measures are used by the general public.

In PARAGUAY the Metric System is the official system but the old Spanish system lingers in some localities for certain purposes for which it is legally recognised.

RUSSIA had made the Metric System obligatory for all official medical services since January, 1908, and was actively preparing to introduce it for general purposes when the Revolution intervened and checked the progress made. Nevertheless the "*Council of the People's Commissars*" issued a decree at the end of 1918 making the use of the System compulsory, as from 1st January, 1922, for official purposes, and at the time

forbade the manufacture and sale of weights and measures of any other system. It was provided that the Metric System should be the sole legal system for all purposes from 1st January, 1924. Practical difficulties have caused this to be put off till 1927, without, however, checking the steady introduction of metric units wherever possible and the teaching of the System in schools.

The TURKISH Imperial Government had made various Decrees since 1889 gradually introducing the Metric System by making it obligatory for certain purposes. In 1892 it was decreed obligatory for all purpose but the decree was not enforced owing to practical difficulties. In 1915 the Metric System was made the official standard on which the native system is based, thus the *Cheki* was fixed at 250 kgs., the *Arshin* at 685 millimetres, and the *Jerib* (hectare) was introduced. No change has been made by the Republican Government.

An Act was passed in 1922 by the Parliament of the UNION OF SOUTH AFRICA by which the Metric System was given the same legal standing as the British system. In 1923 the *Cental* of 100 lbs (*vide* Canada and the U. S. of America) took the place of the hundredweight of 112 lbs. In some districts the early Dutch system is still in use.

The UNITED KINGDOM legalised the use of the Metric System in 1864 by Act of Parliament, but this Act was repealed for some years. Finally in 1897 a new Act was passed making the employment of the System optional. It is of interest to note that in 1871 a Bill, which was introduced in Parliament and which proposed to make the System compulsory was rejected by a majority of five votes only.

Congress of the UNITED STATES OF AMERICA enacted in 1866 that the use of the Metric System was legal and in 1893 that the values of the *yard* and the *pound* were to be based on the standard metre (N<sup>o</sup> 27) and kilogramme (N<sup>o</sup> 20) in the care of the Bureau of Standards, Department of Commerce, Washington, D. C. ; the yard is fixed at 0.91438 metre and the pound at 0.45359 kilogramme. The system in general use is practically the same as the British, the principal differences being that the *Cental* of 100 lbs, the *Short Ton* of 2,000 lbs and the *Winchester gallon* (about 1.6 % smaller than the British gallon) are used. A Bill is before

Congress at the time of writing which provides for the compulsory adoption of the Metric System for all purposes (except for export) ten years after promulgation of the Act.

---

In the course of the researches made for the purpose of drawing up this article it was found that it was very difficult to obtain definite information on the subject of the use of the Metric System and in some cases, authorities differed. The Bureau, would much appreciate any information as to omissions, errors or necessary alterations in the statements made above.

NOTE. — *The thanks of the Bureau are due to MONSIEUR C. E. GUILLAUME, Director of the International Bureau of Weights & Measures for the supply of certain information embodied in this article.*

