

old better *Back cover re-set blank*

~~Ni Korespondas Esperante.~~

COUNTING IN DOZENS

1 2 3 4 5 6 7 8 9 X E 10
 one two three four five six seven eight nine dek el do

Our ~~common~~ number system is decimal - based on ten. The dozen system uses twelve as the base, which is written 10, and is called *do.* for dozen. The quantity *one gross* is written 100, and is called *gro.* 1000 is called *mo.* representing the *meg-gross*, or *great-gross*.

In our customary counting, the places in our numbers represent successive powers of ten; that is, in 365, the 5 applies to units, the 6 applies to tens, and the 3 applies to tens-of-tens, or hundreds. Place value is even more important in dozenal counting. For example, 265 represents 5 units, 6 dozen, and 2 dozen-dozen, or gross. This number would be called 2 *gro* 6 *do* 5, and by a coincidence, represents the same quantity normally expressed as 365.

Place value is the whole key to dozenal arithmetic. Observe the following additions, remembering that we add up to a dozen before carrying one.

94	136	Five ft. nine in.	5;9'
31	694	Three ft. two in.	3;2'
96	3E2	Two ft. eight in.	2;8'
19E	1000	Eleven ft. seven in.	£;7'

You will not have to learn the dozenal multiplication tables since you already know the 12-times-table. Mentally convert the quantities into dozens, and set them down. For example, 7 times 9 is 63, which is 5 dozen and 3; so set down 53. Using this "which is" step, you will be able to multiply and divide dozenal numbers without referring to the dozenal multiplication table.

Conversion of small quantities is obvious. By simple inspection, if you are 35 years old, dozenally you are only 2E, which is two dozen and eleven. For larger numbers, keep dividing by 12, and the successive remainders are the desired dozenal numbers.

$$\begin{array}{r}
 12 \overline{) 365} \\
 \underline{12} 30 \\
 \underline{30} 5 \\
 \underline{5} 6 \\
 2
 \end{array}$$

Answer: 265

Dozenal numbers may be converted to decimal numbers by setting down the units figure, adding to it 12 times the second figure, plus 12² (or 144) times the third figure, plus 12³ (or 1728) times the fourth figure, and so on as far as needed. Or, to use a method corresponding to the illustration, keep dividing by X, and the successive remainders are the desired decimal number.

Fractions may be similarly converted by using successive multiplications, instead of divisions, by 12 or X.

Numerical Progression					Multiplication Table											
1	One				1	2	3	4	5	6	7	8	9	X	E	
10	Do	:1	Edo		2	4	6	8	X	10	12	14	16	18	1X	
100	Gro	:01	Egro		3	6	9	10	13	16	19	20	23	26	29	
1,000	Mo	:001	Emo		4	8	10	14	18	20	24	28	30	34	38	
10,000	Do-mo	:000.1	Edo-mo		5	X	13	18	21	26	2E	34	39	42	47	
100,000	Gro-mo	:000.01	Egro-mo		6	10	16	20	26	30	36	40	46	50	56	
1,000,000	Bi-mo	:000.001	Ebi-mo		7	12	19	24	2E	36	41	48	53	5X	65	
1,000,000,000	Tri-mo	and so on.			8	14	20	28	34	40	48	54	60	68	74	
					9	16	23	30	39	46	53	60	69	76	83	
					X	18	26	34	42	50	5X	68	76	84	92	
					E	1X	29	38	47	56	65	74	83	92	X1	

re do for another issue

The Duodecimal Bulletin

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THE DUODECIMAL SOCIETY OF AMERICA

Secretary, 11561 Candy Lane, Garden Grove, Cal 92640
 Editor, One-Oh State St., Council Bluffs, Iowa 51501

a voluntary nonprofit organization, conducts research while it engages in education of the public in the use of a dozenal base arithmetic in all branches of pure and applied science.

The Duodecimal Bulletin is an official publication of the Duodecimal Society of America, Inc, 11561 Candy Lane, Garden Grove, California 92640. Kingsland Camp, Chairman of the Board of Directors; Charles S. Bagley, President; Tom B. Linton, Secretary; Henry Churchman, Editor. Permission for reproduction may be had upon application. Employment of the symbols \times to represent dek, and of £ to indicate el, has never been restricted. Subscription rate \$3 per year for nonmembers.

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TABLE OF CONTENTS

ANNUAL MEETING OF 1970, "WINCHESTER DECLARATIONS",	1
DOZENAL MEASUREMENTS TODAY,	H. C. Churchman 6
MORE ON BASE CONVERSION ALGORITHMS,	A. Monroe and B.A.M.Moon 7
SURVEYING BY METES AND BOUNDS,	Gower N. Euston \times
BOOK MANUFACTURING AND DUODECIMALS,	Michael J. Sloboda 10
DOZENAL CIRCULAR SLIDE RULE,	Announcement 11
METRIC TIME CLOCK FACES,	Free on request 12
MELODRAMA AT THE OLD HOMESTEAD,	Episode II 14
PRODDING THE LUMBERMAN,	Editorial 15
TELL IT AS IT IS,	John Jarndyce 16
CAREFUL WITH DUODECIMAL NUMERALS,	Lawrence Boythorn 17
LETTERS AND COMMENTS,	Igor Colonna Valevsky 1 £
	Tom B. Linton
	Eugene M. Scifres
INTELLIGENCE ITEMS,	Capt. Herbert Stover 20
	A Horse Watering Trough
	USSR Salyut
	Icebreaker Staten Island
	National Conference on Weights and Measures
	Argentina's Long Tunnel
	U. S. Metric Dollars in French Court
	Ralph H. Beard 21
THE ACCOLADE:	Allan C. Boschen
	B. A. M. Moon
	Shaun Ferguson
	Stanley Bumpus
	F. Emerson Andrews
NEW DEBT CEILING,	Henry Churchman 23
CHARLIE BROWN'S INTEREST IN DOZENALS,	Charles Schulz 23
BASE-12 UPDATES METRIC SYSTEM,	H. C. Churchman 24

ANNUAL MEETING OF 1970
 AND MEETING OF THE BOARD

The Duodecimal Society of America was called to order by its President, Charles S. Bagley, at the charming Country Squire Motel, at Winchester, Kentucky, on 19 September 1970, at 0915^h, 1182 September 17;476.

Minutes of the 1969 meeting held at the University of California at Santa Barbara, were read and approved.

Interesting talks on the progress of duodecimals were given by Kingsland Camp (who flew nonstop from New York City), Ralph H. Beard (returning from a trip to the West Coast), and Henry Churchman. In the afternoon, Charles S. Bagley advanced several suggestions, and read a short paper (which, prepared by an observant high school student, appears in this issue of the bulletin) on paperback book manufacturing.

Members discussed the possibility of the society applying for membership in the American Association for Advancement of the Sciences. It was decided to defer any filing. It was pointed out that DSA itself has been urging the adoption of a metric system of measures and weights since its birth---duodecimal, to be sure, but nevertheless a metric system of weights and measures. Under these circumstances it would seem that any member of the Society who wishes to apply is eligible to join the AAAS and to advance our proposed improvement of the SI metric system.

At 1645^h (eight four six) the meeting adjourned until after completion of the meeting of the board of directors to begin at 0900^h on 20 September 1970 in the meeting room of the motel. A meeting "off the record" after an agreeable dinner lasted until after midnight.

Proceedings of 1182 September 18;460

Chairman Kingsland Camp called to order the Annual Meeting of the Board of Directors of DSA at half past four (460 Moments or 0900^h) on 20 September 1970 in the meeting room of the Country Squire Motel at Winchester, Kentucky, in the bluegrass land of America, in keeping with prior announcement to members.

A roll call disclosed the following board members present:

Charles S. Bagley, of Alamogordo, N. M.
 Ralph H. Beard, of Staten Island, N. Y.
 Kingsland Camp, of New York, N. Y.
 Henry Churchman, of Council Bluffs, Iowa.

Chairman Camp noted that a working quorum was present legally competent to conduct all proper business to come before it.

The minutes of the last meeting were read, discussed, and approved.

Report of the Secretary

Tom Linton, by Bell Telephone conference connection, was able to furnish the board with his complete report from his home in Garden Grove, California. Report accepted.

Incidentally he has on hand a few Duodecimal Circular Slide Rules which can be purchased at \$8 each.

Editor's Resignation

Jamison Handy, Jr., by long distance conference asked to be relieved as Editor of the duodecimal bulletin due to continuing press of business.

Associate Editor's Report

Henry C. Churchman announced the April 1970 Bulletin is ready for the printer as soon as financial arrangements can be completed by the Treasurer to convert certain of the society's bonds into a liquid state to reimburse the printer. That the missing Whole Numbers 34 and 35 are through their rough typing, and ready for the final run before printing. Should follow the distribution of the April 1970 Bulletin. This will bring us close to the April 1971 Bulletin, and another bulletin is expected to follow in December of 1971.

This has meant a tremendous amount of work, and for a time bulletins may be arriving two or three in an envelope, to unburden our editorial office of its accumulation of superior material. He warned that more than one article by the editor may appear in some issues until our entire membership assumes more of the responsibility and comes to see the advantages of each one attempting to put his thoughts into words for the benefit of the whole membership, colleges, libraries, and industry ready to move into the universal conversion to duodecimal numerals as their efficiency becomes more important. Report accepted.

Treasurer's Report

Eugene Scifres, again by telephone conference connection, put the board in complete possession of a rundown on what the society has and does not have, when certain bonds become due, dues received, and an impending transfer of balances still held by the society in a savings account at the Winnetka bank earning interest, and in a checking account there soon to be closed.

Election of Officers

It was moved by Ralph H. Beard, seconded by Charles S. Bagley as board members, that the following members of the board of directors be nominated to continue in the following offices:

Kingsland Camp, Chairman of the Board;
Charles S. Bagley, President;
Henry C. Churchman, Vice President;
Tom B. Linton, Secretary; and
Eugene M. Scifres, Treasurer;

that nominations be closed, and that the recorder (Churchman) be instructed to cast the unanimous vote of the directors for

the motion. Carried.

It was moved by Ralph Beard, seconded by Charles Bagley, that the resignation of Jamison Handy, Jr., as editor, be accepted with regret; and that Henry Churchman be named as Editor of the bulletin and authorized to publish the Whole Numbers described in the Associate Editor's report. Carried.

Election of Board Members

It was moved by Ralph H. Beard, seconded by Henry Churchman, that Kingsland Camp, Tom B. Linton, Van Allen Lyman, and James M. Dixon be nominated as members of the Board of Directors DSA, Class of 1185 (1973); that nominations be closed, and that the recorder be directed to cast the unanimous vote of the members present for the motion. Carried. President Bagley declared the following elected:

Class of 1185 (1973)

Kingsland Camp
Tom B. Linton
Van Allen Lyman
James M. Dixon

New Business

Henry Churchman noted that Bell Telephone Company is rapidly closing the gap in its total renovation plans and by 1972 many cities will be able to furnish all subscribers willing to pay a slight fee in addition to their monthly charge, a wholly new 12-tone button metric desk phone. Bell Laboratories has been working on this tremendous advance in communications for a dozen years at the least reckoning, and perhaps will be the first United States privately owned public service corporation to advance, for sound economic reasons, from base-ten to a base-12 metric system of counting between its customers and between itself and its customers.

Even stockholders are known to have encouraged this advancement---notably among the founders of this society, F. Emerson Andrews, in his role as a stockholder of AT&T at their annual meetings.

Board adjourned sine die at 1500h, 20 September 1970 (18 September 1182;760).

Further Meeting DSA

At 1605h, 20 September 1970 (18 September 1182;806 the Duodecimal Society of America was called to order by its president Charles S. Bagley.

The minutes of the proceedings of the Board of Directors just adjourned within the duor, were read, the election of four members of DSA as members of the board, class of 1973, was noted, it was moved by Beard, seconded by Churchman, that the acts and proceedings of the board as just read be approved by the members of DSA present. Carried.

The President declared the following members of DSA elected as members of the Board of Directors, Class of 1973:

Kingsland Camp
Tom B. Linton
Van Allen Lyman
James M. Dixon.

New Business

Ralph H. Beard moved that the Rockies be the background for the next annual meeting of the Duodecimal Society of America, seconded by Kingsland Camp with the additional proviso that the secretary determine the time and place and give timely notice to the membership. Carried.

It was announced by Ralph H. Beard that since he is slated for a second retirement, he plans to move in the spring or the summer of 1971 to this city in the center of the bluegrass land where he can delve into more mysteries of the dozen base. It will entail his placing of the familiar 20 Carlton Place, Staten Island, New York, up for sale, and he has already selected for his future abode the house at 411 S. Maple Street, in Winchester, Kentucky 40391. It will not be his "Old Kentucky Home" (although many with the Beard surname inhabit this area), but he is already referring to it as "My New Kentucky Home."

Inspired in part by this beautiful, bluegrass country, garden spot of nature, the following was moved by Churchman, seconded by Ralph Beard, and carried as the sense of the membership present at this fruitful meeting, to-wit:

Winchester Declarations of 1970

I

The Duodecimal Society of America has always favored, and its continuing policy is to favor, a metric system of weights and measures.

II

We have been always opposed, and will continue to be opposed, to the 18th Century obsolete and incompetent base-ten metric system until it disappears from all commerce.

III

In the healing sciences we recognize the esoteric value of base-ten as well as Latin, as others move away from them. We are happy to leave that decision to the medical associations.

IV

The Duodecimal Society of America has not taken, neither does it desire to take, a position in favor of any particular words or symbols to replace "ten" and "eleven". For current convenience and common communication, we have used, and continue to use, the word "dek" and the Roman numeral X in any of its many varieties in place of ten; and the word "el" and the swash letter ℓ symbol in any of its many varieties in place of eleven. Some examples are provided on our seal.

V

The Duodecimal Society of America has favored, and continues

to favor, common English words or terms in any duodecimal metric system of weights and measures, but expresses no objections to the use of worldwide terms, diminutives, or substitutes, so long as units of the basic system remain duodecimal and employ the principle of uniformity.

VI

As members of The Duodecimal Society of America we applaud the present move by the BELL TELEPHONE COMPANY to replace the ten customary digits with a dozen metric signals or buttons on its public equipment, and the employment of a duodecimal system of arithmetic internally, as one of the greatest advances ever attempted at one time by any single American private business, absent governmental support, ukase, or compulsory congressional action.

VII

We see other industries and perhaps scientific organizations and governmental departments eventually recognizing the efficiency possible to achieve by employment of base-twelve metric units of time, angle, area, navigation, money, and an Ecumenical Zone (E-Z) Locator or universal zip code.

There being no further business to come before the annual meeting, President Bagley declared the meeting adjourned sine die at 1700^h, 20 September 1970 (1182 September 18;860, or do-one-gro, eightdo-two, September do-eight dit eight-six-0).

-o-0-o-

ANNUAL AWARD 1970

On the 23rd day of November, 1970, that ever dependable Ralph H. Beard, representing the Board of Directors of the Duodecimal Society of America, presented to Kingsland Camp in New York City the Annual Award of the Society for 1970, a suitable plaque, reading: "The Annual Award of the Duodecimal Society of America for the year 1970 is conferred upon

KINGSLAND CAMP

for his long and unstinted service to the Society as

Chairman of the Board

and in recognition of his many other contributions to the application of the Twelve Base in Mathematics and other Sciences.

The award bore the signatures of Charles S. Bagley, President and of Henry C. Churchman, Vice President of the Duodecimal Society of America. It was a happy day.

-o-0-o-

By Henry C. Churchman

By odometer measurement it is precisely eighty-four Edons between Longview Farm, Route 3, Council Bluffs, and the United States Court House in that city. Another way to say this would be 8.4 Canadian statute miles decimally, or 7 dozen edons. And of course 70;0 edons equal 7;0 Navinauts, Aeromiles, Nantes, or Kilomètres duodécimal, if we move the dozenal identification point just one place to our left.

Few men know that ALL Americans today (1970) are measuring on their automobile odometers the duodecimal metric distance traveled in terms of total Edons traversed. For all practical purposes, one-tenth statute mile shown on the odometer and the dozenal Edon are identical distances now. In the most exact measurements their divergence is about 1/3000 part; and odometers, due to the varying air pressures in wheels, are in general less exact than that.

For instance, at the beginning of a trip by automobile, one reads the odometer and writes down something like 123456. That is to say, twelve thousand, three hundred forty-five and six-tenths statute miles. And that evening (or at the end of a trip) he reads, let's say, 128640. If we subtract the smaller from the larger, the distance traveled could be said to be just 518.4 miles, 5184 edons, or, if you have learned to count dozenally, three-mo or three-triple-0 (3000;0) edons.

By moving that unit point one place to our left we find ourselves looking at 300;0 and saying three gross or three-double-0 duodecimal Kilometers, Navinauts, Nantes, or Aeromiles, according to the duodecimal author we have read on dimensions but any way you look at it the trip logged three-triple-0 edons dozenally, or 5184 edons if you prefer base-ten counting. Edons today. Aeromiles tomorrow.

Now who is afraid to go metric, duodecimally that is? Old "klunkers" can still employ their old odometers as they rise in stature to become Antiques. Our old English statute mile until retired will be the equal of 5/6 aeromile (the modern nautical mile), Navinaut, Nante, or kilomètre duodécimal.

Driving on a U. S. interstate or ordinary highway and approaching a detour, one is given preliminary warnings, such as "detour 1500 Ft.", then "detour 1000 Ft.", and finally "detour 500 Ft." If you will check these distances on your odometer, you are apt to find these distances measuring .3, .2, and .1 mile, respectively. Therefore, these signs might give as much advance notice if they were to read: "Detour 3 edons", "Detour 2 edons", and "Detour 1 edon".

All Americans should be given the opportunity to experiment with duodecimal metric measures. Perhaps we can all go metric pleasantly and permanently. It's up to our Senate and House.

MORE ON BASE CONVERSION ALGORITHMS

By A. Monro, Blenheim, NZ, and
B. A. M. Moon, Christchurch, NZ.

The search for improvements in digital computer technology gives a continued stimulus to the investigation of different ways of representing numerals. Negative bases, 'reverse' or 'balanced' notation in which the number values may be negative, and symbol redundancy (in which, for example, 18 and 27 both represent the same dozenal number) all offer varying possibilities.

Much research to find optimal methods for conversion of numbers between these different forms has still to be done. This suggests that new methods for base conversion are worth attention, since circumstances may well arise in which one such is the best available. The following algorithm, while obviously not conferring any advantages over former methods, does perhaps indicate the variety which may await discovery.

A Base Conversion Algorithm

Let it be required to convert a number represented conventionally with an even positive base, to a new base differing from the old one by two.

Then, using the arithmetic of the old base, divide the number to be converted by half the new base. If the quotient be odd, reduce it by one.

Two cases now arise.

- (a) When the new base is smaller than the old:
 1. Add the adjusted quotient to the original number. Then the least significant digit is the units digit of the required answer. Repeat the process on the remaining digits.
- (b) When the new base is larger than the old:
 1. Subtract the adjusted quotient from the original number. If quotient adjustment reduced it by one and the least significant digit in the result of the subtraction is 1 or 0, replace it by the numeral whose value is one or two less than the new base respectively, and reduce its left neighbor by one. If this in turn requires a borrow, proceed in the normal manner. Repeat for the remaining digits.

EXAMPLES (Observe that the digits of the answer, as generated, are underlined.)

(i) Convert ££1 (dozenal) to decimal:

$$\begin{array}{r} 5) \text{££1} \\ +246 \quad (\text{odd quotient reduced by 1}) \\ \hline 5) \text{1237} \\ +2\text{X} \quad (\text{even quotient}) \\ \hline 5) \text{151} \\ +2 \quad (\text{odd quotient reduced by 1}) \\ \hline 5) \text{17} \\ +0 \quad (\text{the last step is obvious and may be} \\ \hline \underline{1} \quad (\text{omitted.}) \end{array}$$

ANSWER: 1717.

Using the general method given in "The Manual of the Dozen System":

$$\begin{array}{r} X) \text{££1} \\ X) \text{123} + \frac{7}{1} \\ X) \text{15} + \frac{1}{7} \\ X) \text{1} + \frac{7}{7} \\ \hline 0 + \frac{1}{1} \end{array} \quad \text{ANSWER: 1717.}$$

(ii) Convert 1717 (decimal) to dozenal:

$$\begin{array}{r} 6) 1717 \\ -286 \quad (\text{even quotient}) \\ \hline 6) 1431 \\ -22 \quad (\text{odd quotient reduced by 1}) \\ \hline 121 \quad (\text{last digit 1 following reduced quotient}) \\ 6) 11\text{£} \quad (\text{adjust last two digits}) \\ -0 \quad (\text{odd quotient reduced by 1}) \\ \hline 11 \quad (\text{last digit 1 following reduced quotient}) \\ 0\text{£} \quad (\text{adjust last two digits}) \end{array}$$

ANSWER: ££1 .

(iii) Convert 1738 (decimal) to dozenal:

$$\begin{array}{r} 6) 1738 \\ -288 \quad (\text{odd quotient reduced by 1}) \\ \hline 1450 \quad (\text{last digit 0 following reduced quotient}) \\ 6) 144\text{X} \\ -24 \quad (\text{even quotient}) \\ \hline 120 \\ \underline{2} \quad (\text{even quotient}) \\ \hline \underline{10} \end{array} \quad \text{ANSWER: 100X.}$$

Application of method to conversion between octal and decimal numbers will be obvious.

Outline of proof for case (a)

Let n be the number to be converted,

- b the new base,
 q the quotient, and
 r the remainder, all assumed to be positive integers.

Then the division theorem asserts that

$$n = qb + r, \quad 0 \leq r < b \quad (1)$$

and furthermore r is the units digit in the representation of n to base b . Alternatively, let q' and r' be the quotient and remainder respectively when n is divided by $\frac{1}{2}b$.

Then

$$n = \frac{1}{2}q'b + r', \quad 0 \leq r' < \frac{1}{2}b \quad (2)$$

and so on from (1) and (2)

$$\frac{1}{2}q'b + r' = qb + r \quad (3)$$

Part I

If $r < \frac{1}{2}b$, this implies that $r = r'$ and so $q' = 2q$ so that q' is even.

Then the algorithm asserts that

$$n + q' = q(b + 2) + r$$

which follows immediately from (1) since $q' = 2q$.

Part II

If $r \geq \frac{1}{2}b$, then from (1) and (2), $r > r'$ so that (3) implies that $q' = 2q + 1$, which is odd (4) and $r' = r - \frac{1}{2}b$.

Then the algorithm asserts that

$$n + q' - 1 = q(b + 2) + r$$

which likewise follows immediately from (1) and (4).

Mr. Alex Monro is a New Zealand farmer, who first became interested in dozenal arithmetic when he noticed how much easier it was to stack fence posts and similar things by dozens instead of by other counting. Apparently New Zealand laymen are far ahead of their political leaders now in power. The 10-base metric system might be universal, but so once was Latin and the notion that the earth was flat. Mankind seems doomed to inch our way towards perfection, 25.4 mm now to describe each step ---unless the Edon encourages giant steps. --Ed.

-o-o-o-

TELEPHONES

Some four years ago we hazarded a guess at what a TRIMLINE[®] phone might look like with a dozen holes in its dial plate to show duodecimal or dozenal numerals. But that ever onward and upward Bell Laboratories has discovered a better method of making a connection with the person you wish to call. And so the newest phone contains a dozen "Touch-Tone" buttons which are so quickly pressed down in the order your party's number is listed in the directory that the telephone company will save bimo moments of time every day, over the former method of waiting for the dial to return to 0 before you could dial the next digit of your call. More calls per day can be made. H.C.C.

SURVEYING BY METES AND BOUNDS

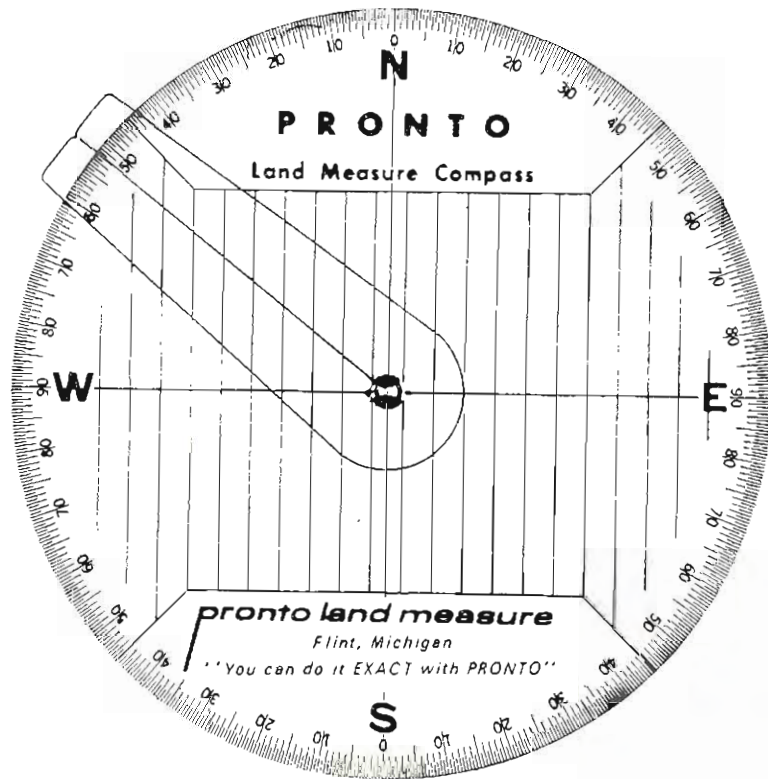
By Gower N. Euston

Let us today describe a parcel of land by metes and bounds in the State of Kentucky, according to a civil engineer's angles, as employed today, and then by duodecimal angles.

"A plot of ground described as commencing at Point A, moving thence North 30° East 528 feet, thence South 60° East 1056 ft., thence South 30° West 528 ft., thence North 60° West 1056 feet to point of beginning, containing 557,568 square feet or 2 Gardens of Land (each Garden being 1/10 mi. sq.), more or less."

Now, employing the duodecimal circle, and duodecimal hectometers, let us describe the same lands, understandable the world over eventually:

"A plot of ground described as commencing at Point A, moving thence 1 duodecimal hectometer at angle seven double-0 ($\angle 700$), thence 2 hmd at angle dek double-0 ($\angle 200$), thence one hmd at $\angle 100$, thence 2 hmd at $\angle 400$ to point of beginning, containing 2 duodecimal hectares or Gardens, more or less."

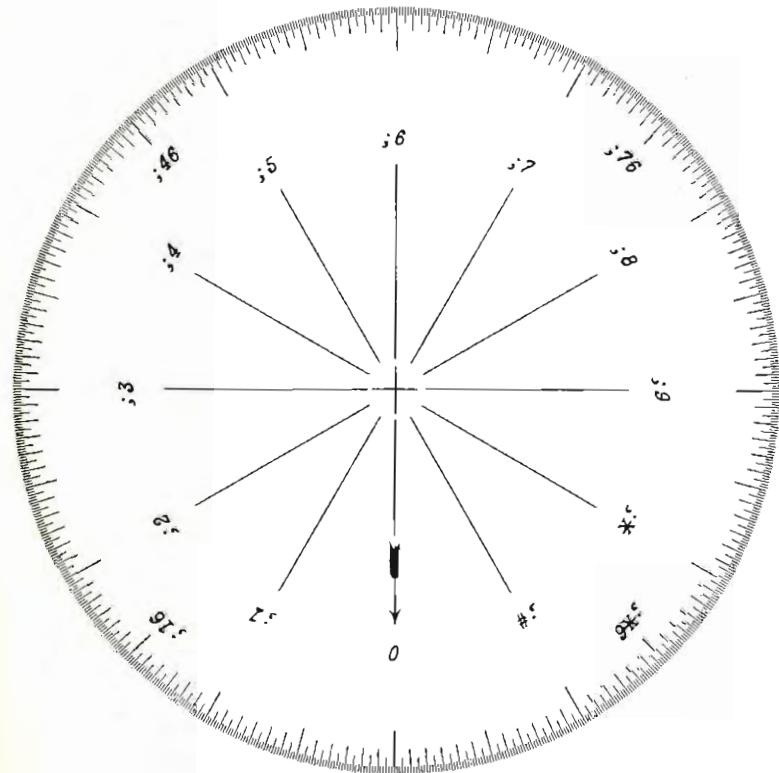


On the Land Measure Compass the smallest arc (between hachures) represents an angle equal to 30 minutes or one-half of a degree. On the Duodecimal Circle the smallest arc (between two hachures) represents an angle equal to 25 minutes or one-third of one and a quarter degrees. In duodecimal angle measurements that arc represents two "donaire" or two per dozen of one per gross part of a circle.

One-half of smallest arc on the Land Measure Compass is equal to 15 minutes of angle, or one-fourth degree. On the Duodecimal Circle, one-half the smallest arc is equal to $12\frac{1}{2}$ minutes of angle or one donaire angle ($0;001$, one emu part of a circle). Generally the donaire angle is adequate, but finer precision is attainable if we employ the naire angle (one-per-do of the donaire angle). The naire angle is exactly equal to $62\frac{1}{2}$ seconds of angle; the edonaire angle is equal to $5\text{-}5/24$ seconds exactly or part of a circle equal to 1 over the 5th power of a dozen.

One edonaire arc of the equatorial great circle and the krypton 86-defined dimension of one Edon, are said to match each other, but they are not identical twins, nor intended to be so.

THE DUODECIMAL CIRCLE



BOOK MANUFACTURING AND DUODECIMALS

By Michael J. Sloboda
141 Elkan Avenue
Ferguson, Mo. 63135

Many books, especially paperbacks, have 144, 192, 288, or 384 pages, although books with 128 or 256 pages are somewhat common in the United States. The reasons for preferring exact dozenal multiples lie in paper printing and packaging.

The common octavo ream of paper used in book manufacturing consists of 500 sheets. Each sheet is printed on both sides and folded four times, giving eight leaves or sixteen printed pages. One octavo ream produces 8000 pages. In metric Europe larger duodecimo reams are in fairly common use, folded six times for a dozen leaves or twenty-four pages.

Reams are sold wholesale by the gross. One gross of octavo reams has enough pages for 8000 paperbacks of 144 pages or 9000 of 128 pages.

For instance, 500 sheets times 16 pages times 144 reams, divided by 144 pages, equal 8000 books of 144 pages each; or 500 sheets times 16 pages times 144 reams, divided by 128 pages, equal 9000 books of 128 pages each.

Look at the display of a best seller in a supermarket or in a large department store. The cardboard display is almost always divided into twelve compartments with paperbacks four or six deep.

Books may be printed in "round" numbers for ease in figuring prices with decimal currency, but they are distributed in dozenals. No trouble is caused by dozenals not dividing evenly into "round" numbers. Only a fraction of any edition goes to libraries in shipments of one or two each.

-o-0-o-

DEK-EL-DO

1 000 000 000 1 000 000 10 000 1 000

Trimo! Bimo! Domo! Mo!

Your Grandmother, X-E-10,

Fell down and broke her toe!

Bimo! Domo! Mo!

-o-0-o-

If, just above, your children called grandma TEN-ELEVEN-TWELVE, they of course missed the boat. In dozenal thinking, especially in counting, ten, eleven, and twelve will become, eventually and of necessity, obsolete. Telephonically today in the U.S.A. they are passé.

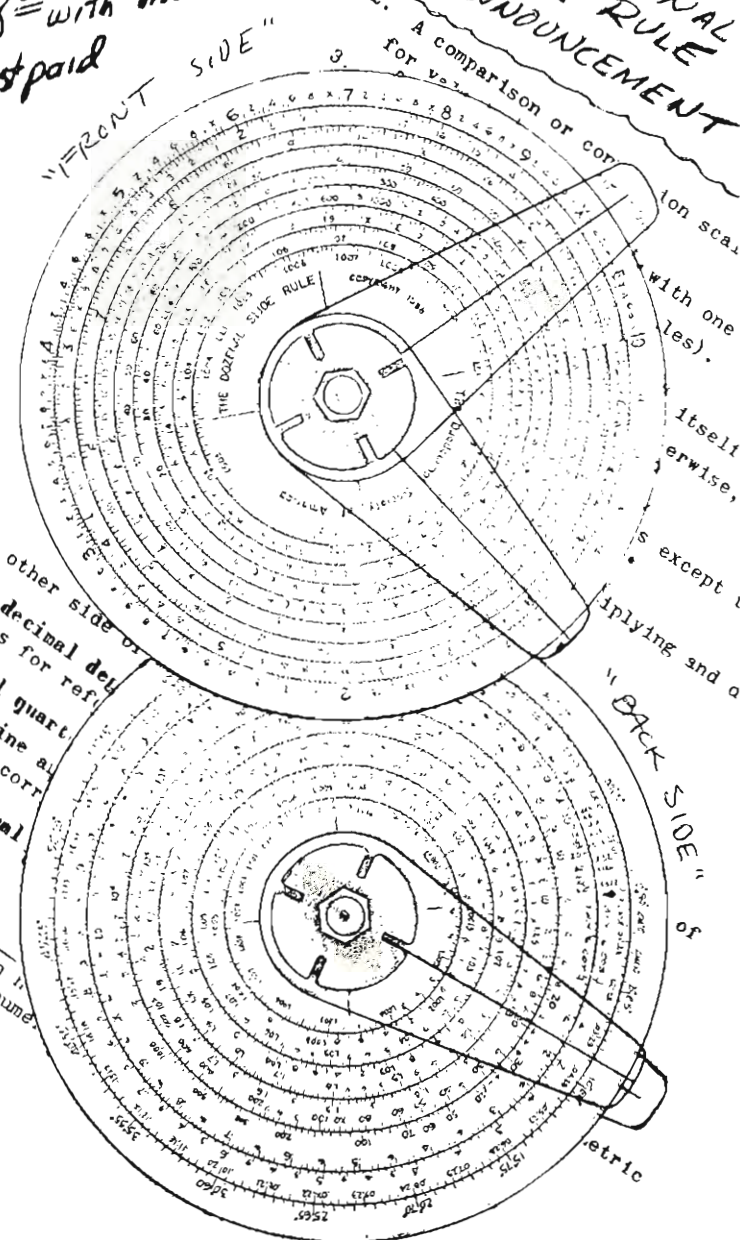
Price \$8.00 with instructions Postpaid

DOZENAL SIDE RULE ANNOUNCEMENT

Write Tom Linton, Secretary

The other side of 90 decimal degrees is for reference - cosine angles correct decimal

shown in the following numbers



1. A comparison or conversion scale with one (dozenal) leaf. 2. For use with itself or otherwise, except when multiplying and dividing.

"BACK SIDE" of

metric

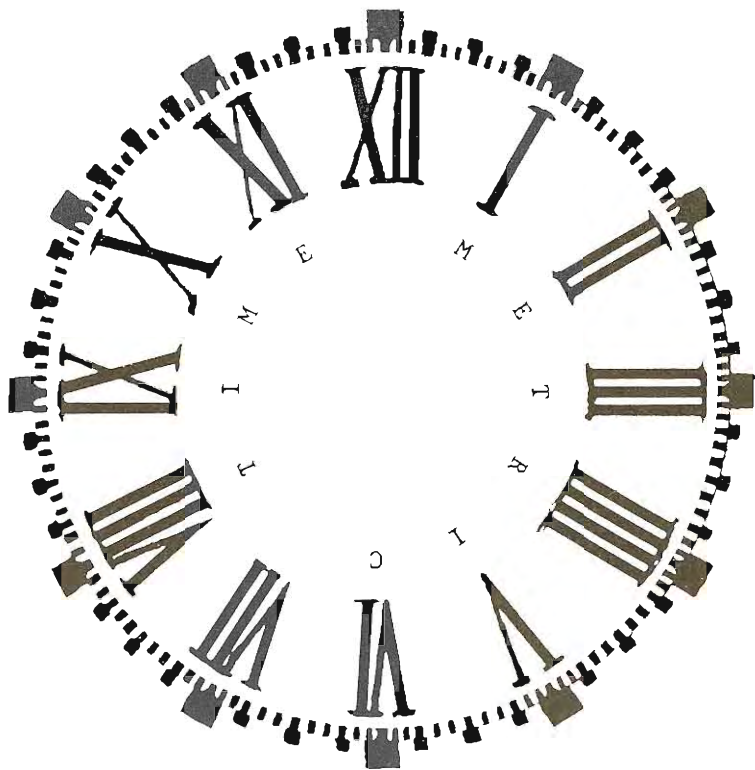
(Whole Number 3%)

A single copy of this page will be sent free on request.

In Bulletin Whole Number 38, on pages 8 and 9, may be found a very short dissertation on how a modern scientist tells time in a modern world; and a metric-time Roman Numeral clock face was shown as Figure 1. The three duplicates, without hands, here reproduced in different sizes are for your use in replacing the face of any 60-cycle electric clock after the attachment is put on it to reduce the rate of travel of the hour-hand and the minute-hand to one-half their 18th century habits.

Roman numerals are employed for good reasons: first, because they indicate the least change in appearance; and second, because astronomers may keep the XII at the top (to imitate the face of Big Ben in London) since the Julian day begins at XII M., while those who prefer Universal Time may invert the clock, putting VI at the top to register noon and XII at the bottom to dramatize the beginning of a new day at midnight.

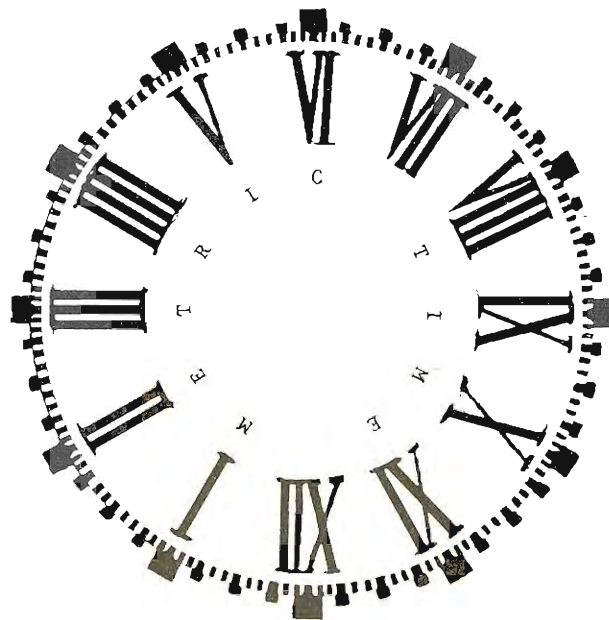
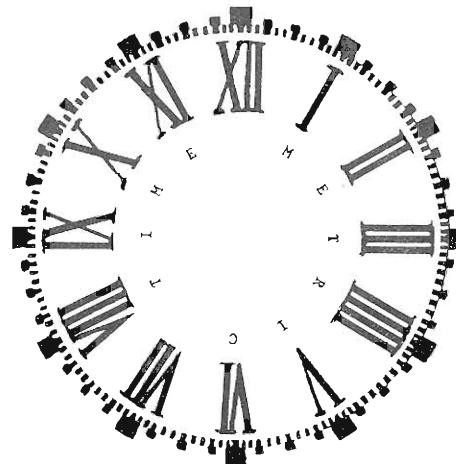
If another reason were required to convince any one, it could be stated that the Roman Numerals have been in the public domain for so long they can not now be copyrighted and hence none can be prevented from using the face depicted on these pages.



(Whole Number 3%)

Supplemental Page

It is suggested that you cut out of this free copy of p.13 at any one time only the particular face that is a suitable size for the face you are replacing. If a larger or smaller face be required than here furnished, feel free to have a photostatic copy made of size desired, at your own convenience and expense.



MELODRAMA AT "THE OLD HOMESTEAD", EPISODE II

Shed a tear for the shameful dynamiting of that able, nimble and indispensable man-about-town, by many persons called Shilling but by his intimates known affectionately as "Bob". So set upon in February last by heavy hands, he has gone into hiding. And when he will again show himself to his many friends and the neighbours will depend upon a more favorable "local press".

Substituting for him presently amongst his millions of customers is an upstart, the "Fiver" (5 new pence), whose presence, not to put too fine a point upon it, is something less than familiar. Time was when foreigners on Homestead soil were puzzled by the several coins and their values (as most people are in another country) while indigenes knowingly smiled. All this has changed. Today no one smiles---or understands.

Bob may reappear first in the United States (already there is a rumor that he has gone abroad), where the new "metric money" DIME is said to hold a value befitting Shilling himself. It is not yet authorized but when it appears the word is out that the new U. S. Dime and a dozen U. S. pennies will be of equal value. It would carry on under the same appearance as the present U. S. decimal money dime, but would require a dozen pennies to make an even trade.

Meanwhile at the Old Homestead another stranger has put in an appearance having the odd value decimally of 1.2 U.S. cents. This new halfpenny is trying hard to substitute for the old six pence coin but it takes five new halfpennies to purchase what the sixpence alone used to buy. This is carrying decimalization to disintegration. His old customers are bravely trying to keep a stiff upper lip at their farewell to sixpence.

The new coins are not unlike new miracle industrial preparations coming on the U.S. market. Admittedly poisonous, we look for new instructions on bottles: "If swallowed do not induce vomiting. Immediately call a mortician."

Rumor has it that the sixpence is about to go abroad---possibly at the urging of Bob Shilling. The new metric, same size U. S. nickel, which is only a suggestion at this point, would have the value of six U. S. pennies and therefore might be given the name of "sixpence" or "tanner" as well as Nickel. Its imminent birth will be categorically denied, but no one denies it has been conceived. And the more its coming is denied, the well-known pastime of governments, the sooner it is expected.

That new U. S. metric nickel, or "tanner", has this in common with the new U. S. metric dime, or "Bob", that either coin will be divisible into two, three, or six equal parts. The present U. S. penny can be used when any of the above mentioned divisions require exact change.

Will some astute "Krook Marine Stores" buy up all the Homestead 12-base computers and refuse to sell whilst illiterate?

(Watch at this same time and place tomorrow as Tanner's problems mount to discourage the stoutest financiers. Sam! SAM!)

PRODDING THE LUMBERMAN---

Speaking Editorially.

Annually the National Conference on Weights and Measures puts the thumbsdown on lumbermen for calling the classic 2 by 4 just that, when every carpenter, builder, and architect knows it has been planed down and polished to a smooth 3-5/8 x 1-5/8 inches.

On the theory that spades should be called spades, they would make a lumberyard clerk use the longer description and apply it when measuring the sum of board-feet involved.

Lumber people might follow these wishes and come out the same in the final billing by merely increasing the board-feet costing computation. But they refuse to be pushed around by newcomers to the building trade who not only know nothing about the 2 by 4's history---they do not want to learn.

Some six or eight dozen years ago, lumber in Iowa--- we speak of things within our knowledge---was cut precisely to the inch. A better word might be 'roughly', for the 2 by 4 was rough and fuzzy and the carpenter's hands, until they got toughened and calloused, absorbed many splinters from its surface.

Two dozen years ago (the milking of a dozen cows on every individual Iowa farm becoming unprofitable, in addition to the normal planting, sowing, reaping, and cattle feeding for public auction) we tore down the milk shed in which cows were bedded down on wintry nights in fresh straw---and dispersed the herd.

It had been a one-room schoolhouse, built in the 1880s, moved only one or two edons onto the farmstead from the schoolyard when the new schoolhouse was built in the 1910s. Its sheathing was a full one by twelve inches, its 2 by 4s were a full two inches by four inches, and its steel nails were not round but square, perspective-like, increasing slightly in thickness from toe to head.

Somewhere along the line after 1880, the lumber mills began to improve their products, specifically the 2 by 4, by installing at some expense a machine to plane and smooth them, causing the finished product to come out gently flowing, glossy, flattering, if you care to say so. It was, in a phrase, a thing of beauty. It cost a trifle more. But throughout the improvement it was always called by its own name, a 2 by 4 dimension.

Now if the National Conference on Weights and Measures will endorse a duodecimal metric system, specifically the 'Metron' or 'duodecimal decimeter', exactly the length of 153,792 wavelengths of orange-red krypton 86 light (duodecimally 75 000 exactly), the lumber mill might plane its 2 by 4s just a trifle less and describe them in scientific dimensions which none can question for accuracy and simplicity as 'half by ones' or $\frac{1}{2}$ x 1---Metrons, of course. Since one metron is the equal of 3-2/3 Canadian or International inches (actually 1/3000ths part greater), the $\frac{1}{2}$ x 1 would plane out at about 3-2/3 inches by one-half of that dimension, in place of 3-5/8 by 1-5/8 now. Every 2 by 4 thus would be strengthened---not diminished by a nod of our federal government to yield to high winds.

For lengths of $\frac{1}{2} \times 1s$, see Table on p. 25 of this issue, Metronic Estimates of Height of Persons, giving a comparison of heights by Metrons, Millimeters, Inches, or Feet. By adding metrons to metrons we can achieve greater lengths than there shown. For instance, 48 metrons are the equal of 14 ft 8 in. And 72 metrons would equal 22 ft 0 in. precisely.

Board-metrons would be easier to figure than feet and inches, for the reason that after multiplying dozenal integers and dozenal fractions of length, width, and breadth into one final sum of cubic metrons, we could merely move the dozenal point, as we now do the decimal point, to change from metrons to duodecimal meters, to duodecimal decameters, hectometers, kilometers, or greater dozenal units. Not unlike board-feet, these might be priced at a certain cost per board-metron. Let us advance into the 21st century---not move back to the 18th. ---Ed.

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TELL IT AS IT IS

By John Jarndyce

In the duodecimal metronic system, one jon equals one cubic metron, which, filled with pure water, equals one kal of mass.

One, here, is relating one to one to one. And one kal is about 4/5 the mass of one kilogram; one jon about 4/5 liter.

But in the base ten metric system (SI), one liter equals one-tenth meter cubed, which, filled with pure water, equals 1,000 grams. We are there relating 1 to 1/10 to 1,000 (or a dime to a cent to \$100). Logical? Uniform?

Many scientists have noticed this, and have overcome the difficulty by memorization as Sir Isaac Newton must have done with barleycorns. Incidentally, Sir Isaac didn't do too badly.

In the SI measures a cube of one decimeter side length, which equals the volume of one cubic decimeter, does not equal one deciliter capacity but one liter whole. And one whole liter of pure water is equal not to one gram but one thousand grams. Confusing?

Like barleycorns, pints, and pounds, the ten base metric system is not so illogical after you memorize the new puzzle, but you must study these odd proportions just as you did with pints and pounds and cubic inches. You are not entering paradise.

Now some executive department heads in Washington (appointed, not elected), and some executives of large corporations handling government contracts on cost-plus or like-base, would without regard to over-run, have you---require you to in bidding---bow down before base-ten-metric units and adore no gods but Baal. This in the 20th Century, in a free democracy, by a people who would kill you at the drop of a hat for merely thinking their government is imperialistic.

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BE CAREFUL WITH THOSE DUODECIMAL NUMERALS

Lawrence Boythorn

Your children riding with you on a Sunday afternoon drive, in a sudden burst of enthusiasm exclaim that the numerals on your odometer now show 33,333.1 and within the next two-tenths of a mile will exhibit nothing but threes.

As they watch the odometer windows, you might debate silently whether to let them in on a little known secret or keep your eye on the traffic ahead. So you hold your peace.

At home that evening you get out a pencil and pad and do some experimenting. You know that 33,333.3 miles is none other than 333,333 Edons or Duodecimal Hectometers. Dozenally how many edons had the car been operated at that point? To determine the sum duodecimally, you jotted down the following:

$$12) \underbrace{3 \ 3^3 \ 3^9 \ 3^9 \ 3^3}_{= 140 \ 0X9;9 \text{ edons}} = 140 \ 0X9;9 \text{ kmd or navinauts.}$$

$$ \underline{2 \ 7^3 \ 7^1 \ 7^5 \ 7} + 9 \qquad \underline{10 \ 000;0} \text{ a gr. circle of earth}$$

$$12) \underline{2 \ 3^E \ 1^3 \ 4} + 9 \qquad \underline{4 \ 0X9;9} \text{ additional aeromiles.}$$

$$ \underline{1 \ 9^7 \ 2} + X$$

$$ \underline{1 \ 6} + 0$$

$$ + 4$$

If 10 000 kmd (dozenal number of domo duodecimal kilometers) equal ONE great circle of the earth, and if we subtract that number from 14 0X9;9 (telephonically one four 0 dek nine D.I.P. nine) we see that the car has traveled the equal of 1-1/3 times around the earth (plus X9;9 Aeromiles or Navinauts).

This illustrates that all motor vehicle drivers in the U. S. today are already reckoning their distance traveled in the duodecimal units of edons and duodecimal kilometers. Who in America is horrified by a dimension equal to the .1 mile?

True, the dimension of one edon is almost exactly 1/3000 more than the length of 0.1 Canadian mile---but the variation caused by the difference in air pressure in the rubber on your wheels, as the air within heats from running, can not be said to be a scintilla less than 1/3000 edon either.

One "edon" is defined as the equal of 75 000 000 wavelengths of orange-red krypton 86 light; and one dozen edons will therefore equal 750 000 000 of the same wavelengths. The latter is called an aeromile. The edon is the equal of the Canadian one-tenth mile shown on the odometer of all American licensed motor vehicles. The 5th power of twelve (248,832) states the exact number of edons in ONE GREAT CIRCLE OF THE EARTH. So, the edon is actually more metric than either the metre or kilometre of the 18th Century base-ten (SI) metric system. There are domo (10 000) aeromiles in a great circle of the earth---but 10 000 SI kilometres are less than the smallest quarter circle of the earth.

And another oddity, hectares in Iowa have existed longer than 125 years. Duodecimal hectares, that is.

On page do-nine observe a plat of Pottawattamie County, just one of the 99 counties in the state of Iowa, as it was surveyed over one hundred years ago and now lies in the southwestern ar-ea of that state. Each of the minor squares represents a mile square, each being the equal of a Congressional Section of land according to the original survey, and in keeping with the present law of the United States of America. The major squares (of which there are two dozen and some fractions) are each six miles on a side and each is called a "Congressional Township". A "political township" may be larger or smaller or coequal.

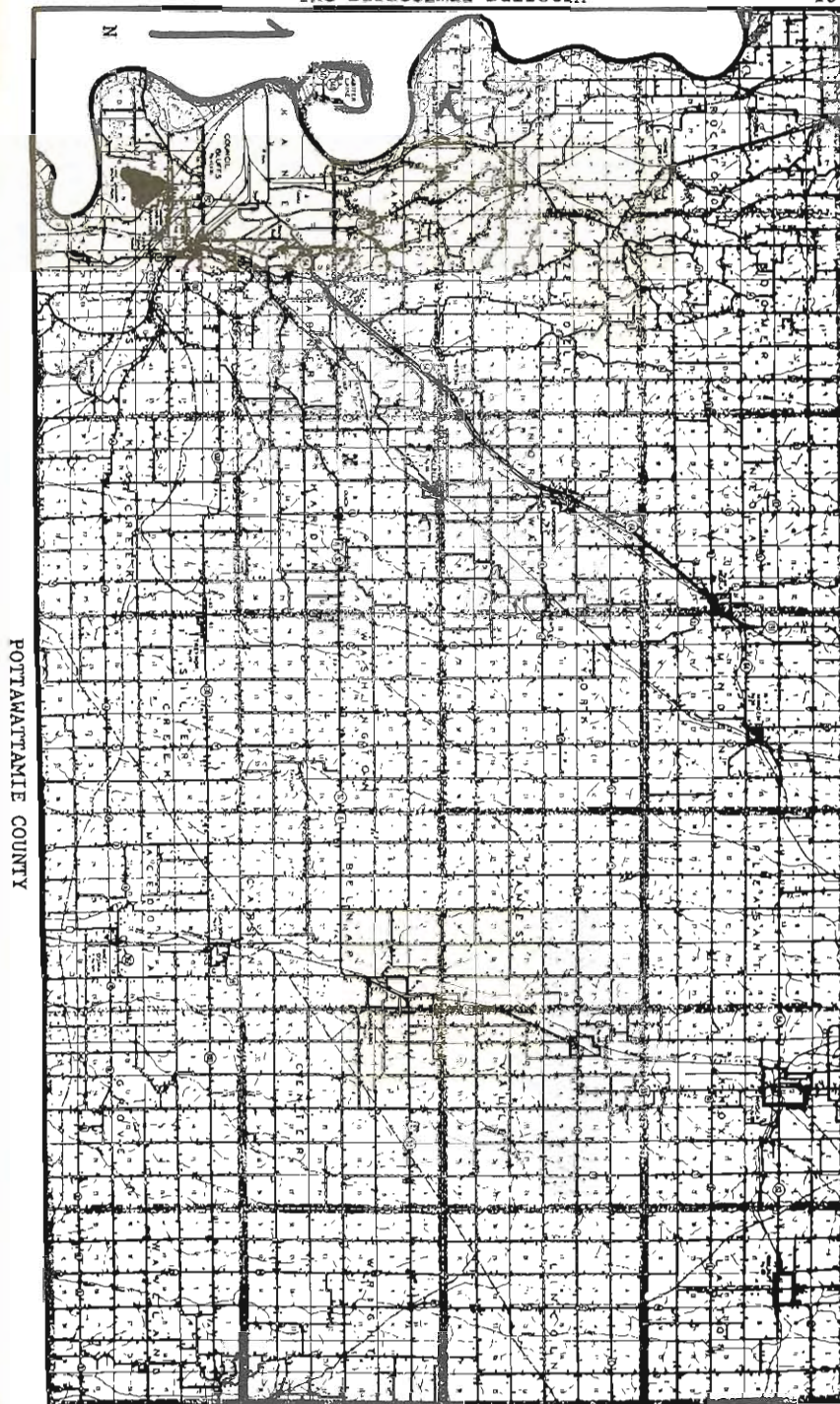
The "Northwest Ordinance of 1787", an Act of the Continental Congress, was enacted for the purpose of surveying and determining the extent of lands lying to the west beyond the specified charter bounds of the thirteen colonies but claimed by them. In that Act there was set up the method used today in all states lying north or west of the Ohio and Mississippi rivers or south of the states of Tennessee or Georgia excepting portions of the state of Ohio where experimentally some townships were surveyed and now remain *five* miles square (containing twenty-five sections of land instead of the approved legal thirty-six sections in a Congressional Township), and except the whole state of Texas, largely Mexican or Spanish measured lands.

In keeping with that Northwest Ordinance of 1787 lands not excluded above, as well as the whole state of Alaska, are legally described, with a few exceptions including city and town plats, as a specific fraction of a numbered "section" (numbered up to three dozen), in a numbered Township north or south of a given parallel, and a numbered Range "lying East (or West)" of a certain "Principal Meridian".

Bowing for the moment to base ten, we might count one hundred "duodecimal hectares" (each 0.1 mile square) in a "section" of lands. Today we might add these duodecimal hectares on a ten-base adding machine as we now add pennies and dollars. A duodecimal hectare of lands in the U. S. has been described as one "square edon", or a "Garden of Land", or 0.1 mile square. (See December 1960 Bulletin, p. 41.)

Not only will we find one square statute mile in one hundred duodecimal hectares (in Manitoba or Saskatchewan even as in New Mexico) but equally there is a square one-tenth-statute-mile (528 feet square) in one duodecimal hectare. In putting in and gathering crops by machinery we might say that the difference between one duodecimal hectare and the square one-tenth-mile is negligible and may be ignored, even in harvesting contests. If size of farms keeps increasing each year, as now appears likely to continue, the square mile and its percentage rather than acres are apt to prove best for the farmer and the taxing-bodies in describing units of land measurement.

Let us now move forward another step: since three dozen "sections" are found in each Congressional Township, these are said



to equal two dozen and one square duodecimal kilometers (called Fields or Champs some dozen years ago). A Champ or Field might be described as one Congressional Field if approved by Congress in this modern age. A duodecimal kilometer may be said to be the length of a dozen one-tenth miles, or $6/5$ the length of a Canadian statute mile. But, for scientific accuracy, it should be defined as equal to 750 000 000 (seven-five doimo, or decimally $12^7 \times 89$) wavelengths of orange-red krypton 86 light.

One "Congressional Field" thereupon could be described as containing one gross (100) duodecimal hectares; and those who live in Saskatchewan could still say that one Canadian square mile fits quite comfortably within one hundred duodecimal hectares. No need to push around any farmer or governmental branch head who likes best what he grew up with.

We might note that Pottawattamie (named after an Indian tribe of early days) is 24 by 36 plus statute miles in size, the Missouri river skirting its west side to create an irregular or meandering boundary line. A great many if not most counties in Iowa are 24 miles square and thus nominally contain sixteen congressional townships, or four hundred Fields or Champs. Due to the curvature of the earth and difficulties encountered during the original surveys a Congressional Township does not always contain its full quota of acres of land, and so will not measure out 3600 full duodecimal hectares at all times either--but remember the ASCS is concerned with crop areas, not land.

If the U. S. Agricultural Stabilization and Conservation Service would take upon itself the task of describing growing crops in terms of Sections of land rather than acres, each section being considered as the equal of one hundred "duodecimal hectares", think of the ease and speed with which we might add up "sections" and "percent of section" in every county to reach the state totals of square miles (and percent of square mile) of corn, wheat, oat, or other crops planted.

If the conservation service would today describe the one-tenth-mile-square area (duodecimal hectare or Garden of land) in terms of its relation to "sections", for example 9.87 "sections" of oat crop in a certain township, then we might keep these same duodecimal hectares when everyone, led by the example of Bell Telephone Company and its associates, counts by the dozen and gross with unlimited pleasure. We might even, as our farms grow larger year after year, regroup our 36 sections now found in a Congressional Township and describe them as two dozen-one (or twenty-five) "Congressional Fields."

By a simple Act of Congress defining the standard side of one "Congressional Field" in wavelengths of orange-red krypton 86 light, we may move into a metric system of measurements, duodecimal in size of units, yet employing ten-base counting for those who would disdain to move over to duodecimal numerals. Let us here note the same choice in the case where your telephone digits are duodecimal, yet your thinking of them in terms of base-ten is not foreclosed so long as you sound them separately as cardinal digits---telephonically speaking!

LETTERS AND COMMENTS:

IGOR COLONNA VALEVSKY, Caixa Postal 5888, Sao Paulo, Brazil, in a study of the most desirable sizes of units of measures and of weights in any base, has reached definite conclusions. Look at dimensions. He writes: "The ancient cubit (between 18 and 21 inches, used throughout the world five to three thousand years ago, gradually converted itself in the course of ages into a foot of about twelve inches. With some divergencies this has been the unit most used not only in Europe and in European settlements but also in exotic lands such as China and Japan. As a matter of fact the few exceptions were the 'arshin' (about 28 inches) in Russia under Peter the Great, and the French meter (about 40 inches), both erected through an arbitrary act of the state. What does a noncoerced natural growth tell us? That our unit of length is to be somewhat like one foot or one inch, but not a yard, a meter, or a centimeter. A unit of length of about 1 inch or between ten and fifteen inches is to be considered as EXCELLENT. Other units as Very Good, Good, Fair, Unsatisfactory. Those between 3 and 4 feet (or inches) are BAD."

Editor's note: Senor Valevsky's paper is being received one part at a time, and it is hoped somewhere along the line to see a systemic exposition of his ideas. His findings mentioned above bear out the tendency of some Air France pilots to ask for their flight plans in "feet" and to avoid both meters and yards in determining separation levels. His studies would seem to bring M. Essig's *mètre duodécimal* within the classification of "bad", and this would take the SI metre, the Dometron, and the Ell along with it. Senor Valevsky is to be commended for his persistence in this study. The people appear to prefer either no changes or the fut, dofut, etc., we suggested years ago.

TOM B. LINTON, 11561 Candy Lane, Garden Grove, Cal 92640, says: "In a postscript to my article 'More Evidence of Base Twelve Economy', on p. 35, December 1968 Bulletin, the n-1 number base designation was credited to me, whereas it was suggested to me by DSA member Joe Celko, who in turn gave credit to 'one or two new math text books at high school level.' Joe also included the base conversion (transradication) concept, his own idea, of indicating the transmutation from one base to another, as ${}_2234_e$ would be read as an instruction: 'Change base twelve numeral 234 into base eight.'

"My high regard for Joe's suggestion led me to propose both the subscript and the transradication ideas to the Standards Committee of the Association for Computing Machinery (ACM). It is still under consideration, since hasty action is never taken on such nontrivial matters."

EUGENE M. SCIFRES, 1580 S. Milwaukee Street, Denver, Col 80210, says: "My daily work involves binary and hexadecimal so I feel like a traitor to our cause. However my contact with dozens broke me out of the decimal rut, and makes work in 2, 8, or 16 base relatively easy."

INTELLIGENCE ITEMS:

According to UPI Miami report (11 Apr 71), beads of sweat appeared on Capt. Herbert Stover's forehead the moment he heard and FELT a rhythmic thump..thump..thump.. over the drone of his Eastern Airlines jet. He was flying at 33,000 feet (which you or I might call 36,000 "nufut"**) and was 30 minutes (1/4 duor) out of New Orleans enroute to New York City. This was no time, he thought, for something to come unglued. No warnings on the instrument panel, yet the thump..thump... continued at a steady 140 per minute (99 per Moment).

Stover finally throttled back the engines. The thumping then stopped. He decided to continue to New York, and the big jet landed safely. As the crew headed for the operations office, a stewardess commented: "Man, did we have a weird passenger on this flight." "What did he do?" inquired Stover. "Well," she explained, "this guy locked himself in the forward lavatory and then jogged in there for 20 minutes." Two dozen Moments of agony for the pilot!

**See April 1970 Bulletin, p. 4.

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According to AP release 15 Apr 70, Bulawayo, Rhodesia, "a horse-watering trough has been declared a national monument and the Government Gazette gave this description so there would be no confusion: The cast iron Victorian horse trough outside the stables in the grounds of government house, latitude 20 degrees 06 minutes 24 seconds south, longitude 27 degrees 35 minutes 00 seconds east." This would seem to be none other than Ecumenical Zone location 6#4#214-23#5*33, if we take the liberty to borrow Bell Telephone Company's * for dek and # for el. It will lead only to confusion in making a telephone connection if we call these symbols "ten" or "eleven". As a warning to us, Bell defaces the Roman numeral ten and the Arabic eleven symbols.

Since that E-Z location is precise within 44 inches, a surveyor might be employed to determine the correctness of the two terminal numerals of both the meridian and the parallel numbers. On the other hand, the location would be exact within one-tenth English land mile if we used only 6#4#2-23#5* (six el four el two, two three el five dek, telephonically or as old artillerymen might find themselves pronouncing the deflection and range from a future "Manual of the Piece".

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On 19 April 1971, the USSR launched a scientific station to orbit the earth about 137 miles above sea level, on an 88½ minute cycle. The *Salyut* completes each circuit, dozenally speaking, in less than 3/4 duor. The 137 statute miles might be said to equal 1370 of Essig's duodecimal hectometers (962;0 dozenally), or a full 96 duodecimal kilometers if his duodecimal *mètre* is conceded the equal of 750 000 wavelengths of orange-red krypton 86 light. A grade scholar might perform the trans-

fer mentally from dozenal hectometers (528 feet) to dozenal kilometres without pencil, paper, and a handbook. But try to translate feet to base ten hectometers without a book.

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The U. S. Coast Guard icebreaker *Staten Island*, according to *Reuters* (Christchurch, N.Z., 4 Mar 71) was limping towards Melbourne for temporary repairs after striking an uncharted rock in the Antarctic. This 5,250-ton ship might be said to equal 2763 metric tons, or 122 domikals. That places its tonnage just below the 200 (two-gro) domikal class----in 1971 described as a 5,268-ton ship. One single kal or 4/5 kilogram or 1-3/4 pounds avoirdupois are all quite equal to each other at a grocers.

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According to AP (Salt Lake City, Utah, 17 Jul 70) the National Conference on Weights and Measures adopted a proposed "model state regulation pertaining to dimensions of manufactured lumber." It calls for advertising and selling lumber "in terms of actual dimensions of width, thickness and length." Usually a 2 x 4 measures 1-5/8 by 3-5/8 inches in the U.S.A. because most lumber producers use what is called "nominal" dimensions.

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In the last month of 1969 a tunnel, among the world's longest, was to be opened by President Juan Carlos Onganía to provide the first road link between three northern provinces and the rest of Argentina, according to *Reuters*. It goes under the Parana river, took five years to build, is 11-1/4 edons (1;13 duodecimal kilometers) long, and cost the equal of 41,666,666 metric dollars to construct. A metric dollar equals 144 U. S. pennies exactly. One edon (1 duodecimal hectometer or 1 hmd) and a Canadian one-tenth statute mile are quite equal. Canada and the U.S. already have a Common Market in many respects.

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According to *Reuters* (Paris, France, 3 Apr 71) five owners of shops were sentenced yesterday to fines ranging from \$144 to an upper range of \$960 on charges of obscenity and for the exhibition and sale of indecent objects. The minimum \$144 appears to be the equal of one hundred metric dollars (each such dollar equal to 144 U. S. pennies). Is it possible that a law tribunal in France has gone duodecimal ahead of our U. S. Treasury?

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THE ACCOLADE:

In the Dec 1968 Bulletin, page fourdo-four, that farsighted Ralph H. Beard again disclosed his correct appraisal of the future when he said, and I quote, "I may have to learn the Boolean Algebra of the Ternary Base." (See page one of the April 1970 Bulletin for the reason why---at least one reason. Ed.)

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THE ACCOLADE: (Continued)

We call to your attention the interesting paper by Allan C. Boschen in the April 1970 Bulletin, p. 16, in which he points out the advantages of base twelve over base ten. And while he along with some other members of DSA holds to a viewpoint that duodecimal counting and measures will not come to America save through a simultaneous introduction throughout the world, possibly through action of the United Nations, yet his analyses of the strong points of dozenals making them superior in so many ways in comparison with decimals, give his appraisals a significant value.

His remarkable foresight with regard to future appropriation of base twelve by computers, from economic necessity, and their actually leading the way to over-all conversion to base twelve, puts him in that home of advocates of dozens that lends support to our cause. Bell Telephone equipment may be doing just that.

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On page one of that same bulletin appeared an outstanding report by the Director of the Computer Centre of the University of Canterbury, Dr. B. A. M. Moon, of Christchurch, New Zealand, in which he tells of actual experiments with a ternary computer by Russian scientists, and sets forth an estimate of the situation disclosing strong possibilities of gaining some cost advantage by using a mixture of base two and base three storage elements over a pure power-of-two system. Conceivably this may lead to representation in base twelve external to the computer, even as the hexadecimal base is now employed; and may make full transradication from base ten to base twelve in all civilized countries impossible to forestall. All hades cannot delay an idea whose time is come. There is plenty of evidence of existence of a great renaissance arising throughout the world.

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And on page one-el of the April '70 Bulletin we urge you to re-examine your knowledge of number bases other than ten from the work of Shaun Ferguson, one of our English Cousins. These were never more succinctly set forth to expose base ten as only one star of many, and a dim one at that.

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Too, while you are fondling the Dec 1968 Bulletin just take a Mona Lisa glance at pages three-seven through three-el, and admire the work of Stanley Bumpus, 3813 Lebanon Church Road, West Mifflin, Pennsylvania 15122, accomplished on an IBM 360 Model 75 computer at the University of Illinois, not the least of all being Pi through 1728 minus powers of twelve.

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Watch this space again tomorrow as we burst with pride over other prize articles and efforts in advancing dozenals, especially the insuperable work of F. Emerson Andrews, 34 Oak Street, Tenafly, N. J. 07670, as a stockholder of AT&T.

NEW DEBT CEILING

By H. C. Churchman

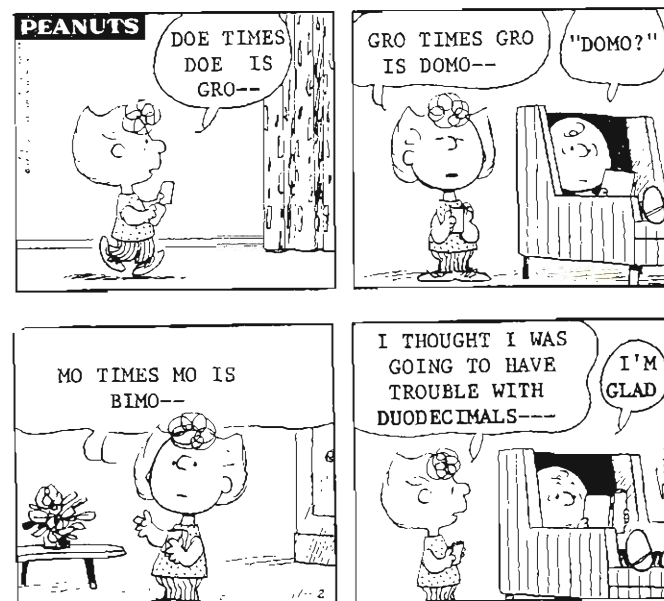
If \$500,000,000,000 is to become a new U. S. debt ceiling and if a new metric dollar is to equal 144 cents, or \$1 metric, the new debt limit then might be described as equal to 348 billion metric dollars. In our base ten counting of the moment this is between 16 and 17 million Dominions (below). A decimal sum of Dominions appears quite comprehensible and manageable and capable of being reduced by future taxation, in a viable economy, at the rate of perhaps one million Dominions in each biennium.

The metric money denomination of "one Dominion" is the equal of 10 000 new metric dollars and is perhaps the most suitable monetary unit by which to measure our national debt. See p. 49 of the December 1966 Bulletin for colors of new paper notes.

The Dominion printed on blue paper would replace the \$10,000 U. S. paper note, but its monetary value, in terms of the 1950 dollar, would be the equal of \$29,859.84 EXACTLY---almost three times the value of a \$10,000 U. S. paper note of the '50s.

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A LESSON by COURTESY of CHARLES M. SCHULZ: The hand is that of the artist; the voice is Dozenal Joe's. Good ol' Charlie Brown expresses his amazement, as well he might, in his inimitable way. Our dear little Sally appears, if you have been following her life story in the strip millions of newspaper readers look for first, to be having a great deal of trouble with arithmetic but does anyone enjoy 'learning sums' in anything save base-12?



(This article was originally printed in the OMAHA WORLD-HERALD on 14 November 1970 on its editorial pages, through courtesy of JAMES CLEMON, Editor of the Editorial Pages of that outstanding newspaper. Other members may wish to write to their local paper or to their Congressman in Washington. If you put off writing to your representatives you could end up in a straightjacket---and deserve every cubic decimeter of it.)

Another Point of View. BASE-12 UPDATES METRIC SYSTEM.

The writer of the following article is a member of the board of directors and an officer of the Duodecimal Society of America. He holds a doctor of jurisprudence degree from Georgetown Law Center, Washington, D. C., and has practiced law in Council Bluffs for 45 years. He served in World Wars I and II as a field artillery officer. He lives at Longview Farm, RR 3 Council Bluffs 51501. His article was prompted by a World-Herald article by Dr. Rainer Fried, Creighton University professor, urging adoption of the metric system in the United States.

By Henry C. Churchman
Editor, Duodecimal Bulletin

Some people question whether the Congress should pass a law making it illegal for all Americans to use any measures other than meters, liters, and grams, as now under study.

It is possible that the French base-ten metric system may not be the best, even though, as with Latin, many people were attracted by its universality.

A Frenchman, Jean Essig, commander of the Legion of Honor and holder of many French citations, published in 1955 a book using the title "Douze, Notre Dix Futur" (Twelve, Our Modern Ten), in which he suggested that France move its metric system from base ten to base twelve arithmetic. IBM computers today require a knowledge of base two and of base-16. No modern computer uses our base-10, although they tried it initially.

Essig's proposal might eventually convince Frenchmen. It received the endorsement of Albert Caquot, membre de l'Institut. It was purposely prepared for study in the base ten metric world.

Nevertheless, it would perhaps tend to draw Americans into a worldwide metric system voluntarily since we count so many small things, from eggs to hours, by dozens. Most canned foods are packed by the dozen---liquids in six-packs---because five objects in a small carton are not so compact.

The question today is when will Essig's suggestion be adopted in France.

Within the next dozen years, the Bell Telephone System will have voluntarily moved entirely over to twelve touch-tone buttons to make your connection with another party. Base ten then will be obsolete in the communications field and yet it need not cause any subscriber to as much as raise an eyebrow.

TABLE

Metronic Estimates of Height of Persons Compared			
Metrons	Millimeters	Inches	Feet
12	1117	44	3 ft. 8 in.
13	1210	47-2/3	4 ft. 0 in.
14	1304	51-1/3	4 ft. 3 in.
15	1397	55	4 ft. 7 in.
16	1490	58-2/3	4 ft. 11 in.
17	1583	62-1/3	5 ft. 2 in.
18	1676	66	5 ft. 6 in.
19	1770	69-2/3	5 ft. 10 in.
20	1863	73-1/3	6 ft. 1 in.
21	1956	77	6 ft. 5 in.
22	2049	80-2/3	6 ft. 9 in.
23	2142	84-1/3	7 ft. 0 in.
24	2235	88	7 ft. 4 in.

For convenience all numerals above are ten-base.

In America, most prep through college students are between one dozen and two dozen years of age, and between one dozen and two dozen base-twelve "metrons" in height. The metron quite precisely equals three-and-two-thirds inches, but for scientific exactness it is defined as the equal of 153,792 wavelengths of orange-red krypton 86 light. Meters today are defined by the same kind of wavelengths.

The average citizen, in estimating the height of an assailant, could miss by as much as an inch either way. So, in describing the height of a 5-foot, 8-inch person, it is safe to say "about 18-1/2 metrons". If a suspect is 5 feet 7 inches high, a trained officer might describe him as 18-1/4 metrons. The inch is roughly equal to a quarter-metron.

Now imagine an assailant estimated to be 5 feet 6 inches tall, the equal of 1,676 millimeters. The six millimeters suggest that your attacker stopped to permit you to take a precise measurement of his height. And if we round to 1,670 or even 1,600 millimeters, the result appears to many persons equally Lilliputian-slanted.

If we say 1.6 meters, we shall have omitted 76 millimeters or three inches. (We could say 18 metrons. See Table above.)

Congress is torn by doubts and would sooner not make the decision. Accordingly, it has referred the matter to the National Bureau of Standards. A half million dollars later, they will report. Are we going to outlaw the use in America of all measures save meters and millimeters, liters and kilograms?

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Let's learn to say: "Testing. Testing. Dek-el-do. One-one. One-two. One-three." Teach just one more person dozenals!