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.	*E;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.

12) 365
12) 30 + 5
12) 2 + 6
0 + 2 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 12^2 (or 144) times the third figure, plus 12^3 (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		
1	One		
10	Do	*;1*	Edo
100	Gro	*;01*	Egro
1,000	Mo	*;001*	Emo
10,000	Do-mo	*;000,1*	Edo-mo
100,000	Gro-mo	*;000,01*	Egro-mo
1,000,000	Bi-mo	*;000,001*	Ebi-mo
1,000,000,000	Tri-mo	and so on.	

Multiplication Table

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*X*	*E*
1	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*X*	*E*
2	*2*	*4*	*6*	*8*	*X*	*10*	*12*	*14*	*16*	*18*	*1X*
3	*3*	*6*	*9*	*10*	*13*	*16*	*19*	*20*	*23*	*26*	*29*
4	*4*	*8*	*10*	*14*	*18*	*20*	*24*	*28*	*30*	*34*	*38*
5	*5*	*X*	*13*	*18*	*21*	*26*	*2E*	*34*	*39*	*42*	*47*
6	*6*	*10*	*16*	*20*	*26*	*30*	*36*	*40*	*46*	*50*	*56*
7	*7*	*12*	*19*	*24*	*2E*	*36*	*41*	*48*	*53*	*5X*	*65*
8	*8*	*14*	*20*	*28*	*34*	*40*	*48*	*54*	*60*	*68*	*74*
9	*9*	*16*	*23*	*30*	*39*	*46*	*53*	*60*	*69*	*76*	*83*
X	*X*	*18*	*26*	*34*	*42*	*50*	*5X*	*68*	*76*	*84*	*92*
E	*E*	*1X*	*29*	*38*	*47*	*56*	*65*	*74*	*83*	*92*	*X1*

Ni Korespondas Esperante.

The Duodecimal Bulletin

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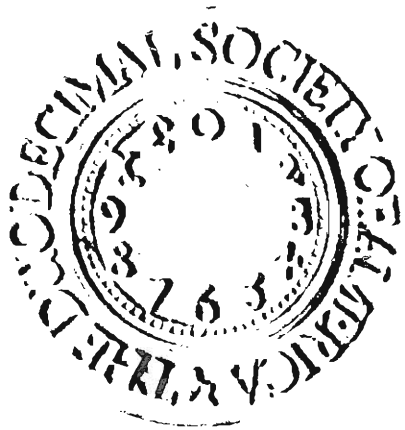

THE DUODECIMAL SOCIETY OF AMERICA

Sec'y, 4728 Cielo Drive, Huntington Beach, Cal 92649

Treasurer, 1580 S. Milwaukee St., Denver, Colo 80210

Editor, 10 State Street, Council Bluffs, Iowa 51501

THE DUODECIMAL SOCIETY OF AMERICA

is a voluntary nonprofit organization for the conduct of research and education of the public in the use of base twelve in numeration, mathematics, weights and measures, and other branches of pure and applied science.

The forms of membership include Honorary, Life, Fellow, and Senior Members, as well as Members, and Student Members. Members and Student Members are not required to pass aptitude tests in base twelve, but are encouraged to do so.

Senior membership with voting privileges requires passing of elementary tests in the performance of twelve base arithmetic. The lessons and examinations are free to those whose entrance application is accepted. Remittance of $6, dues for one year, must accompany application. Forms free on request.

The Duodecimal Bulletin is an official publication of the Duodecimal Society of America, Inc., 4728 Cielo Drive, Huntington Beach, California 92649. Charles S. Bagley, Chairman of the Board of Directors; Henry C. Churchman, President; Tom B. Linton, Secretary; Eugene M. Scifres, Treasurer. Permission for reproduction may be granted upon application. Separate subscription rate $3 per year.

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All figures in italics are duodecimal.

ANNUAL MEETING

The Duodecimal Society of America held its annual meeting of members and the Board of Directors on July 28, 29, and 30, 1972, on the campus of the University of California, at La Jolla, California.

The following were elected to the Board of Directors by the membership, to-wit:

Class of *1187* (1975)

F. Emerson Andrews, 34 Oak Street, Tenafly, New Jersey 07670;
Henry C. Churchman, 10 State St., Council Bluffs, Iowa 51501;
Jamison Handy, Jr., 716 Swarthmore Avenue, Pacific Palisades, California 90272;
Eugene M. Scifres, 1580 S. Milwaukee Street, Denver, Colorado 80210.

Chairman of the Board of Directors, Charles S. Bagley, 1314 Ohio Avenue, Alamogordo, New Mexico 88310, was re-elected.

The following other officers of the Society were elected to another year of service:

Henry C. Churchman, President;
Tom B. Linton, 4728 Cielo Drive, Huntington Beach, California 92649, Secretary; and
Eugene M. Scifres, Treasurer.

Henry Churchman was reappointed by the Board as Editor of The Duodecimal Bulletin, and stated that there was enough good material on hand to prepare another bulletin. He is seeking a co-editor.

The high point of the membership meeting was an address by Dr. B. A. M. Moon, Director of the Computer Laboratory at the University of Canterbury,

Christchurch, New Zealand, on the history of computer machinery development. It was both scholarly and entertaining, as well as educational.

Pres. Henry C. Churchman declared the membership meeting adjourned sine die on Sunday in the late afternoon hours. Most members remained overnight at the University dormitory and took off early on Monday morning for home. Board members remained to close shop.

The minutes of the meeting of the Board of Directors are here omitted---consult Secretary for full details.

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NAVINAUT FOR ALL (Continued from page four)

hour (familiar to you), and then by some fraction of the navinaut. A navinaut is of course the exact equal also of M. Essig's *kilomètre duodécimal per moment* in France and all of western Europe.

That is to say, not the base-ten kilometer concocted in the 18th century (exactly equal to nothing in nature) but rather the duodecimal kilometer equal to *750 000 000* wavelengths of orange-red kr. 86 light, without fractions entailed whatsoever.

[1]Redivivus Reckoning, August 1958 Bulletin.
[2]April 1970 Bulletin, p. *4*, Nufut or "Nubbin."

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ONE SIMPLE TRANSMUTATION:

If a person weighs twelve stone and 7 (twelve-and-one-half stone) this would be the equal of 175 pounds avoirdupois. And if one Kaul were equal to 1-3/4 pounds (4/5 kilogram), then 12-1/2 stone may be said to equal some one hundred Kauls even. A Kaul is more nearly 1.76 pounds but 1-3/4 is good.

NAVINAUT FOR ALL---KNOT FOR TWO

Lawrence Boythorn

No longer shall we be required to measure our rate of travel in air or on water it seems, by the knots of Sir Francis Drake's schooner or any other sailing ship. A duodecimal metric age is nearing.

In the article "Replacing Knots" (September 1967 Bulletin, p. *4*) we were told that one Navinaut is equal to a rate of 86.4 statute miles per hour. This is well enough for speedways and test tracks, but not for a pilot in the cockpit of a jetcraft. Let's fill him in, too.

If a rate of 86.4 statute miles per hour roughly equals 75 knots then one Navinaut might replace an estimated 75 knots in describing a rate of travel. That is to say 86.4 mph = 1.44 miles in 60 seconds = 1.20 miles per Moment (fifty seconds) = one aero mile per Moment = one Navinaut. It is fair to say that 1.2 Canadian miles = 6336 feet = one aeromile less 1/3000th part; but in estimating 2, 4, 6, or 8 navinauts one might ignore the inconspicuous and tiny fraction for a rough estimate. And each one-fourth navinaut might be said to equal 18-3/4 former, outdated knots.

A perspicacious Charles S. Bagley was the first duodecimalist to define a [1]Navinaut as the equal of one edomo part of one great circle of the earth ---also said to be the equal of Essig's *kilomètre duodécimal* or one Nante or Aeromile---but might we not usurp its well-chosen spelling to indicate a *rate of travel* equal to one aeromile or one nante or one duodecimal kilometer PER MOMENT?

Then 150 knots equal two Navinauts; 300 knots equal perhaps four Navinauts; and five Navinauts might equal some 375 knots (432 statute miles per hour). These are inexact but fair comparisons. A Navinaut of course will be precise and exact as to both time and distance---the latter defined in wavelengths of Kr. 86 light as the 18th century

meter is today by order of the International Conference on Measures and Weights.

Henceforth you might hear your friendly Captain reporting that we are now cruising at five Navinauts and 36,000 ^{2}Nufut. When he does you will be able to confirm either 432 miles per hour or 375 knots and an altitude of 33,000 feet as of old and know that 33,000 feet equal 36,000 nufut or 9000 dometrons above sea level.

On land surfaces there are further pleasant uses for Navinauts. Driving in a motor car, this writer often cruises on gravel roads at the half-navinaut (between 40 and 45 MPH), on State or U.S. highways at the three-quarters navinaut (65 MPH), and on a U.S. Interstate highway (permitted in some states) at 7/8 navinaut (say 75 MPH). See Table for knots below. At 54 MPH we are doing 5/8 navinaut.

In cities and towns the rate of travel permitted is sometimes 1/3 navinaut (28 to 30 MPH)---lowered in passing school grounds to 1/4 navinaut (20 to 22 MPH). Imagine cruising on land, on water, in the air at the same understandable and comparable rate of travel. One ubiquitous, common rate of travel for all elements to replace the hodge-podge of kilometers, statute miles, and nautical miles.

Rough Comparison Table

Navinaut	Knots	Navinauts	Knots
1/4 = 21.6 MPH	= 18.75	2 = 172.8 MPH	= 150
1/3 = 28.8 MPH	= 25.00	3 = 259.2 MPH	= 225
1/2 = 43.2 MPH	= 37.50	4 = 345.6 MPH	= 300
2/3 = 57.6 MPH	= 50.00	5 = 432.0 MPH	= 375
3/4 = 64.8 MPH	= 56.25	6 = 518.4 MPH	= 450
7/8 = 75.6 MPH	= 65.60	7 = 604.8 MPH	= 525
1 = 86.4 MPH	= 75.00	8 = 691.2 MPH	= 600

The next time you are driving an automobile, try estimating your rate of travel first by miles per

(concluded on page two.)

INTELLIGENCE ITEMS:

The New York Times, as quoted in the July 1970 Readers' Digest, p. 12, states that "A high-speed transit system, running 14.4 miles between downtown Philadelphia and suburban Lindenwold, New Jersey, in 22 minutes, is regularly drawing more than 40 percent of its passengers from people who formerly drove to work. Trains run every four minutes during rush hours. The maximum fare is 60 cents one way."

Two things are unique about that item: The run of 14.4 miles (actually 144 edons, or duodecimal hectometers if we borrow a suggestion of the late M. Jean Essig) might be said to be the equal of one dozen duodecimal kilometers, nantes, or aeromiles precisely; and the one-way fare is none other than *five* suggested metric-money dimes (each dime having the value of a dozen U. S. pennies).

Metric money would SEEM to reduce the fare, and dozenal metric dimensions would equate the whole trip with *10* aeromiles.

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According to Seattle AP dispatch 4 Feb 1973, the first joint U.S.-Russian study of the arctic ice cap began last week. The Coast Guard icebreaker *Staten Island* left Seattle to study the ice cap which scientists say holds the key to better weather forecasting. The *Staten Island*, we are told, is a 5,250-ton ship, equal to 4763 metric tons, or *1ℰℰ* "domikals". That places its tonnage just below the *200* (two-gross) domikal class. One single kal or 4/5 kilogram or 1-3/4 pounds avoirdupois are all quite equal to each other (see April 1971 Bulletin, p. *21*, for other travels of *Staten Island*).

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East Kilbride, Scotland (AP) 28 August 1971 "The Church of Scotland has built four new churches in

East Kilbride, including one of hexagonal (six-side) shape that seats 600 and has a central Communion table."

Apparently the Church of Scotland in East Kilbride knows some things about the future which are hidden from the eyes of those advisers to the governments of the United Kingdom and of the United States of America.

What a pity that "farsighted" is not one of the adjectives applicable to some of our scientists in this day.

But all the more glory to scientists in the Bell Laboratories, Inc., whose symbol for 9 plus one is a beautiful, printed, hexagonal ✻ snowflake, which dozenalists tend to call "dek". A horizontal line across the waist of the Roman numeral X tells us that it must NEVER be called ten throughout our lifetime. Call it ten and a Romanoff scientist is apt to write down 10 and dial a wrong number. Do not risk it on any one. Use "dek".

-o-0-o-

Juneau, Alaska, in area, is the largest city in the U.S.A. It is said to cover 3,108 square miles ---this is none other than 310,800 duodecimal hectares. Dozenally, this size is equal to *12Ɛ ϗ40* modern duodecimal hectares or "gardens" of land or square Edons; and would also equal one two el dek, dit[1] four *(12Ɛϗ;4)* of Essig's *kilomètres duodécimaux carré*.

These latter, some day, might be designated Congressional Fields after the congress defines such field as the equal of one square Nante or a square Aeromile (the square of a dimension of *750 000 000* wavelengths of orange-red krypton 86 light, if you would aim at a target of exactness).

[1]Suggested by T. Pendlebury to describe a dozenal numeral as well as the fraction which follows dit.

"PYTHAGOREAN TRIPLETS"

Shaun Ferguson,
69 Scotby Road,
Carlisle CA4 8BG,
Telephone 0228 72 430.

Choose any odd number; multiply it by its half; take this result and form two numbers, one half more than it, one half less; the odd number and these two resulting numbers form a triplet.

E.g. take *Ɛ:* $Ɛ \times Ɛ/2 = 50;6$

$50;6 + 0;6 = 51$

$50;6 - 0;6 = 50$

The triplet is *Ɛ, 50, 51.*

We can also choose an even number to start with. In this case we take half the number and square it; take the result and add one, and also take the result and subtract one.

E.g. take *8:* $(8/2)^2 = (4)^2 = 14$

$14 + 1 = 15$

$14 - 1 = 13$

The triplet is *8, 13, 15.*

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MEMO to members:

All members of the Duodecimal Society of America should be in possession now of the DUODECIMAL REVIEWS Nos. 24, 25, 26, bearing dates of Winter 1970, Summer 1971, Winter 1971, Mr. Pendlebury's TGM System and Annex 1 thereto, and a single sheet depicting many of the number symbols of the world, all complimentary gifts of DSGB, in keeping with our exchange agreement. Look for more gems.

THE PRINCIPLE OF UNIFORMITY

By Grosvenor Bond

JOHN QUINCY ADAMS (later President of the United States of America) in 1821 as Secretary of State in a masterly report to the Senate and House thus characterized the ten-base metric system shortcomings:

". . . it has been proved that the principle of decimal divisions can be applied only with many qualifications to any general system of metrology; and that time, space, gravity and extensions inflexibly reject its sway. France after trying the new metrology in its most universal theoretical application has been compelled to renounce it for all the measures of astronomy, navigation, time, the circle, and the sphere; . . . a system of measures and weights which excludes all geography, astronomy, and navigation from its consideration, must be essentially defective in the principle of uniformity."

A diplomat, before rejecting, often says something nice; and Adams did just that. His flattering remark is often quoted today by meter advocates, completely out of context. A U.S. Secretary of Commerce (now resigned) ignored all of these defects and reported favorably to the Congress in 1971---a turnabout 150 years after Adams' outright rejection.

If official intelligence were as high today as in the time of Adams, no modern government would be expected to force the base-ten metric system on an independent American people.

Also defective in uniformity perhaps was the dozenal proposal by Essig to put time into the very pocket our ancestors centuries ago put their shillings---by whatever name identified across Europe. Ignoring the Julian Period day as a unit divisible into a dozen equal parts, it would have divided

the day into two dozen parts and these into twelve new periods of 5 minutes each, the 5-minute period into twelve parts of twenty-five seconds each, and so on down.

There was a foreboding similarity in that the same digits were selected to reckon up both shillings and hours (20), albeit these represented two tens in one system and two dozens in the other---- each double its own base!

In that system one week would equal *120/20* hours (under what name you please) or a dozen and two over two *(12/2)*days. Thus, a week became a fraction equivalent to fourteen days over two. Astronomers would be required to divide the total of hours by two dozen for the exact number of mean, tropical solar days, instead of merely moving the dozenal point one place to their left.

Avoiding this problem, Admiral G. Elbrow, R. N., in a book published in 1913 by P. S. King and Son, London, with a foreword by George Moores, F.S.S., urged the joining of two hours to create a "duor" (bi-heure). He suggested dividing the duor into a dozen equal parts, each equal to a ten-minute period or six hundred seconds of time. In turn, these would be divided into a dozen equal periods of fifty seconds each, which he described as "minettes" or little minutes.

Farsighted people in America (DSA in particular) were alerted to advantages of "duor", of the ten-minute period "temin", and the fifty-seconds "minette" (some call it a "moment"), and embraced all.

In keeping with a metric principle of uniformity we multiply almost everything so far as possible by successive positive or negative powers of base-twelve. Astronomers are dependent on the day primarily, and could embrace its dozenal parts quite advantageously, merely moving the point.

Twelve pence in a shilling and twelve shillings

in a pound (Aitken's Royal?) are sensible, yet the double of ten shillings was chosen (possibly as early as the time of Charlemagne). Now these are to be discontinued in their last stronghold in Europe, since they are neither the tenth nor twelfth part of a fundamental unit of money. *Old pence and shillings, the most efficient coins ever created by the mind of man, are being wasted.*

Two years after publishing his book "Douze Notre Dix Futur" (Twelve, Our Modern Ten), Dunod, Paris, 1955, M. Jean Essig was able to see this lack of uniformity, and quietly abandoned that scheme in favor of a day divided into twelve duors or bi-heures (May 1957 Bulletin, p. *7*, ℵ). At the same time he urged France to abandon her ten-base metre in favor of his *mètre duodécimal*, and the U. S. to move from their customary yard to the dozenal meter equal to some 44 inches---a universal duodecimal metre. In this proposal he was closer to the Jeffersonian architectural ideas than he then probably knew (Sept 1967 Bulletin, p. *25*).

-o-0-o-

The DSA seal shown above within an aurora sunburst might depict the face of a modern watch or clock.

DUODECIMAL LAND AREAS

Gower N. Euston

Is it possible that the French Commission to set up the metric system chose base-twelve originally, got frightened and reduced their sights to base-ten----and thereby scuttled one-half of the metric system's usefulness? Particularly in time, angle, money, navigation, communications.

Note how easy it is to visualize English square miles of land by employing "duodecimal hectares." What follows is none other than the classic French metric system employing the dozen base as urged by M. Jean Essig of France in 1955 for modern times.

We know that a U. S. Congressional Section measure of farm lands is defined as a square mile of 5280 feet on each side.

A "duodecimal hectare" (one square duodecimal hectometer) might be described as a square measuring 528 feet on each side (it is actually 1/3000th part greater). So one hundred duodecimal hectares could be said to contain one square mile snugly in base-ten counting.

The length of one duodecimal hectometer has been defined as exactly equal to *75 000 000* (seven-five bimo or seven dozen and five greatgross, great-gross) wavelengths of orange-red krypton 86 light.

If that number happens by any chance in the dozen base to equal some aliquot part of a great circle of the globe, we trust you will believe that it in no manner depends on present or future changes in measurement of any flabby girth of the earth. Nevertheless the coincidence can be a material aid to navigation, as we may see elsewhere.

If we today are given the approximate number of square miles comprising a town, township, shire, county, district, state or nation, and if we multiply that figure by one hundred (merely add two

zeroes), then the product might describe decimally that area in terms of duodecimal hectares---a size all of us in English speaking countries who drive any motor vehicle will immediately recognize---a one-tenth-mile squared, sometimes called a Garden of land.

Inversely we may convert duodecimal hectares into some percent of an English square mile, simply by moving the decimal point two places left.

Seven nations in the Near East are here compared by their areas in square miles and in duodecimal hectares simply by adding two zeroes to the number of square miles commonly employed today.

Nations	Decimal Square Miles		Square Dozenal Hectometers		Camps or kmd^2
Iraq	173,259	=	17,325,900	=	*59 766;90*
Israel	7,993	=	799,300	=	*3 266;84*
Jordan	34,820	=	3,482,000	=	*11 ᘔᘐ;68*
Lebanon	4,015	=	401,500	=	*1 744;24*
Saudi Arabia	870,000	=	87,000,000	=	*251 772;80*
Syria	72,234	=	7,223,400	=	*25 042;60*
U.A.R.	386,100	=	38,610,000	=	*10ᘔ 129;00*

Please note in the case of Lebanon (the smallest in area) that 401,500 hmd^2 by conversion to the dozenal base may be expressed as *174 424* hmd^2. By merely moving the dozenal point two places to our left, we find that there are *1 744;24* kmd^2 (square duodecimal kilometres) in all of Lebanon. The same method applies to each nation.

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The speed of light per Flash,
In Aeromiles, will score
Near two-seven-two greatgross,
Two gross, threedo-four.

272 234

-o-0-o-

RIDE, BERT, RIDE

(A page from a primary school reader)

Egbert Pardiggle

Once we measured distance by the mile. That was not so long ago. A land mile was equal to 5,280 feet. The Can-a´di-an one-tenth mile was the same distance as 528 feet----which was the distance now called the equal of one e´don, a new metric unit.

One edon is the smallest distance measured by your bicycle as you ride across country or along a bicycle path. It is measured on the o-dom´e-ter.

There are five days of school in a week. The Greek people today (as in olden times) call twice that many days "deka". So, we now call twice five "dek". Dek edons measured on Bert's bicycle are believed to be the equal of the Canadian mile.

When Bert has measured a dozen edons on the bicycle path, he has traveled a whole Ae´ro-mile. A Frenchman called this distance a *"kilomètre duodécimal."* Try as hard as you can to pronounce it as the French do and it will not sound the same as in France. Here we call it an aeromile.

When you have ridden your own bicycle a distance equal to one edon, think of this: If you raised a dozen to its fifth power, then that number of edons would be the equal of ONE great circle of the earth---248,832 edons in base-ten.

If you keep your bicycle oiled regularly, and if you replace worn out rubber with new, your bicycle might be able to travel as far as the equal of one great circle of the earth---and your odometer will be again showing 0000;0 as it did when brand new.

If more adults rode bicycles there would be less pollution of the air. As more people come to measure distance by edons, world unity might advance in every land, in the air, and at sea.

GOOD OLD DAYS---An Editorial.

In what follows, the real difference is between, perhaps, 1773 (in the happy coach days in both England and America) and 1973, a change of some two hundred years in both monetary terms and economic conditions. Nothing alive remains unchanged.

As described by Charles Dickens, three young, would-be barristers, erstwhile law clerks, having repaired to a dining-house (which its customers might call a slap-bang) in the heart of London, in Chancery Lane or perhaps near Old Square, Lincoln's Inn, proceeded to appease their appetites by taking on the following items at then prices, as reckoned up duodecimally by Bartholomew Smallweed still not fifteen years of age, in shillings and pence, in the presence of Polly, their waitress. Polly's tip was one penny per customer!

"Four veals and hams (with gravy, French beans) is three (shillings); and four potatoes is three and four (three shillings fourpenny); and one summer cabbage is three and six; and three marrow puddings is four and six; and six breads is five; and three Cheshires is five and three; and four pint-pots of half-and-half is six and three; and four small rums is eight and three; and three Pollys is eight and six. Eight and six from a half sovereign leaves eighteen pence out (change)."

Weep not---tomorrow could see abandonment of degrees and hours, minutes and seconds. If pence and pounds were non-metric, compound denominate numbers, the same may be said of angle and time as employed in the metric measurement world of today. Metric money can bring alive equivalents of shilling and pence, a duodecimal age invoking the principle of uniformity by excluding the score and indeed the half-sovereign of dek shillings.

We might replace the U.S. dollar and the English

(Concluded on page 16.)

MOTORCYCLE OPERATORS

(A Children's Song by Westbourn Grove)

SOLO: Howd'y do, motorcycle-0's,
Learning to count? Here's how it goes:
One two three four, all quick like that;
Five six seven eight, then nine comes pat.
In place of ten, which out we throw,
Say dek, then kel, and then one-oh!

VOICES: Say dek, then kel, and then one-oh!

SOLO: All ready, class, now let's begin
To count the motorcycles in
A pack, a pool, a motor inn.

VOICES: (all count slowly)

a one,	a two,	a three,	a four,
a five,	a six,	a seven,	an eight,
a nine,	a dek,	a kel,	one-oh!

SOLO: One dozen 'cycles tallied out,
And not one driven by a lout.
Now motorcycle-ridin' COUSIN
Let the countdown start abuzzin'.

VOICES: (slow start with rapid increase)

One-oh! Kel! Dek! Nine!
Eight! Seven! Six! Five!
Four! Three! Two! One!

Class all set for another run!

SOLO: Sing, Cousins Joseph, Josephine!
The more matured, or not thirteen;
One-one, one-two, one-three, one-four;
Upward we count, onward we roar!
And when we pass one-nine, good Joe---
Sing out one-dek, one-kel, two-oh!

VOICES: Sing out one-dek, one-kel, two-oh!

SOLO: All ready, class, continue in
The count of motorcycles in
A pack, a pool, a motor inn.

VOICES: (all count slowly)

One-one	one-two	one-three	one-four
One-five	one-six	one-seven	one-eight
One-nine	one-dek	one-kel	two-oh!

SOLO: Two dozen motorcycles gone,
While others have begun to spawn.
Now motorcycle-ridin' COUSIN
Let the countdown start abuzzin'.

VOICES: (slow start with rapid increase)

Two-oh! One-kel! One-dek! One-nine!
One-eight! One-seven! One-six! One-five!
One-four! One-three! One-two! One-one!

Class all set for another run!

A FABLE, PERHAPS, BUT HISTORY IS SILENT

John Jarndyce

Base-six symbols in Asia might once have been 0, 1, 2, 3, 4, 5, 10 (one zero), 11 (one-one), etc., in times lost to history by erosion of records, if we assume anyone was acquainted with place values.

The Arabs employed a small square for their own zero, but something tells us that others must have enjoyed a circle for zero and much earlier than Arabs or Hindus---in fact before the Greeks moved from base-eight to base-ten notation possibly. It was indeed found in the Devanagari, Tibetan, Bengalese, and Siamese cultures.

In moving from base-six to base-eight those symbols might have been changed to 0, 1, 2, 3, 4, 5, b, 7, 10 (one zero), 11 (one-one), etc. Thus, the new six was created from the old circle with the one placed at the upper left and attached to the circle itself, both occupying one space.

And in creating the 7 symbol (in base-six, 11 of course would be the equal of 7 cows) we might note that one of the ones remained nearly upright and the other became a horizontal one attached to the upright one to look like a 7, a simple reoriented one-one relationship retaining the old material. The Bell Laboratories could not have done better in retaining original parts.

We move to less surmise and more supportable yet still presumption in that era when our ancestors changed from base-eight to base-ten. For instance today we find ourselves using 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (one zero), 11 (one-one), etc. Please note that eight is now represented by two circles, arranged vertically one above the other, quite vividly saying "this is where you were wont to commence as at zero again, so here are two zeroes."

And the new "nine" symbol is the old circle with the one attached at the lower right. We know it was a revision of an older symbol since it became by its very name "new" in base-ten. If that isn't candid and forthright history, what is?

When the Greeks in their most ancient times were indicating that value and even perhaps using their own alphabetical symbols for numerals, they translated that word into their own tongue as nea, or ennea (nine), which is their identical word "new".

Later the pre-Romans, translating ennea into the Etruscan tongue (and although using what we today call Roman numerals) also called it new (novem), the very quantity we call nine.

Does it now seem so unlikely that in moving from base-ten to base-twelve, our children might find themselves employing 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, d, k, 10 (one zero), 11 (one-one), etc.? Ten is there represented by another rearrangement of 10, the old circle with the one attached at the right upper part of it. Call it "dek" or "dee" if you will, but never "ten." Until smoothed out it may initially perhaps look like the d.

And the new symbol "el" or "kel" (no longer described as eleven) is the old one-one with the second one broken in half, each half attached to the first one near its middle and slanting thirty to forty-five degrees to our right from the perpendicular one. It might look more or less like a lower case k. If you will again place in a straight line the two halves of the second one and keep it adjacent to the first one, it again looks like 11.

Never is "k" to be called eleven---call it "kel" or "el", but at no time eleven. It is an improved symbol for the old quantity, and if you say "kel", surely I will write it down as k. Otherwise maybe not.

Please note in this suggested forecast that one, four, seven and kel are composed of straight lines until someone attempts to pretty them up or make

them appear ornate. And the two and three, five and six, and eight, nine and dek are cursive or composed of curves with only a scratch of straight line here or there.

Also note that the symbol d was used by the English people, and many continental nations, to indicate penny or pence (originally denarius) for not less than a millenium. Then it was displaced only a few years ago under an act of the British Parliament by the p to indicate the new penny. Accordingly d is now an orphan and quite footloose so far as coinage is concerned. Adoption of the d symbol by a world culture of dozenists to indicate "dek" or a dozen less two is not only possible but probable, not excluding the English who are logically using the p for their pence today.

If the alphabetical symbol d could be employed in Europe for more than a thousand years to suggest the size of a coin without confusing other sciences, perhaps its use hereafter to represent a dozen less two will produce a minimum of dissent.

Neither the d nor k is the brainchild of this writer. They were first brought to the attention of THE DUODECIMAL SOCIETY OF AMERICA by the late Kay Humphrey, a Winnetka (Illinois) banker and the able Treasurer of DSA. He is said to have cashed a bank cheque once for $1.31, shown as $0;dk and spelled out as "Only dekkel cents."

-o-0-o-

GOOD OLD DAYS. (Continued from page 12).

pound sterling by a Metric Dollar (English Royal?) containing a dozen 12¢ pieces---each perhaps the size and material of the present American dime or the Classic English shilling. The situation might appear hopeless but is not serious. The darkest duor is just before dawn. H.C.C.

THREE MARKETS

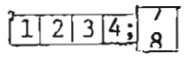
H. C. Churchman

A Capri 5-place bicycle speedometer and odometer counting up to 9999.9 is now manufactured and sold to the public. A bicycle odometer alone may be purchased at retail for about $2.

Let us suppose each drum, instead of containing the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, were to be recast so as to turn one-twelfth of a circle each time it is moved instead of one-tenth and to contain the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, d, k, 0. It is suggested that d be named "dek", that k be called "kel", and that as now 0 be called "zero". Thus no symbol is altered---each is identified by its initial letter or digit name itself.

The rightmost of these drums is geared to move one-twelfth of a turn every one-tenth statute mile (528 feet) traveled by a bicycle (which distance may now be named one "Edon" ---think of the Garden of Eden). And the next to rightmost-place numeral counts each "Aeromile", or "duodecimal kilometre" if you prefer M. Jean Essig's description (the equal of a dozen Canadian one-tenth statute miles or one dozen Edons).

Each third rightmost numeral registers dozens of aeromiles. For instance, 40;0 equals four-dozen aeromiles. So, 500;0 then registers five-gross aeromiles; and 6000;0 registers six greatgross aeromiles or precisely half the distance around the globe on which we live. This odometer, in fact, if you use your bicycle that much will indicate when you have ridden it a distance equal to ONE great circle of the earth.

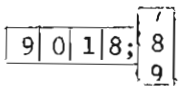


Might we not teach school children on bicycles how to measure distances on land which are the equal of like units at sea and in the air? A brilliant Frenchman, himself, M. Jean Essig advanced a "kilomètre duodécimal" as the new mile at sea, an

air mile, and very same unit in measuring farm and city distances. Awake, America! Or die in our sleep.

Astronomers' Julian Days

The very same dozenal-counting odometer above described may be mounted in a plastic box with a special winding clock spring or electric motor geared to cause the rightmost digit drum to move one complete turn every 24 hours (as does an electric timer clock) and to count Julian Day duodecimal numbers beyond the next 25,800 years, if we remember every 56 years to manually change the sum of the three numerals on left of these five places so as to increase total by one unit*. Note that this manual increase is made only each time the Julian Day calendar registers 0000;0----every 20,736 days.



Universal Time Metric Moments

And that very same dozenal-counting odometer described above may be mounted in a suitable plastic box with special winding clock spring or electric motor geared to cause the rightmost digit drum to move one complete turn every 4-1/6 seconds of time to tell the precise metric FLASH of any certain Universal-Time (or Julian Day) clock. Each Moment is the equal of fifty seconds of time, scientifically determined---one-twentieth kilosecond.

Not alone will this quick-glance clock tell us the Duor (two-hour period of time), Reste (ten minutes of time or one per gross part of a day), Moment (fifty seconds of time), BUT ALSO THE FLASH (4-1/6 seconds of time), AND THE DOT (25/72 part of one second of time).