

**THE METRIC SYSTEM: ITS
CLAIMS AS AN
INTERNATIONAL
STANDARD OF METROLOGY**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649247240

The Metric System: Its Claims as an International Standard of Metrology by James B. Thomson

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

JAMES B. THOMSON

**THE METRIC SYSTEM: ITS
CLAIMS AS AN
INTERNATIONAL
STANDARD OF METROLOGY**

UNIFICATION OF WEIGHTS AND MEASURES.

THE

METRIC SYSTEM:

ITS CLAIMS

AS AN

INTERNATIONAL STANDARD OF METROLOGY.

BY

JAMES B. THOMSON, LL.D.,

CHAIRMAN OF THE COMMITTEE ON WEIGHTS AND MEASURES OF THE NATIONAL EDUCATIONAL
ASSOCIATION.

NEW YORK:

CLARK & MAYNARD, PUBLISHERS,

No. 5 BARCLAY STREET.

1874.

PUBLISHERS' NOTICE.

THE publishers beg leave to refer those, who wish to become acquainted with the

METRIC WEIGHTS AND MEASURES,

to the lucid explanation of the principles and applications of the System contained in

Thomson's New Practical Arithmetic.

Hon. JOHN A. KASSON, Chairman of the Congressional Committee on Weights and Measures, says, respecting it:

"I have observed with care your section devoted to the *Metric System* of Weights and Measures, now in legal use in the United States. No Arithmetic can now be complete, or claim public approval, without giving instruction to the student upon this system. It seems to me you have admirably combined its elements in a few pages."

President F. A. P. BARNARD, LL.D., Columbia College, after paying a flattering compliment to the author's *New Arithmetic*, adds:

"But the feature of your book which it pleases me most to see, is the *presentation of the Metric System* of Weights and Measures."

Professor H. A. NEWTON, LL.D., Yale College, remarks:

"I like the *presentation of the Metric System*, and I am glad to see such progress in rejecting the obsolete and obsolescent in other parts of Weights and Measures."

Entered according to Act of Congress, in the year 1874, by

JAMES B. THOMSON,

In the Office of the Librarian of Congress, at Washington.

Electrotyped by Sayer & McDougall, 82 Beekman St., N. Y.

P R E F A C E .

AT the annual meeting of the National Educational Association, held at Trenton, N. J., August, 1869, a committee of three was appointed to report on "The practicability of introducing the Metric System of Weights and Measures into the United States, and the best means to accomplish that object." The committee consisted of Professor James B. Thomson, LL.D., City of New York, Chairman; Professor Charles Davies, LL.D., Fishkill-on-the-Hudson, and Professor Edward Brooks, A.M., Millersville, Pa.

At the meeting of the University Convocation of the State of New York, the same year, a committee of three was also appointed, charged with the duty of reporting "What farther steps, if any, may be necessary in respect to the introduction of the Metric System of Weights and Measures." This committee consisted of Professor Charles Davies, LL.D., Chairman; Hon. Robert Hale, LL.D., and Professor James B. Thomson, LL.D.

At the meeting of the National Association, held in Cleveland, Ohio, Aug., 1870, the Chairman presented the substance of the following report. The Association accepted the report and passed the series of resolutions appended to it, setting forth,

"The Importance of the Unification of Weights and Measures to the progress of science, to civilization and commerce throughout the world."

"That in the judgment of the Association, the Metric System is nearer perfect than any other reached," and therefore has the "strongest claims to universal adoption."

"That its early introduction into our schools and seminaries of learning be recommended as the best means to popularize the system, and secure its general use among the people."

A copy of the report was requested for publication, but for want of means to verify some statistical matters, it was deemed inexpedient to allow it to be published at that time.

At the meeting of the University Convocation at Albany, the same year, Professor Davies made his first written report against the Metric System. In a prefatory note to that report, he says, "Prof. Thomson has not acted with the committee, and is, of course, not responsible for its doings."

Lest his non-action should be ascribed to indifference to the subject, justice requires him to say that he had no knowledge that his associates intended to make a report, or desired his co-operation, until after their report was submitted to the Convocation. The reason he did not enter his protest against the views expressed in the report at the time of its presentation, was because personal illness prevented his attendance upon the meeting.

The University Convocation in 1871 was favored by Rev. F. A. P. Barnard, S.T.D., LL.D., President of Columbia College, with an erudite and exhaustive address upon the "Origin and Nature of the Metric System of Weights and Measures."

The same committee being continued, the Chairman in 1872 made his second report against the system. At that meeting the substance of the following paper was submitted as a counter-report, urging the necessity of metrological reform, and advocating the claims of the Metric System to universal adoption.

With this brief explanation, it is now, at the solicitation of numerous friends of progress, offered to the public. With the exception of a few slight emendations of the text, and the addition of a few explanatory items, it will be recognized as the paper presented on the occasions referred to.

If it shall deepen the interest already felt in metrological reform, and contribute in any degree to the realization of a common international system of Weights and Measures throughout the world, its aim will be accomplished.

NEW YORK, Feb. 23d, 1874.

THE METRIC SYSTEM.

Mr. Chairman; Ladies and Gentlemen of the Association:

The committee appointed at your last annual meeting to report upon "The Practicability of introducing the Metric System of Weights and Measures into the United States, and the best means to accomplish that object," respectfully submit the following:

In common with other important enterprises for the advancement of civilization, the Metric System has received in different lands its full share of opposition. Among the most remarkable attacks it has encountered in this country are the strictures recently presented by gentlemen distinguished for mathematical and legal learning, to the University Convocation of the State of New York. These strictures are the more extraordinary as one of the gentlemen, from whom they emanated, had previously declared his conviction, over his own signature,* "that the Metric System is nearer perfect than any which can be reached, and that its adoption would greatly simplify and abridge all the applications of numbers to the various operations of commerce and business." The explanation of these conflicting views, this radical change of opinion, is chiefly found, we apprehend, in a misconception of the aims of the friends of metrological reform, and of the practical working of the Metric System, if introduced into our country.

Our opponents assume that the friends of metrological reform demand the adoption of the Metric System and the exclusion of our present system, *simultaneously*. They assert that the question is, "Shall the Metric System of Weights and Measures be adopted by

* The Metric System explained, etc., by Charles Davies, LL.D.

compulsory legislation, and the use of every other system forbidden?" They accuse "the friends of the Metric System of attempting to give such direction to public sentiment as shall lead to that result.

Again, they declare that "wherever the Metric System has been introduced, the exclusion of every other system, by penal enactments, has been found necessary." Allusion is also made to "dragooning the people into its use;" "fierce conflicts" are predicted in this country, where "the people are free and less habituated to blind obedience to imperial edicts." We have heard, Mr. Chairman, of the "Poetry of Mathematics." Here we have a specimen of what may be called *Sensational Mathematics*. These mathematico-sensational flourishes, if they have any meaning, assume that the friends of the Metric System have some sinister design concealed under the garb of metrological reform; that their aim is to take the people by surprise; to cheat them out of the old system and force them into the immediate use of the new.

We beg leave to assure the Association and the public that the advocates of metrological reform in this country, repudiate all such designs. They neither ask nor desire such legislation. Their object is alike *peaceful* and *beneficent*; and while they pursue it with untiring zeal, they intend to employ no other than peaceful measures.

Object of Metrological Reform.

The object of the advocates of metrological reform is this:

First. To establish a uniform, international system of weights and measures, of such a character that its base and derivative units shall be *commensurable* quantities.

Second. That its derivative units shall increase and decrease by the *decimal*, or a *uniform* scale.

Third. That its different denominations shall be designated by a convenient, common nomenclature. The manner by which they hope to secure this reform will be explained hereafter.

The origin of the present system of weights and measures is veiled in obscurity. We received it from the father land; England

borrowed it from Rome, Rome from the Greeks, the Greeks from their ancestors, and so on to a remote age. Whoever may have suggested its original units, the grain, the barley-corn, the hand, the foot, etc., and whatever may be said of the *fitness* of these standards of comparison, certain it is, the *details* of the system were not the offspring of philosophical research, but of ignorance or chance. Yet amid the rise and fall of States and Empires, and all the political revolutions that have swept the earth during the past 2000 years; amid the gigantic conquests in science, in agriculture, and in commerce; amid the vast improvements in simplifying and abbreviating mathematical computations, which followed the introduction of the decimal notation into Europe, strange as it may seem, the essential features of this anomalous system of weights and measures, which sprung up in the world's gray dawn, held undisputed sway over all enlightened lands down to the commencement of the nineteenth century, and are still in vogue among all the English-speaking people of the present day. True, our Anglo-Saxon fathers expanded it into different kinds of weights and different kinds of measures, and substituted the foot and arm of some modern hero or potentate for those of an ancient or fabulous predecessor; but its leading features are still essentially the same, with its absurdities not only *unmitigated*, but *increased*. However well the system may have answered the few and simple wants of remote periods of antiquity, we need not say that it is totally inadequate to the demands of the present enlightened age; an age in which space is annihilated by the applications of science, and knowledge is communicated from land to land by lighting lines stretching around the globe.

Objections to the Present System.

Among the numerous objections to the present system are:

First, The standards by which its base units are determined, are *arbitrary* and *perishable*. These characteristics destroy all confidence in the experiments and researches of other ages and countries, encourage fraud, defeat the ends of commercial justice, and thus weaken the bonds that hold society together.