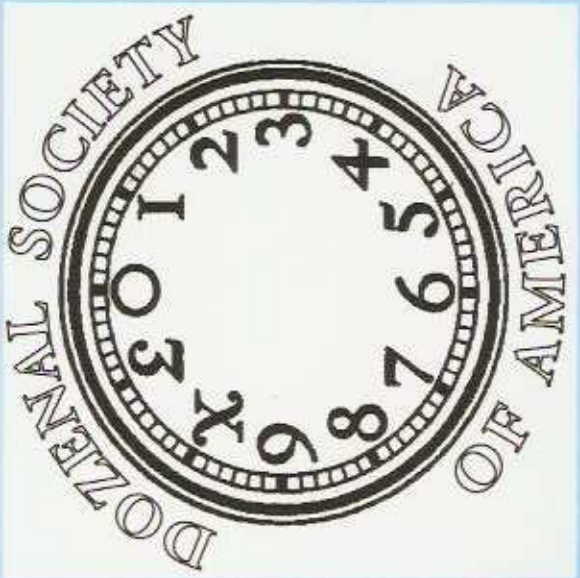
THE DUODECIMAL BULLETIN



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c/o Math Department
Nassau Community College
Garden City, LI, NY 11530-6793

FOUNDED 1160;(1944.)

= Annual Meeting: Oct. 2nd @ Bank Street College, NYC - See page 21; =

THE DOZENAL SOCIETY OF AMERICA

(Formerly: The Duodecimal Society of America)

is a voluntary, non profit, educational corporation, organized for the conduct of research and education of the public in the use of base twelve in numeration, mathematics, weights & measures, & other branches of pure & applied science.

Membership dues are $12 (US) for one calendar year. Student Membership is $3 (US) per year, and a life Membership is $144 (US).

The Duodecimal Bulletin is an official publication of the DOZENAL SOCIETY OF AMERICA, INC., % Math Department, Nassau Community College, Garden City, LI, NY 11530-6793.

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THE
DUODECIMAL BULLETIN

Whole Number Eight Dozen Dek

Volume Four Dozen Five

Number 1;

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DSA

FOUNDED 1160; (1944.)

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The DSA does NOT endorse any particular symbols for the digits ten and eleven. For uniformity in publications we use Cap X with strikeout (ↄ) for ten and the octothorpe (#) for eleven. Whatever symbols are used, the numbers commonly called "ten", "eleven" and "twelve" are"dek", "el" and "do" (pronounced *dough*) in the duodecimal system. When it is not clear from the context whether a numeral is a decimal or a dozenal, we use a period as a unit point for base ten and a semi-colon, or Humphrey point, as a unit point for base twelve. Thus ½ = 0.5 = 0;6

PRESIDENT'S MESSAGE

As the year 11#0; (2004.) commences, The Duodecimal Society proudly commemorates its five dozenth anniversary. Since 1160;(1944), the society has espoused the advantages of base twelve in counting and pure and applied science. In addition the year 11#1; (2005.) marks another five dozenth celebration, the anniversary of the 1st issue of this *Bulletin*. (See page 1dozen 5.)

A Twofold Celebration

A number of activities are planned for these celebrations. Firstly, The *Metropolitan New York Section of the Mathematical Association of America (MAA)* will host its Sixty Third Annual Meeting on Sunday, May 2, 2004 at Nassau Community College in Garden City, LI, NY. Our membership is well versed in the partnership that exists between Nassau Community College and The Duodecimal Society. NCC houses our dozenal library and since 1192;(1982.), the majority of our Annual Meetings have taken place at this location. Your President will speak on duodecimals at one of the Contributed Paper Sessions at our MAA Meeting. Readers may also be interested is some of the following:

The *NJ Section of MAA* will be hosting its Regional Meetings at Rutgers, New Brunswick on Saturday, March 27, 2004 and at the College of New Jersey (Formerly Trenton State College) on Saturday, November 13, 2004.

The *Texas Instruments Regional Conference* at Rockville Centre on October 15-16

Association of Mathematics Teachers of NJ Annual Meeting on October 14-15 in Somerset, NJ.

My proposal to speak at the *National Council of Teachers of Mathematics* Regional Meeting in Baltimore on October 14-16 at which I will be speaking on *Number Theory and the TI-89 — Perfect Together*
In addition, our *Bulletin* plans to reprint a number of the best articles published in previous *Bulletins* as part of our four Anniversary Issues. (See page 1Dozen 2.) The coming Annual Meeting is tentatively scheduled for Bank Street College in New York City, the city which hosted the first meeting of our Society five dozen years ago at the Gramercy Park Hotel.

The Bank Street College of Education (where our Secretary, Christina K. D'Aiello is employed as the Network Manager for their computer education programs) is a unique experience and is connected with Columbia University.

Bank Street offers Elementary School and Graduate School Programs of distinction. The plan is to have several speakers from our membership and hopefully participation by the Bank Street faculty as well. Our WEBSITE is being given a facelift and we expect much profitable work in this regard. Exciting technology dealing with Dozenal calculators is likewise in the offing. Our goal is to make our five dozenth anniversaries most memorable and we cordially invite your participation.

Jay L. Schiffman ●

□ □ □

RIP MARY NEWHALL

The wife of former Board Chair Fred Newhall, Mary[1], was an ardent supporter of the DSA. Life member number 321; she attended many meetings of our Society and gave encouragement to all with whom she came in contact.

Her daughter Wendy sent us the following:

Dear Dozenal Society members (Alice Berridge and the Zirkels),

I'm so sorry to inform you that my mother passed away this past April. [2003] I think I remember meeting the Zirkels many years ago and I'm so sorry that I didn't write sooner. I just recently received your letter Alice. I don't believe that we ever met but please tell any other members of the society about my mothers death. She must have appreciated your friendship and her friendship with the Zirkels to have stayed in touch all these years.

The last time my Mother was well was last Thanksgiving [11/28/2002] and she was actually beaming - she looked so happy to have the whole family together. Three weeks later [about 12/19/02] she had a very bad stoke that left her bedridden, unable to swallow or to speak. We kept hoping she would recover but she never got better and eventually died on [Good Friday] of this year. [4/18/2003] I know my father would have been so excited about your web-site.

Wishing you all well and continued interest in your mathematical endeavors.
Sincerely,
[Wendy Newhall] ●

[1] See page 1Dozen 6 for a photo of Mary and her husband Fred

A DOZENAL CALCULATOR FOR YOUR COMPUTER

by Gene Zirkel

One of our newest members, Michael Punter of England, has submitted a wonderful calculator for a computer. Altho it is written in C++, one does not need to know that programming language nor does one need to have a copy of it installed on a computer.

Not only does this calculator work in both dozens and decimals, it easily switches back and forth between the two. In fact if one adds "12 + 13" in decimals and then switches to dozenals before entering "=" the result is duodecimal 21; and similarly if one adds "10 + 10" in dozenals and then switches to decimals before entering "=" the result will be decimal 24.

Unlike some simpler calculators, Michael's device includes logs and trig functions. The logs work in base *10*, whether that symbol represents either a dozen or a ten. The trig works with four different angular measures: degrees, radians, a full circle and a semicircle. This latter unit is from Tom Pendlebury's excellent work, *TGM: a Coherent Dozenal Metrology Based on Time, Gravity & Mass* wherein *one zeniPi* (1 twelfth of π) is equivalent to 13; (15.) degrees.

A picture of the calculator as it appears on a computer screen is found on the next page.

The upper left corner reads **Zen** when calculator is in normal Dozenal mode and **Dec** when calculator is in Decimal mode.

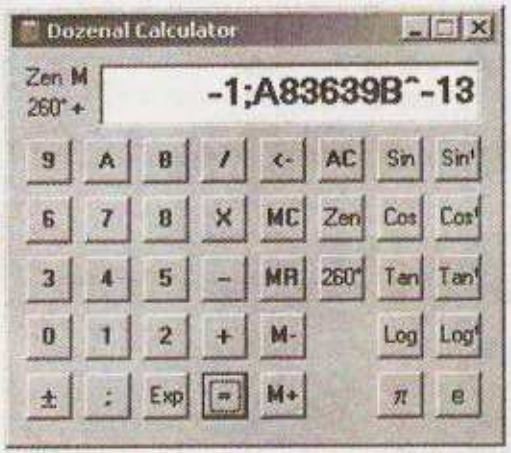
To the right of this the calculator displays an **M** if a non zero value is in memory & is blank otherwise.

Below left the calculator shows which of four possible modes of angle measure the trig functions are using. *See below, column 6* & end note 1.

Finally the current operation /, x, -, or + (if any) is displayed. Operations may be repeated using the last value entered. Thus "4 x 2 x" displays 8 and entering a third "x" produces 14; (16.). This feature allows for exponentiation with integral exponents. For example 2^3 can be found by entering "AC 2 x x x =", and 2^{-3} can be found by entering "AC 1 / 2 / / / =".

Non-integral exponentiation can be accomplished using logs. Thus $9^{½}$ = Anti

log(½ log 9) which can be found by keying "9 log / 2 = anti log" which yields 3. Similarly, $14;^{½}$ = Anti log(-½ log 14;) is evaluated via "14 log / 2 ± = anti log", yielding 0;3 or ¼.



The display shows up to 12; [14.] digits in ordinary usage or 8 significant digits using scientific notation as illustrated. To the left of the display 4 items may be shown:

In addition to the numeric keys 0 thru 9, Michael uses A for dek (ℋ) and B for el (#). This is standard usage for computer programmers who are accustomed to use A thru F for the digits dek thru do-three. We also have keys for the four fundamental operations: +, -, x and /. Other keys are:

Column 1
± change sign toggle key

Column 2
A dek, ℋ when in normal Dozenal mode.
; (or .) fraction point. See end note 2.

Column 3
B el, # when in normal Dozenal mode.
Exp (^) Is used to enter very large or very small numbers in *scientific notation*, in particular numbers which cannot fit into the display of 12; digits. E.g. 3;412^18; which would be 341 200 000 000 000 000 000. Any results from calculations which cannot be displayed in the ordinary way are displayed in scientific notation. In dozenals "3 Exp 1 ± =" yields $3 \times 10^{-1} = 0;3 = {}^{3}/_{10;} = ¼$. In decimals it gives $0.3 = {}^{3}/_{10}$. "5 Exp 6" yields 5(1 000 000) or 5,000,000.

Column 4
= or Enter
Column 5
<- Backspace deletes last key entered

MC Clear memory
MR Recall memory
— Subtract display from Memory
M+ Add display to Memory

Column 6
AC Clears display & stored operations (but NOT memory)
Dec (or **Zen**) Toggles from dozenals to *Dec*imals (or from decimals to Doz*en*als).
1° (TGM, 260;°[360.°] or **Rad**) Cycles thru the four angular measures for trig functions. See end notes 1 & 3.

Column 7
3 Trig functions which depend upon the angular measure displayed at the upper left. See end notes 3 & 5.
Log Logarithmic base do (10;) or dek (10.) depending upon the current mode. See end notes 4 & 5.

Column 8
3 Inverse trig functions depend upon angular measure currently in use. See end note 3 & 5.
Log^{-1} Inverse log function depends upon current mode. See end notes 4 & 5.

In addition, Michael has added the feature that one can use the keyboard instead of a mouse. Each key on the calculator has a corresponding key or keys on the keyboard. Note that keyboard entries may be upper or lower case letters. See the table on the next page.

Furthermore the letter H will toggle Hints on and off. When the Hints are on placing the cursor on a key will show you the keyboard equivalent. For example placing the cursor over the *M+* key will show that *P* is the keyboard equivalent for that key.

A nice touch is the ability to copy a value to or paste a value from the clipboard. Simply right click the mouse for a popup menu over the display area.

We are greatly appreciative of Michael's fine work. We suggested many cosmetic changes and he very graciously acceded to our several requests.

If you would like a copy of this excellent tool, request a copy from him at:
michael.punter@talk21.com

Calculator Key	Keyboard Key(s)
Numeric keys	0 - 9, A, B
Fraction points	; or .
Scientific Notation	^ or I
Change sign (+/-)	_ or w (for switch sign)
Equals	= or 'Enter'
Add	+ or d (for add)
Subtract	-
Multiply	* or X
Divide	/
Delete last digit input <-	Backspace
Clear all	Esc
Memory Clear	E (for Erase)
Memory Recall	R
Memory - Subtract	M (for Minus)
Memory + Plus	P
Log	L
Anti Log	Ctrl-L
Sin	S
Arcsin	Ctrl-S
Cos	C
Arccos	Ctrl-C
Tan	T
Arctan	Ctrl-T
π	Ctrl-P
e	Ctrl-E
Toggle between Number bases	N
Cycle thru Four angular measures	F
Toggle Hints on or off	H

End Notes

1. A. 1° angular measure 1 unit = 1 circle = 260;° [360.°].
Using 1° to find the Sin 26; [30.] degrees divide the degrees by 260; [360.]. In dozenals enter "26 / 260 = Sin". To change the results of an inverse function to degrees multiply by 260; (360.).

B. TGM angular measure 1 unit = 130; [180.] degrees.
Using TGM to find the Sin 26; [30.] degrees divide the degrees by 130; [180.]. Enter "26 / 130 = Sin". To change the results of an inverse function to degrees

multiply by 130; [180.].

C. Using angular measure 260;°[360.°] to find the Sin 26; [30.] simply enter "26; [30.] Sin".

D. Using Radians one multiplies Degrees by π/130; (180.). For example the to obtain Sin 26; [30.] enter "26 x π / 130 = Sin". To change the results of an inverse function to degrees multiply by 130;/π

Angular Measure	One Unit	Arcsin ½
1°	260;° (360.°)	1/10; (1/12.) = 0;1 (0.083333...)
TGM	130;° (180.°)	1/6 = 0;2 (0.1666...)
260;°(360.°)	1°	26;° (30.°)
Rad	1 Radian	π/6 ≈ 0;634941... (0.523598...)

2. Shows the correct fraction point depending on the current mode.

3. Note: Trig functions having a value of zero are sometimes approximated by very small numbers such as the one displayed in the figure above. Note that
-1.A83639B^-13; = -0.000 000 000 000 001 A83 639 B Similarly, undefined trig functions (sometimes denoted by ∞) may be given as very large numbers.

4. Do not confuse:
A. the base (b) of a logarithm ($\log_b$) with
B. the base (or radix) or a numbering system, i.e. 1 dozen or dek.
In the dozenal base $\log_{10;}$ differs from $\log_{\text{Ж};}$, while in decimals $\log_{12.}$ differs from $\log_{10.}$ This calculator uses only $\log_{10;}$ [$\log_{12.}$] when in dozenal mode & only $\log_{10.}$ [$\log_{\text{Ж};}$] when in decimal mode. To find the natural log of a number n, (that is ln n or $\log_e$ n) divide $\log_{10}$ n by $\log_{10}$ e.

5. The functions are used in *reverse polish notation*. That is, to find the Sin of 3 one enters "3 Sin =". ✱

AN INTERVIEW WITH ROB ROY

by Jean Kelly

"There are some who think that twelve would be a better base."

With these dozen words Mrs. Fipps started her teenage math student on the path to a lifetime interest in dozenals.

Rob Roy McPherson (aka Robert Royal McPherson) of Gainesville Florida related that he hadn't even known what radix or base meant when, in answer to a question, his Trig teacher explained the idea of number bases to him. But, he said, her comments resonated within him. It was an "Aha!" moment for him, exposing the big lie of the awkward decimal metric system.

Rob later attended the University of Florida in Gainesville which, fortunately for our Society, had a wonderful library. He found J. Halcro Johnson's wonderful book, *Reverse Notation,* and F. Emerson Andrews, *New Numbers* there. In the latter he discovered the existence of the Duodecimal Society of America, as we were then called, and the rest - as they say - is history.

At that time Aspirants for membership in the DSA were required to pass four exams to demonstrate their proficiency in dozenal arithmetic. After passing only 2 of the tests, and as a result of a paper he wrote, Rob was advanced to Full Membership and became member number 4#. Less than one half dozen living members have numbers preceding 4#. (See page 1 Dozen 5.) Our hats go off to all of these early dodekaphiles whose efforts make our young Society what is today.

After obtaining his BEE degree from Florida State, and earning a Masters in Electrical Engineering from MIT he went on to complete some advanced graduate work.

In 1383;(1971.) Rob was elected to the Board of Directors of our Society, a position he still holds a the age of 68; (80.).

Founder of the BASE TWELVE NUMERALS LABORATORY

Rob is the founder of the BASE TWELVE NUMERALS LABORATORY. One of his aims is to get people to "actually use" dozenal numerals. For example, he was able to obtain and then successfully cash a money order using duodecimal numerals. This feat was written up in the *Gainesville Sun* (12/27/69).

On the Golden Anniversary of his graduation from FSU the University of Florida

National Alumni Association honored him with a citation. Rob convinced them to indicate the year of his graduation as 1160; (Here is a challenge for our younger readers: When did Rob graduate?)

Each time he succeeds in these efforts he has, in effect, not only taught the several people involved how to use base twelve notation, but also he has convinced them to "actually use" it.

I found Rob to be a man of many interests. For example:

At one point in our conversation the need for a calculation arose. Rob reached into his shirt pocket and extracted a small 2 inch by 3 inch calculator. It was a homemade abacus!

At one time the DSA promoted the use of an especially designed script ℵ for the numeral dek, and this was used in some of our literature. Rob's sharp eye spotted the fact that in a few places it was printed upside down. No one else had spotted this error.

He pointed out that the asterisk [*] and the octothorpe [#] which we use for dek and el appear on many calculation machines. Not as numerals, however. Instead they stand for subtotal and non-add respectively.

I thoroughly enjoyed my face to face meeting with Rob, who had been only a voice on the fone or the author of a letter in the past. The time flew by unnoticed when I suddenly realized we had spent 2 very enjoyable hours together. ✹

O O

RIP Steven Thoburn
Metric Martyr

It is with great regret that we report the passing away of metric martyr trader Steven Thoburn. Steve died 6am, Sunday March 14th, 2004.

A short tribute has been made on BWMA's homepage:
http://www.bwmaonline.com/index.html

The above was received just as we were going to press. Our next issue will contain a tribute to Steve. See " 'Metric Martyr' Loses Historic Case" in this *Bulletin* (v42; n 2; pp4 to 9; 11ℵ9;(2001.) for more information. ✹

Some of our Story

by Professor Gene Zirkel

Approximately 6 dozen years ago a young man who worked for a foundation discovered duodecimals (as many before him had done also). His wife was not impressed. The man was **F. Emerson Andrews** author of magazine articles and children's books among other things.

F. Emerson Andrews

He penned an article about dozenals and sent it to various magazines which had published his writings previously. All of them rejected it. Desperate, he sent it to the *Atlantic Monthly*, an unlikely periodical for an article about mathematics.

In October of 1934 they published "New Numbers" and, unknown to Andrews, the seeds of our Society were planted. As a result of his article several people wrote to him. Andrews replied and a few of them continued the correspondence.

Very soon letters were passed from one to another in a round robin pattern. One of the group, **Ralph Beard**, was an executive with Bell Telephone. One day, "Whiskers" (as he often signed his letters) humorously referred to their little group as the "Dozenal Society of America" and the seeds began to germinate.

Ralph Beard

When the group became serious about a formal organization Ralph wrote the Constitutions and By Laws and in 1944 they formally incorporated our Society as a non profit educational group. The five directors were Andrews and Beard along with **George S. Terry, F. Howard Seely**, and **F. Morton Smith**. Terry was Chairman of the Board, Andrews was President, Seely was the Vice President, Ralph was Treasurer and Smith was a Director of our fledgling Society.

A sixth dodekaphile, **John Benbow**, died in February of that year. Within 3 years time first Smith and then Seely also passed away.

In order to get our Society off the ground Terry donated $5,000 (*that's 1944 dollars!*) with the remark that if you spend all this and go broke then it

[Continued on page 1 Dozen 6]

EGGSACTLY A DOZEN[1]

A Simple Approach to Duodecimal Counting

Reprinted from 42;26;1; 1191;(1981.)

by Prof. James Malone, NCC

With the advent of the computer, numeration systems with bases other than ten have become more than just a "fill-in" topic. Rather they are a matter to be examined with care, not only by those entering the computer field but also by those of us who have just a passing interest in the computer because of its influence on so many facets of our lives.

Jim & Mary Malone

To introduce the fundamental ideas of numeration systems I have come across a presentation using the duodecimal system that students seem to find interesting and easy to grasp. I'd like to share it with you, making no claims to originality. Here is the "story" I tell:

Many years ago, I was traffic manager for one of the largest wholesale egg dealers in the Northeast United States. My job consisted mainly in seeing to it that each delivery truck that left our depot was directed correctly and was loaded with sufficient eggs. Each deliverer carried with him the order forms which had been picked up the previous afternoon by our salesmen. Since our deliveries were made between 12 midnight and 6 a.m., these orders had to be most exact; the store managers had little chance to see the driver and even if they did there were no extra eggs on the truck to increase an order.

After some months of observation, I decided that order forms need not be picked up ahead of time but could be left taped on the doors of those places receiving deliveries. The drivers and I were able to estimate, quite accurately, the number of eggs each delivery would need and hence the total number of eggs each driver would need to carry.

[1] A Classic reprinted from the Fall 1981 issue

Our order form had the following configuration:

CRATES	GROSSES	DOZENS	EGGS

wherein twelve eggs equals one dozen, twelve dozen equal one gross and twelve gross equal one crate. So a supermarket might leave an order blank which would look like:

CRATES	GROSSES	DOZENS	EGGS
3	4	0	0

which calls for a delivery of 5760 eggs. Because the business was owned by the same family for three generations, there were a few customers who were accorded, the privilege of home delivery. Many of these were elderly and their orders were small. One of these might be:

CRATES	GROSSES	DOZENS	EGGS
		1	4

which calls for a delivery of sixteen eggs.

Wanting to simplify our systems, I decided to eliminate the order form completely and have each customer simply tape a slip of paper on his door and on the paper write a four digit number. The digit furthest right would tell the driver how many loose eggs he should leave, the digit to the left-indicated the numbers of dozens and so on; our first order would appear as: 3400 and our second as 0014. This worked well until at one of our private home customers the driver left more than three hundred eggs! The customer was irate, the driver defensive and I was confused.

Looking at the order made everything clear. Here is what was taped to the door: 00210. The customer wanted two dozen and ten loose eggs. The driver, very correctly, interpreted the order as no loose eggs, one dozen and two gross. Something had to be done!

The problem was created by the occasional need to use ten and eleven. So we, the management and I, invented symbols to represent these numbers when they were needed. We chose ✳ to represent ten and # to represent eleven. Our

"problem" order would now be: 002↋. A supermarket order would now appear as: 12↋0. The store manager and my driver both understood this to mean an order of one crate, two gross, ten dozen and no loose eggs.

We had invented, so we thought, a new numeration system. Our "digits", with the corresponding decimal equivalents were:

1 2 3 4 5 6 7 8 9 ↋ #
1 2 3 4 5 6 7 8 9 10 11

To convert a "base twelve" numeral to the "base ten" numeral naming the same number we simply took each "base twelve" digit and multiplied it by its "base ten" value. The number represented by $2\#\text{↋}_{\text{twelve}}$ would be represented by 430ten. This was arrived at by multiplying 2 by 144, and the # (11) by 12. and the ↋ (10) by 1 and then adding the products.

To convert a "base ten" numeral to the "base twelve" numeral naming the same number was, for us, somewhat more complicated. We had to decide how many crates (1728 eggs) we could make up from our "base ten" representation of the number, then subtract this from the total number of eggs. From the eggs left, we would make up as many gross (144) as possible, from the remaining eggs as many dozens as possible and the number of eggs left gave us the rightmost digit. For instance, the number of eggs represented by 3300_{ten} is also represented by $1\text{↋}\#0_{\text{twelve}}$. This is arrived at by noting that one crate, (1728), can be formed from 3300 leaving 1572, ten (↋) gross can be formed leaving 132 to be accounted for: Next 132 make up eleven (#) dozens leaving (0) to be accounted for.

I was chagrined, some time later, to learn of a simple method for converting a base ten numeral to its equivalent in any other base.[2]

This "story" having been told, I introduce the name duodecimal, do some examples of conversion from one base to the other and finish up with some problems in addition and multiplication.

Introducing the students to number bases other than ten or twelve is now readily accomplished. They seem to now be able to "let go of" base ten and begin to "think" in any base that may be suggested. I have used this approach for many years and seldom have found a student not able to reach an understanding of number bases. ●

[2]See *Manual of the Dozen System*, p 1↋, DSA, NY

TWO ANNIVERSARIES!

During the next two years dodecaphiles will be celebrating two important anniversaries. Five dozen years ago in 11#0(1944.) five people officially incorporated the *Dozenal Society of America* (originally the *Duodecimal Society of America*) as a non profit educational association. We are grateful for their foresight.

George S. Terry

They included **George S. Terry**, the author of *Duodecimal Arithmetic*, **F. Emerson Andrews**, who started the whole thing with an article in the "Atlantic Monthly", **F. Howard Seely**, who chaired the Membership Committee, **Ralph H. Beard**, who wrote our first Constitutions and By-Laws and **F. Morton Smith** whose invaluable help played a key role in getting Terry's book published in 1156;(1938.) before the DSA even existed.

There efforts have paid off and over the years an additional 372;(518.) people have joined them.

That first *Bulletin* listed more than a dozen new members of our fledgling society including Life Fellow **Gene (Skip) Scifres** of Denver, former Board Member, long time Treasurer of our Society and the proud possessor of number 11; and Life Member **Dallas Lien** of Sun City, AZ who holds number 14;. Dallas wrote several articles for our *Bulletin*: "A Better Ratio for π" (v4; n3; p↋; 1164;[1948.]), "Units of Fine Measurement" (v6; n1; pp21-22; 1950), "The X Unit" (v6; n2; p42; 1166;[1950.]) and "Table of Equivalents for 1 Meter" (v6; n3; pp54-56; 1164;[1950.]).

Skip Scifres

Other early members with membership numbers less than a gross are: **Robert C Williamson** of Cincinnati OH, number 24; Life Member **Albert De Valve** of Anchorage AK, number 32; Life Member and current member of the Board of Directors, **Paul Adams** of Brooklyn, number 40; Fellow **Bob McPherson** of FL, one of our directors, number 4#; (See page ↋; for more about Rob), Life Fellow and Board Chair **Gene Zirkel** of Babylon NY, number 67; **Kenneth C McCulloch** of Manitoba Canada, number 6#; **Peter Andrews** number ↋9; of Pittsburgh PA, the son of our founder, F. Emerson Andrews and Life Member **Thomas Goodman** of Baltimore MD, number #6;.

Robert served on our Committee on the Slide Rule along with Skip and others. Al was elected to serve on our Nominating Committee in 1948 and Paul was elected to the Committee in the following year. Paul and his wife Camilla authored "Several Short Cuts" in this *Bulletin* (v6; n1; pp19-1ℋ; 1950). Skip, Dallas Al and Paul all served together on the Committee of Weights and Measures.

Peter Andrews, Fred & Mary Newhall

Ken submitted "The Twelve Winds and Their Portals: An Excerpt from the Book of Enoch" which was published here (v#; n1; p15; 116#;[1955.]). Peter is a former member of our Board of Directors, and the author of two articles which appeared in this *Bulletin*: "The Choice of Units of Measurement" (13; 2, 35-39; 1173;[1959.]) and "On Time and Distance" (14; 2; 2#-30; 1174;[1960.]).As a young student Tom wrote a research paper "The Duodecimal System" which was printed in this *Bulletin* (12; 2; 42-48; 4ℋ-4#; 1172; [1958.]).

In the just over one dozen names above we find ℋ Board members including 6 officers, 6 recipients of our Annual Award and 9 authors. A distinguished group!

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Some of Our Story Continued from p 1 Dozen 1

wasn't time for our endeavor. Clearly it was and Terry's endowment still exists..

Since membership was scattered they saw the need for a regular newsletter to replace their sporadic letters and so one year later they published the first issue of our *Duodecimal Bulletin* under the editorship of Ralph Beard, thus next year will be the 5 dozenth anniversary of this publication.

Our founders' foresight was on the mark for today our readers are located throughout the world in 31 states plus Canada and 8 other countries in 5 continents.

MAIL BAG

Shaun Ferguson writes from England re poles and perches...

Bulletin 89 received with thanks.

My comments on *English Measures*, page 8 of the Bulletin:
The English rod, pole or perch **is** 16.5ft (not **"said to be"**, but is).

As I think Arthur Whillock has mentioned before, the rod is also rated (and may have originated) as 15 Northern feet, each of 12 Northern inches*, these being 1.1 Imperial inches. The mile of 5280 feet is 320 rods or 8 furlongs each of 40 rods, and can also be rated 320 x 15 = 4800 Northen feet or 1600 Northern yards. This has suggested to some that the Northern yard is in fact a precursor of the metre.

and on page 9: The foot/inch which derives from the rod is the Northern foot and Northern inch, this latter being 1.1 Imperial inches or 27.94mm. The point about all this is that the rod was not divided into the (unlikely) 16.5 parts but that it was re-defined as 16.5 feet in terms of a smaller foot.

Best wishes,
Shaun

PS: The firkin varies in size, - a firkin of beer is given as 2538 cubic inches, while one of ale is given as 2256 cubic inches. "In London they compute but 8 gallons to the firkin of ale and 32 to the barrel; but in all other parts of England, for ale, strong beer and small (i.e. weak) beer, 34 gallons to the barrel and 8 and a half gallons to the firkin." -from "The Tutor's Assistant", York 1823.

1. "Northern inch" is 1.1 Imperial inches - one-twelfth of the old Northern foot. Petrie[2] and others mention the unit called a "wand" which would have been the Northern Yard of 3 Northern feet, 36 Northern inches (or 39.6 Imperial inches, slightly larger than the 39.37 inches of the metre). The present Imperial yard is the one of Henry VII (based on the Winchester yard of Henry I, restandardised under Henry VII and Edward I - see Berriman's book[3]).

2. W. M. Flinders Petrie, *Inductive Metrology* 1877. Contains evidence of the ancient use in England of the foot of 13.2in. (The really important book...)

3. A. E. Berriman, *Historical Metrology*, Dent, London, 1953

See also: *Ancient Weights and Measures*, 1926; *Wisdom of the Egyptians*, 1940; *Encyclopedia Britannica*, 14th ed, "Ancient Weights and Measures"

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Dear DSA, Since I am now 90 it is inconvenient to participate or be active. I hope Dozenal helped prevent the spread of Metric! Would it not now be better to spend a bigger % of time and effort on assuring that we shall never be again faced with the stupidity of Metrication? If aliens ever visited us they might have 4, 6 or even 7 digits/hand. Then they would have a base 8, 12 or even 14! The Brits need our help. **Charles F. Marschner** 9/19/03

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Our Congratulations and best wishes to **John Gardener** the new director of the *British Weights & Measures Association* who sent us the following:

Supporters, For those of you who have not yet heard, the Metric Martyr's appeal to the European Court of Human Rights has been disallowed, purportedly on grounds of inadmissibility.

The text of the decision is below. BWMA is disappointed but not discouraged. We will be considering the implications and formulating an appropriate strategy.
John

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Dear Sir,
I write to inform you that on 3 February 2004 the European Court of Human Rights, sitting as a Committee of three judges (M. Pellonpaa, President, S. Pavlovschi and L. Garlicki) pursuant to Article 27 of the Convention, decided under Article 28 of the Convention to declare the above inadmissible because it did not comply with the requirements set out in Articles 34 and 35 of the Convention.
In the light of all the material in its possession, and in so far as the matters complained of were within its competence, the Court found that they did not disclose any appearance of a violation of the rights and freedoms set out in the convention or its protocols.

This decision is final and not subject to any appeal to either the Court or any other body. You will therefore appreciate that the Registry will be unable to provide any further details about the Committee's deliberations or to conduct further correspondence relating to its decision in this case. You will receive no further documents from the Court concerning this case and, in accordance with the Court's instructions, the file will be destroyed one year after the despatch of this letter.

Yours faithfully,
For the Committee
F. Elens-Passos
Deputy Section Registrar

John also informs us that the *BWMA* has a new e-ddress: *bwma@email.com*

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From: "BWMA" <contact@bwmaOnline.com>
Subject: Metric Martyr press release regarding attempted seizure of scales
Date: Thursday, October 30, 2003 8:06 PM

Neil Herron of the Metric Martyrs Defence Fund has released this press release regarding today's events in Lewisham. Please note, in contrast to the Sunderland case, the police were called by traders rather than the TSOs. The story made the BBC TV London evening news. Keep an eye peeled for articles in tomorrow's papers (Oct 31st).

Traders in Lewisham High Street market have thwarted a mass attempt at scale seizures by Lewisham Council's Trading Standards Officers.
In what appeared to be a co-ordinated attempt to target a section of traders they met with massive resistance from traders and customers alike.
Calls from traders started coming in to the Metric Martyrs Office concerned and alarmed by the TSO's aggressive tactics, but traders and customers alike rallied and mounted a human defence. Police were called to prevent a breach of the peace. Traders were threatened with obstruction by TSO's.
Press and media were alerted and TV crews, photographers and reporters descended on the area. After a Mexican stand-off the five Trading Standards Officers retreated back to the Council Offices.
Police were reluctant to make any arrests. Traders say that they will defy trading standards and continue to serve their customers the way they want to be served, and will all stand firm together.

Notes
-There have been no other prosecutions since the five original Martyrs.
Their case is currently lodged at the European Court of Human Rights.
- because of the local authority Enforcement Concordat the council will have a duty of 'equitable enforcement' which means they would also have to prosecute supermarkets for Price Marking Orders 1999 offences (which some of the market traders were about to be charged with). ✹

MINUTES OF THE ANNUAL BOARD & MEMBERSHIP MEETINGS

Saturday, 4; October 11X# (October 4,2003)
Rowan University, Glassboro NJ

Attendance: Prof. Alice Berridge, Chris Harvey, Prof. Jay Schiffman, Prof. Gene Zirkel, Dr. Patricia Zirkel.

BOARD OF DIRECTORS MEETING

1. President Gene Zirkel convened the meeting at 11:15 A.M. The following Board members were present: Alice Berridge, Jay Schiffman, Chris Harvey and Gene Zirkel.

2. The minutes of the meeting of 16; October 11XX; (October 18,2002) were approved as published in *The Bulletin.*

3. The Nominating Committee (A. Berridge, J. Schiffman, and Pat Zirkel) presented the following slate of officers. A motion was made and seconded and the following persons were elected unanimously:
Board Chair: Gene Zirkel, President: Jay Schiffman, Vice President: John Earnest, Secretary: Christina D'Aiello, Treasurer: Alice Berridge

4. Appointments were made to the following DSA Committees:
Annual Meeting Committee: Alice Berridge and Gene Zirkel
Awards Committee: Gene Zirkel, Patricia Zirkel, Alice Berridge and Jay Schiffman. Volunteers to these committees are always welcome.

5. The following appointments were made:
Editor of *The Duodecimal Bulletin*: Jay Schiffman
Associate Editor: Gene Zirkel
Parliamentarian to the Board Chair: Christina D'Aiello

Other Business of the Board:

Members discussed the status of the Website. Christina has indicated interest in working on the Website with Chris. She thought the appearance could be improved. Members suggested that current material ought to appear regularly on the site; perhaps a "Puzzle of the Month" and/or other math tidbits would be appropriate. We would like to see the membership application appear on the site and hope that the number of "hits" to the site can be recorded. Publication of future meeting times and places could be very useful. This extra material should

be updated monthly to be current and viable. We would like to set up the arrangement on the site: "Not a DSA member? Never been a DSA member? Get a one-year free membership to DSA. Click here."

The next Board Meeting will be held on Saturday, 2; October 11#0; (October 2, 2004.) Next year will be the five-dozenth anniversary of the Society. The meeting will be at a New York school, perhaps Hofstra U., Adelphi U., Bank Street School or Nassau Community College. Members suggested that the next *Bulletin* be a "Special Anniversary Issue" acknowledging five dozen years of activity, and include a brief history of DSA.

The Board Meeting was adjourned at 11:50.

ANNUAL MEMBERSHIP MEETING

President Jay Schiffman gaveled the meeting to order at noon. He thanked everyone for attending and specially thanked the Zirkels for providing meeting refreshments. He had arranged for us to view the Website, to examine the calculator of Harvey Kramer Hawks, and to consider other Internet sites which feature dozens activity. Unfortunately this could not occur because of technical difficulties. Members were saddened to learn of the death of Mary Newhall, wife of Fred Newhall. Fred's enormous contributions of the society were recalled as well as Mary's interest in affairs of the Society and generosity to DSA.

2. The minutes of the meeting of 16; October 11XX (October 18, 2002.) were approved as published in *The Bulletin.*

3. Treasurer's Report - Alice Berridge

Alice presented Income Statements for the years 11X#; and 11XX; for comparison, as well as Membership lists for last year and a listing of current members from the recent membership drive. A second pitch for membership will be made soon. The checking account balance as of 4; October 11X# was $14X#;($2435.06.). Her report indicated that dues received for 11X9; - 11XX; were $304; ($436.) as of meeting date last year with $324; ($460.) received since the meeting date for a total of $628; ($896.). Members pointed out typo errors, which will be acknowledged in the official report. She reported that the sharp decrease in Net Worth is due to a dip in stock value, dues not yet recorded and because the previous expenses included only one journal for the reporting period. The Journal is our largest expense but all expenses have increased. Pat reminded members that our funds are to be used to keep alive the message of dozens and that if necessary stocks will have to be used to keep alive that mission.

4. Editor's Report - Jay Schiffman

Members discussed the new appearance of *The Bulletin.* It was agreed that the new color is an improvement and that the glossy stock is a great improvement. We are thankful to suggestions made by Gene Zirkel, Sharon Whitton and Pat Zirkel who worked last year on revamping the appearance of *The Bulletin* into this more professional output. Jay reported that he has received several complements on the new look. Members agreed that the "pull quotes" and the graphics lend greater appeal. Gene said that the application form, which is customarily printed, couldn't fit into this last issue. He added that the super script error would be reported as errata in the next issue. Jay reported that he will be making a Dozenal presentation at the MAA Section Meeting to be held 2; May 11#0 (May 2, 2004.) at Nassau Community College. DSA members should be encouraged to make presentations at that meeting, hopefully on dozens. Contact **www.maa.org** Metropolitan NY Section.

5. Annual Meeting Committee - Alice Berridge and Gene Zirkel

The next Annual Meeting, the five-dozenth meeting, will take place on 2; October 11#0; (October 2, 2004) at a New York area college – Hofstra U, Adelphi U, Bank Street School or Nassau Community. The Jim Malone DSA video "Eggsactly a Dozen" could be shown at the Annual Meeting.

6. Nominating Committee - Alice Berridge

The Committee presented the following slate for the class of 11#2(2006): John Steigerwald, Fanwood NJ, Carmine DeSanto, Merrick NY, Jay Schiffman, Philadelphia PA and Timothy Travis, El Toro CA. The slate was elected unanimously.

Alice Berridge, Jay Schiffman and Patricia Zirkel were proposed as the Nominating Committee for the coming year. They were elected unanimously.

Christina D'Aiello was appointed Parliamentarian to the Chair.

7. Awards Committee – Gene Zirkel

There were no awards for this year. Members are asked to suggest possible honorees.

8. Other Business:

Member Margaret Mooring Calderon had requested answers to exercises in "The

Manual of the Dozen System." This may prove a difficult chore but we will look into the matter.

Members discussed that more advertising is needed, that we should make a concerted effort for a "call for papers" pointing that *The Bulletin* is a refereed journal. An effort will be made to recruit new referees. Untenured faculty should be specially approached with an invitation to present articles for publication. Jay reported that he has reprinted articles from other journals.

Members were grateful for this chance to meet and thanked Jay for his coordinating efforts at Rowan University. Discussion continued at a nearby diner.

The meeting was adjourned at 1:30 PM.

Respectfully submitted,
Christina K. D'Aiello, Secretary
Alice Berridge, Treasurer ✹

□ □ □

JOIN US!

Our Annual Meeting is tentatively scheduled for 10 AM at Bank Street College on Saturday, October 2, 11#0;(2004.) which is located at 510 West 112th Street in New York City and is convenient to Subways and buses.

For further info call 631 669 0273 ✹

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THERE ARE ONLY *10* TYPES OF PEOPLE IN THE WORLD:
THOSE WHO UNDERSTAND BINARY AND THOSE WHO DON'T. ✹

WHY CHANGE?

This same question was probably rife in Europe between the years 1000 and 1500, when the new Hindu-Arabic numerals were slowly making their inching progress in displacing the comfortable and familiar Roman numerals then universally used.

Yet, although it took D years, and despite much opposition--("Who needs a symbol for nothing?")--the new notation did come into popular use. Released from the drag of Roman notation, people's thinking leapt forward dramatically, and mathematicians discovered a new dimension in mathematical symbolism. Working with Hindu-Arabic numeration, they found that the new system better accommodated mathematical statements and facilitated the working out of ideas. Re-examining their fundamental concepts of numbers, they made advances in arithmetic, algebra, logarithms, analytic geometry and calculus, and thus contributed to the explosion of human thought which later became known as the Renaissance. Then, in a related development, people awoke to the fact that different number bases could be used.

A parallel to today seems tenable. The notation of the dozen base better accommodates mathematical statement and facilitates ideation. It, too, is a step forward in numerical symbolism. The factorable base is preferred for the very same advantages which led the carpenter to divide the foot into twelve inches, the baker and the grocer (one who deals in *grosses*) to sell in dozens, the chemist and the jeweler to subdivide the Troy pound into twelve ounces. And yet, this is accomplished by such simple means that students in the primary grades can tell why they are better. Literally, the decimal base is unsatis**FACTOR**y because it has **NOT ENOUGH FACTORS**.

Then should we change? Yes, but no change should be forced, and we urge no mandated change. All the world counts in tens. But people of understanding should learn to use duodecimals to facilitate their thinking, their computations and their measurings. Base twelve should be man's second mathematical language. It should be taught in all the schools. In any operation, the most advantageous base should be used, the one best suited to the task at hand. (Similar to computer scientists use of binary, hexadecimal or octal - whichever is most convenient.) If this were done, duodecimals would progressively earn their way into general popularity because they simplify the all-important problem of the correlation of weights and measures, the expansion of fractions (1/3 = 0;4) and give an advantage in calculations involving time and our twelve-month calendar. Perhaps by the year 2000, (or maybe by 1200; which is 14; years later!) duodecimals may be the more popular base. But then no change need be made, because people will already be using the more convenient base.

If "playing with numbers" has sometimes fascinated you, if the idea of experimenting with a new number base seems intriguing, if you think you might like to be one of the adventurers along new trails in a science which some have erroneously thought staid and established and without new trails, then whether you are a professor of mathematics of international reputation, or merely an interested pedestrian who can add and subtract, multiply and divide, your membership in the Society may prove mutually profitable, and is most cordially invited ✹

DETACH--HERE--OR--PHOTOCOPY

YOU ARE INVITED TO JOIN THE DOZENAL SOCIETY OF AMERICA

The only requirement is a constructive interest in duodecimals

Name _____/__/__
Last First Middle Date

Mailing Address (including full 9 digit ZIP code)

_____

_____

_____

Phone: Home_____ Business_____

Fax _____ E-mail _____

Business or Profession _____

Annual Dues ..... Twelve Dollars (US)
Life ..... One Gross Dollars (US)
Student (Enter data below) ..... Three Dollars (US)
(A limited number of free memberships are available to students)

School _____

Address _____

Year & Math Class _____

Instructor _____ Dept. _____

College Degrees _____

Other Society Memberships _____

To facilitate communication do you grant permission for your name, address & phones to be furnished to other members of our Society?
Yes: ___ No: ___

Please include on a separate sheet your particular duodecimal interests, comments, and other suggestions.

Mail to: Dozenal Society of America
°/₀ Math Department
Nassau Community College
Garden City LI NY 11530-6793