

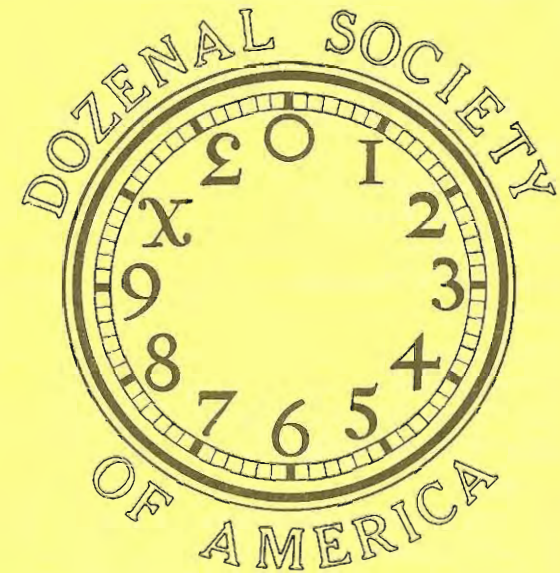
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The Duodecimal Bulletin

Whole Number 46

Volume 28, Number 1

Winter 1983



THE DOZENAL SOCIETY OF AMERICA

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



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THE DOZENAL SOCIETY OF AMERICA

(Formerly: The Duodecimal Society of America)

is a voluntary, nonprofit, educational corporation, organized 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.

Membership dues are \$6.00 for one year. Student membership is \$3.00 per year.

The Duodecimal Bulletin is an official publication of the DOZENAL SOCIETY OF AMERICA, Inc., c/o Math Department, Nassau Community College, Garden City, LI, NY 11530.

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IN MEMORIAM

HENRY V. WEBBER

1919 - 1982

Board Member Henry Webber died suddenly on Tuesday, September 21st, the victim of a heart attack. Those of us who knew Henry, knew a big-hearted, generous man who gave freely of his time and who recently donated a dozen copies of New Numbers to our Society.

In 1980 our Annual Meeting was held in Boulder, Colorado, Henry's home state. He took it upon himself to give the visitors a guided tour of the breathtakingly beautiful nearby mountains in his car, and insisted that what we Easterners were calling mountains were only foothills! On the last night of the meeting he stayed at our motel in order to be able to drive us to the airport in Denver the following morning.

Henry joined our Society on 2 February 1974, and was member number 237;. He was elected to the Board of Directors, Class of 1983, at the aforementioned meeting in Boulder, replacing Vivian Linton, the wife of our former President. Henry most certainly would have been re-elected to the Class of 1986 when his term expired, at the Society's next Annual Meeting.



*Henry Webber at the
1979 Annual Meeting
in New York.*

HENRY WEBBER, *In Memoriam*

Always active in the Society, Henry travelled around the country in order to be present at all of our recent Annual Meetings. He wrote many letters to promote the Society's aims, and diligently checked new editions of almanacs and other publications to insure that the DSA was listed correctly. He also served on the Society's Nominating Committee and then on the Awards Committee. Surely, his zeal will be sorely missed.

Henry was born in Port Arthur, Texas in 1919. Following more than two dozen years in the U.S. Army, including service during World War II, he retired as a Staff Sergeant. A graduate of Contra Costa Junior College in California, Henry was a member of the Denver Astronomical Society who really enjoyed his telescope. At one time, he was responsible for calculating the times of sunrise and sunset for publication in the Denver Post. (Incidentally, Ralph Beard and Kingsland Camp, former Board Members, were also keenly interested in astronomy.) Henry leaves a son, two daughters and four grandchildren, to all of whom our sympathy is warmly extended.

In memory of Henry's work on behalf of the Society, the Board of Directors voted to send a plaque to his family. It reads:

In memory of Board Member

Henry V. Webber

In appreciation for his enthusiasm and zeal

In promoting the aims of our Society

Presented by

THE DOZENAL SOCIETY OF AMERICA

November 1982

HOW DO YOU PRONOUNCE 32?

Gene Zirkel
 Nassau Community College
 Garden City, N.Y. 11530

Many of us who work with differing number bases become concerned with the pronunciation of symbols such as 32. The expression "thirty-two" is clearly a name for a decimal quantity and is not the correct term for 32 in base seven or base twenty.

In the dozenal system we have had several systems of terminology proposed, the most wide-spread being the one in which 32 is called "three-do-two". However, when working in base five no such system is agreed upon. Many people simply list the digits, saying: "three-two".

Recently, I have been taking a course in Data Communications where we often use the hexadecimal notation. One night, my professor startled me by referring to 32 in base sixteen as "thirty-two". My background in using number bases caused me some momentary discomfort, but I soon became quite comfortable with his terminology. I had no trouble following him as he switched back and forth between hexadecimals, decimals, and octal base numerals. To further complicate matters, he sometimes listed the digits as "three-two", and he sometimes said "thirty-two". I soon realized that no one in the class was having any problem in understanding him.

Upon further reflection, I thought of the many ways we pronounce numerals such as 1236 in our everyday conversation. We say things such as:

"one-thousand-two-hundred-thirty-six",

"twelve-hundred-thirty-six",

"twelve-thirty-six", and

"one-two-three-six",

Continued... →

1983 AND ITS DIGITS SALUTE DO

Charles W. Trigg
 San Diego, CA

Happy New Year!

$$1 - \sqrt{9} + 8 + 3! = 10$$

$$1 + \sqrt{9!} + 8 - 3 = 10$$

The year in duodecimal notation is 1193, and

$$1 - 1 + 9 + 3 = 10$$

$$1 \cdot 1 \cdot 9 + 3 = 10$$

$$(1 + 1) (9 - 3) = 10$$

$$11 + \sqrt{9}/3 = 10$$

$$(1 + 1 \cdot \sqrt{9}) \cdot 3 = 10$$

$$(1 + 1) (9/3)! = 10$$

$$1 \cdot 1 \cdot \sqrt{9!} + 3! = 10$$

$$\begin{vmatrix} 1 & 1 \\ -3 & 9 \end{vmatrix} = 10$$

In each of the equations, the digits are in the same order as they are in the year. In the determinant, the digits are in clockwise order. —

and no one seems confused.

Perhaps I have been too rigid, too narrow in insisting that "thirty-two" is reserved for decimals only? —

OFFICERS MEETING

On October 30, 1982, the New York area Officers and Board Members of the DSA assembled with their guests at the home of President Gene Zirkel and Vice President and Editor Pat Zirkel. Present were Jim Malone (Treasurer) and his wife Mary, who is also a member of the DSA; Carmine De Santo (Secretary); Tony Scordato (Chairman of the Board) and his guest Jean Horn; and Board Member John Earnest and his wife, Jean. (By the way, that's a quarter dozen people answering to the name Jean!)

Agenda:

1. After a Treasurer's Report from Jim, we decided to propose raising the yearly dues from \$6 to \$9. This proposal will be presented to the membership at our next Annual Meeting, October 14th to 16th, 1983. Student dues will remain unchanged at \$3. (Please note that in the Minutes of the 1978 Meeting, which were printed in the last issue of the Bulletin, a proposal to raise the dues was considered, but postponed until the Bulletin was once again regularly issued.)



John, Pat, Gene and Jim in a post-dinner discussion.

OFFICERS MEETING, Continued

2. Because of the success of our ad for free materials in the Arithmetic Teacher (a journal for elementary school teachers), it was decided to place a similar ad in the Mathematics Teacher (for high school teachers). (The ad appeared in the February issue; vol. 76, no. 2., p. 100.)
3. Our Editor announced that the next issue of the Bulletin was ready to go to press. (Fall 1982)
4. It was decided to reprint the ever-popular Excursion in Numbers by F. Emerson Andrews. This is approximately the eighteenth printing. One copy of the Excursion is available free for the asking, and additional copies are distributed at cost. In fact, the Excursion is the Society's main advertising piece.
5. It was also decided to send a memorial plaque to the family of Board Member Henry Webber, who passed away suddenly on September 21, 1982.

After the business meeting, we retired to the dining room, where we feasted on a lasagna dinner prepared by our Editor. The usual good spirits and camaraderie that mark our meetings were much evidenced, helped out no doubt by a glass of vino.

-GZ



Tony listens as Carmine makes a point.

The minutes which follow are the final unpublished reports of past DSA Annual Meetings. The Bulletin is once again a complete chronicle of the official actions of the DSA, as well as a history of dozenal activities over the past three dozen plus years.

DOZENAL SOCIETY OF AMERICA

Minutes of Special Meeting

May 9, 1980
Nassau Community College
Garden City, New York 11530

In attendance were:

Arthur Whillock (of the Dozenal Society
of Great Britain)

James Malone
Gene Zirkel
Dudley George
Tom Linton
Jamison Handy

Discussion of Agenda:

1. Nomenclature/symbols for ten and eleven:
Whillock made a plea to adopt "final" symbols to avoid shifting, which is confusing to members and outsiders. Noted that the telephone symbol * (asterisk) is a multiplier in computer programming, and the # (octothorpe) is used as a number and pounds weight symbol. Thus neither is a happy choice. Seven-segment displays, as do other calculator/computer displays, pose special problems. The DSGB has used a rotated 2 (ζ) for ten, and DSA's £ (or a rotated three) for eleven. Conclusion: no known symbols are clearly satisfactory, but long usage by the DSA of script X and £ have been accepted, except by the British when they use the ζ. Continue to use £ for eleven (or rotated 3), and lean toward the X with a short cross (as X̄, i.e. X with a hyphen) for ten.

1980 SPECIAL MEETING, Continued

2. Cooperation between DSA and DSGB:

There was some discussion of a dual Society name. Following this, the practicalities of a dual publication were addressed, and the title Dozenal Journal was suggested for this publication. The DSA will provide funds. A total print quantity of 4 gross was suggested -- 1½ gross for the DSGB and 2½ gross to be mailed to the DSA. The DSA will initially provide \$300.00 for the first printing, when requested by the DSGB. Copy is to go to the British Secretary camera-ready. The DSA may set up an editorial group, based on Zirkel's suggestion of May, 1979.

3. Linton told the group about a Scriptomatic addressing machine, showed a brochure and a sample address. Purchase was approved.
4. Linton showed a mailing from: Americans for Customary Weight and Measure, 47 West Street, NYC 10006. Membership dues for same are \$12.00.
5. The Metric Journal was discussed. This publication was first mentioned in a letter by Whillock, and appears to be a forum pro and con on the metrication of this country. Agreed to spend \$48.00 for one year's subscription for our DSA library at Nassau Community College, Garden City, NY.
6. Linton, Handy and George visited Hempstead Bank, Stewart Avenue, Garden City, NY (Edna Marlow, Mgr.) \$800.00 was deposited from our Culver Federal Savings account (added to the \$200.00 start-up deposit made in January).
7. Linton, Handy, George and Whillock toured DSA/Nassau Library facilities. The DSA has been assigned a special small room off the reference/reading area. Shelving will be installed and a sign posted on the locked door.

Continued...

1980 SPECIAL MEETING, Continued

8. Linton discussed the complexity of handling the ATT stock records. For example, there are three prices to be considered: 1. The IRS value; 2. The reinvestment value; 3. The market value, which changes from day to day. He suggested selling the stock and putting the money into our savings account. The Society acquired, from the Beard estate, 50 shares of common stock, with a market value of about \$63.00 per share. Value now is approximately \$50 - \$53.00 per share. There was unanimous agreement to sell the stock when appropriate. (Ed. note: The stock was never sold, as it remains valuable. See references to this in later Meeting Reports.)
9. With the move of DSA headquarters to New York, it was moved and agreed to elect Professor James Malone of Nassau Community College's Math and Computer Science Dept. to the post of Treasurer. Our thanks and appreciation to Mr. Jim Ellis, outgoing Treasurer, for his stop-gap filling of the post in spite of a personal heavy workload in his accounting practice. Our thanks and appreciation are also extended to Prof. Malone for agreeing to serve in this capacity. Jim was elected to the Board at the May, 1979 meeting in New York. —



At the end of a rewarding day's work, dinner was shared with members, spouses, and several guests. (L-R) Ruby Whillock, Dudley George, Gene and Pat Zirkel, Tom Linton, Peggy McMillan, Katy George, Jamison Handy, Jr., Arthur Whillock.

DOZENAL SOCIETY OF AMERICA

Annual Meeting Report 1980

Highlander Inn
Boulder, Colorado
September 5, 6, 7, 1980

Those attending were:

Tom Linton	CA
Jim Malone	NY
Gene Scifres	CO
Henry Webber	CO
Gene Zirkel	NY

Guest: Prof. Peter Beckman, Univ. of Colorado

By telephone: Charles and Miriam Bagley
Jamison Handy

On Friday evening, we had an informal meeting from 7 to 9 P.M. followed by a convivial dinner from 9 to 11 P.M. Conversation at dinner drifted back and forth between dozenals and various other topics of general interest.

At the two Saturday sessions, split by walking to lunch at a small restaurant just down the road from the Highlander, we discussed many ideas, including:

1. The Secretary's report and the Treasurer's report.
2. A reprinting of the Excursion. A suggestion was made to add several pages which would serve to include such things as data from our Society's brochure and an application blank.
3. A joint publishing venture with our sister organization, the Dozenal Society of Great Britain. Our members would then receive both the joint Journal and the Bulletin when it is once again published.
4. A proposal to elect Jim Malone as Treasurer and to move the Society's funds to a New York bank.

Continued...

1980 ANNUAL MEETING, Continued

5. A proposal to assemble a package of publicity, writings, etc.; to be called "The Lighter Side of Dozenals", and which would sell for about \$1.00.
6. Sending a plaque to Henry Churchman, recipient of our 1980 Annual Award.
7. Thanking several people for books, films and other materials which have been donated to the Society: Van Allen, Webber and Scifres.
8. Installing both Churchman and Camp as Life Members.

Continued...

MEMBERSHIP ON THE RISE

In 1980 four new members joined our Society, numbers 248; to 24#;. The following year, a half-dozen people applied for membership, numbers 250; to 255;. In 1982 a dozen and a quarter new members have been added to the roster of the DSA, numbers 256; to 268;. We passed two and one half gross members since our founding back in 1944, a little over three dozen years ago.

This rise in interest in the work of the DSA is probably due to several factors, among which we note:

- The publication of this Bulletin on a regular basis once again.
- The nationwide publicity we received from Ms. Virag's newspaper article which went out on the wire service in the U.S. and Canada.
- The demise of the metric board and the increased feeling that the imposition of a decimal based metric system is not the answer to our counting and measuring needs. —

1980 ANNUAL MEETING, Continued

9. Sending someone (probably Tom Linton) to Council Bluffs, Iowa, to review the materials from Ralph Beard's estate which are now stored at Henry Churchman's farm.
- *. The planning of future meetings. Should we alternate between the East and the West? Would Easter be a good time? Is housing available at college dormitories? The 1981 meeting was set for New York.
- #. Computer programs for any base conversion, but especially base ten/base twelve for the Hewlett-Packard 41-C programmable calculator.
10. Arthur Whillock's paper on Measurement with foot samples. (Several members removed their shoes to check the barleycorn-shoe size relation -- i.e., that the increment in shoe size is one barleycorn length.) Willock's paper was sent to the permanent collection at the Nassau Community College Library.
11. Symbols. The consensus seemed to be that the time has not yet arrived to enforce standardized symbols. It was felt that the Dwiggin's script X had posed no problems over the years, and that it differed sufficiently from the straight-sided X and the Roman X to avoid confusion. Discussion also touched upon the telephone company symbols, 7-segment and 14 segment, dot matrix and other displays.
12. Jamison Handy reported by telephone that he was translating Essig's book (Douze: Notre Dix Futur) into English. It was suggested that the Society publish the translation chapter by chapter in future Bulletins.

Continued...

RIP

We have received word that Robert Davies of Bloomfield Hills, Michigan has passed away. DSA member number 222, he was the author of "A Duodecimal Calendar" which appeared in the April 1972 issue of this Bulletin, volume 23; page 7.

1980 ANNUAL MEETING, Continued

13. Three members of the Class of 1980 were re-elected to the Board of Directors:

Charles S. Bagley	NM
Robert R. McPherson	FL
Gene Zirkel	NY

Rounding out the Class of 1983 was new Director, Henry Webber who was elected to the seat vacated by Vivian Linton. Our gratitude to Mrs. Linton for serving on the Board.

14. The Board of Directors re-elected three Officers:

Charles S. Bagley	Chairman of the Board
Tom Linton	President
Henry Churchman	Vice President

Tom Linton was also elected as Secretary, and Prof. James Malone was elected Treasurer.

There was no Editor of the Bulletin at this time and, as a result, the Bulletin is temporarily not being published.

The Highlander Inn, scene of the above meeting, was located just across the street from the sprawling campus of the University of Colorado, within walking distance of the National Bureau of Standards, and literally in the shadow of the Rockies. We enjoyed beautiful, crisp autumn weather for the entire weekend.

As usual the meeting closed with a friendly dinner. This was preceded by a tour of the campus of the University of Colorado and a drive through the scenic "foothills" of the indescribably beautiful Rocky Mountains. Henry Webber was our chauffeur and guide through the area.

1980 ANNUAL MEETING, Continued

The next morning Henry showed us parts of Denver, including the mint and some beautiful State buildings, before driving us to Stapleton Airport and our flights out of Colorado. Our thanks to our friendly hosts from the "Centennial" State.

(This report was adapted from a rough report of the meeting found in the notes of the late Tom Linton) _____

EXCURSION REPRINTED

Our most popular piece of literature is still F. Emerson Andrews' Excursion In Numbers. We recently had to have another supply reprinted. In keeping with past-president Linton's ideas, this one was done in color on a nice light green stock.

Although we do not have accurate records, this must be about printing number 16;.

The Society has distributed innumerable great-gross of these pamphlets over the years, primarily to teachers and college students. _____

DESERVED OBLIVION

by Charles S. Bagley
Alamogordo, NM

The following was written in response to an article which appeared in the El Paso Times of 8/29/82, entitled, "Metric Switch Inches to Oblivion".

That article outlines some of the reasons why the proposed U.S. conversion to metric measurement has been a "Tremendous flop", and says in part that the metric system "could prove to be the Edsel of American measurement. Because of a combination of industrial resistance, consumer dislike and public apathy, the meter appears to be running out"...

Man's first use of numbers may have been to count his possessions on his fingers. If he had been born with six instead of five digits on each hand, we would be using a dozenal instead of a decimal system today. This would be very fortunate because the advantages of a twelve-base system are considerable and easily recognized. One current example of twelve-base counting is the "touch-tone" dialing system used by the Telephone Company. By adding two digits to the base (* and #), the number of telephones that can be accommodated before changing the prefix has been increased from 10,000 to 20,736. There is also a corresponding economy in the number of dial motions needed to call numbers. These advantages apply to serial listings of all kinds.

Many very efficient ways have been devised to notate, designate and manipulate numbers. With a few simple symbols that are universally used and understood, enormously large numbers can be written with incredibly simple characters. No number is so large that a larger cannot be written nor is any number so small that a smaller cannot be designated. Although every number is rigidly unique unto itself, all the atoms in the universe are not enough to exhaust the supply.

The world's greatest philosophers, mathematicians, physicists, and just ordinary people have tried to define

DESERVED OBLIVION, Continued

numbers. They all know how to use them but still don't know what they are. Bertrand Russell is believed to have come as close as anyone to a definition of number but even he flounders in a semantic swamp of his own creation. He might have confused less and imparted more by a simple admission that he did not know what numbers are.

The Dozenal Society is opposed to conversion of our American system to the so-called "metric system" because it believes the metric system is a persistent effort to force on all of us the counting methods of our primitive ancestors. The Space Age in which we live deserves something better. If the metric system were half as good as its proponents say it is, it would have been adopted long ago. As early as the 1860's Congress passed a law making the use of the metric system legal. It was thought that, seeing its many advantages, Americans would soon adopt it voluntarily. Of course they didn't because they have yet to see any superiority over the present system. An examination into the history of the metric system all over the world reveals the astonishing fact that no country, including France, the place of its origin, has ever adopted the metric system voluntarily. In every case the metric system has been forced upon the citizenry by law, in many cases contrary to the will and wishes of the people.

The measurement of time and distance was one of man's earliest needs and its fulfillment one of his greatest achievements. In the English and Metric systems of weights and measures we see the culmination of many centuries of development and refinement of these needs. Neither system is perfect and each has specific advantages. The metric system blends and integrates into a denary (counting by tens) number notation with greater facility than the English system. On the other hand, the natural divisions of day and night into twelve equal parts, corresponding to divisions of a circle, have led to the only universally accepted world standard, that of time. Attempts to put ten hours on a clock face are comical, and metric division of the circle had to begin with four, not five, initial equal parts.

Continued...

DESERVED OBLIVION, Continued

In spite of enormous federal, state and institutional pressures to effect a conversion to the metric system in the United States, these efforts are now regarded as having failed.

An Associated Press article in the El Paso Times of August 29, titled "Metric Switch Inches To Oblivion" outlines some of the reasons -- mainly, the high cost of conversion, and inflation -- for this failure. However, the article overlooks the principal reason, which is the indefensible position into which the metric system has been put by the childish ridiculous claims of its advocates. Foremost among these is the claim that it is a perfect system. It is said, for example, that most of the problems of conversion encountered in the English system of weights and measures are obviated in the metric system, because there conversion is accomplished by merely shifting the decimal point.

However, were this as simple as it appears at first blush, American decimal currency should work perfectly in tandem with metric units of measurement. That the meshing of the two systems does not always produce obvious advantages though, is made clear by a visit to the local supermarket. The metric equivalents have been placed on the labels, at considerable expense to the taxpayers, to educate the public and gain support for a system which is supposedly vastly superior to the familiar one. If this advantage is real you should be able at a glance to know the unit cost of every item, and consequently to be able to buy more economically. If, however, you see no such advantage, you may conclude that conversion-by-law, to which every other nation has had to resort, is the only way the United States will ever go metric. —

DOZENAL JOTTINGS

News from or about the dozenal activities of members and friends

Our Society received a nice plug in the Spring 1982 issue of the National Association of Independent Schools' NAIS Newsletter under the title "For Those Who Like To Be Different". This Teacher Services Committee publication goes to many educators. Our thanks to the Editor, Prof. Jerry Johnson, of the University of the Pacific in Stockton, California.....TIME Magazine gave a very brief mention of duodecimals while explaining binary counting on page 30 of their "Man (Machine?) of the Year" issue, January 3, 1983.....SALLY BYRON of Hadley, NY (daughter of the late Henry Webber) donated four of her father's books to our Society. Included in her gift were two copies of the first edition of Andrews' New Numbers, published in 1935. These books are extremely rare and are a welcome addition to the Society's archives. We have several copies of the second edition, but these are our first copies of the original book. (We still do not have a copy of the British edition. Most of those were destroyed in a warehouse fire in London during World War II.) Our heartfelt thanks to Mrs. Byron for her most appreciated gift.....Board Member JAMISON HANDY has retired from his "temporary" job at Hughes Aircraft after 2½ dozen years there. Not one to be inactive for long, he is now working on a part-time basis for Transit Research Foundation.....President GENE ZIRKEL was recently invited by the China-U.S. Scientific Exchanges to lead a delegation to the People's Republic of China to discuss joint work with Chinese colleagues in the DSA's field of interest: simplified counting, calculating, and measurement, including metric systems which retain the convenience of dozens, such as twelve inches in a foot.....On January 6th, GENE spoke on "A Dozenal Metric System" to some high school students at the annual Student Symposium in Mathematics held at C. W. Post College in Greenvale (Long Island), NY. The Symposium is jointly sponsored by the Nassau County Association of Mathematics Supervisors and the Nassau County Mathematics Teachers Association.....HARRIET EDKINS writes from England that twelve-button phones have been introduced in the British Isles. Unfortunately, they did not use the asterisk

Continued.....

DOZENAL JOTTINGS.....

(*) and the octothorpe (#) for the two extra digits as Ma Bell does on this side of the Atlantic. We have, in fact, received two different pictures of the new telephones. One uses an asterisk and a small square; the other uses "T" and "P".....
 ...In response to our quest for the meaning of the word "octothorpe" (i.e., the name of the symbol, #), BILL WALWORTH of Mott Community College in Flint, Michigan writes that perhaps the word "octothorpe" came from "ortho" and "thorpe". He argues that "ortho" means "straight" and "thorpe" comes from the Latin for "beam". He then states that "thorpe" is Greek thorubos for "to disturb, throw into confusion", hence # are straight beams that are disturbed or thrown into confusion. (However, Webster says that "thorpe" is from the Greek teramna for "house".)...

Continued.....



Y'ALL

COME!

.....To the DSA Annual Meeting of 1983.....

To be held Friday through Sunday, October 14, 15, and 16, 1983...(that's October 12; 13; and 14; 1193; for diehard dozenalists!) ... at our New York offices.

We look forward to seeing you!

DOZENAL JOTTINGS.....

....JOE JUSTON of N.Y. Telephone showed us some company literature which refers to the symbols * and # as "digits". The latter is called an octothorpe in other company literature. The former is designated a "sextile" rather than an asterisk. (When counting, we still prefer to say "dek" and "el".).....
In our last issue, we mentioned several newspapers that had covered our Annual Meeting (of 1982). Add to that list the May 15; issue of the Santa Barbara, CA Times.....As of last October 9th, our youngest member GEORGE ZIRKEL is a dozen years old.....Several members have written to help in straightening out the confusion concerning the designations: "Honorary Member", "Life Member", and "Fellow" of the Society. Our thanks to TONY GLASER, HENRY CHURCHMAN and CHARLES BAGLEY.....BILL SCHUMACHER, a Fellow of the Society from Cherry Hill, NJ, sent us a five page letter with comments on many of the articles in the recent issues of both the Duodecimal Bulletin and the Dozenal Journal. He covered just about everything from calendars to clocks to suggestions for dozenal notation. He also solved the Four Fours problem from 1 to 36; using the factorial symbol, $4! = 20$; . He stated that he passed through Garden City, Long Island, recently and did NOT stop in. For shame, Bill!.....

end

ERRATA

Don Hammond, editor of our sister publication, The Dozenal Journal, wrote and pointed out a typo on page # of our last issue. The list of the five presently known Fermat primes contained only four numbers. Denary 17 was omitted. Sorry about that.

PUZZLE CORNER

Solution to Four or Mo' (Fall 1982 p.24;)

Our last puzzle was solved by Nelson B. Gray of Arizona (author of "All Number Systems Have Base 10", this Bulletin, volume 13; number 2; pages 43-48;). He writes that it is impossible to have a sum of 4 consecutive integers, or any other even number of consecutive integers which add to 1000 in any base. However, odd numbers of consecutive integers can add to 1000 in any base which is evenly divisible by the number of integers being added. E.G.:

Base 3	Base 5	Base 6	Base 7
22	43	155	64
100	44	200	65
101	100	201	66
1000	101	1000	100
	102		101
	1000		102
			103
			1000

Base 9	Base 9	Base Ten	Base Twelve
288	85	198	3##
300	86	199	400
301	87	200	401
1000	88	201	1000
	100	202	
	101	1000	
	102		
	103		
	104		
	1000		

PUZZLE CORNER

You are invited to send us your solutions to or your extensions of these problems. Also send us other problems which are related to dozenals or to number bases.

Twelve Twelves

What is the missing number in this series?

10
11
12
13
14
15
20
22
?
40
1100
111111111111

The following are available from the Society

1. Our brochure (free)
2. "An Excursion in Numbers" by F. Emerson Andrews. Reprinted from the *Atlantic Monthly*, Oct. 1934. (Single copies free. Bulk orders 40¢ each)
3. *Manual of the Dozen System* by George S. Terry (\$1;00)
4. *New Numbers* by F. Emerson Andrews (\$10;00)
5. *Douze: Notre Dix Futur* by Jean Essig in French (\$10;00)
6. Dozenal Slide rule, designed by Tom Linton (\$3;00)
7. Back issues of the *Duodecimal Bulletin* (as available) 1944 to present (\$2;00 each)

A PERPETUAL BASE TWELVE CALENDAR

Directions for assembling your Perpetual Dozenal Calendar:

1. *Cut entire facing page out along dotted line.*
2. *Cut out three strips below along dotted lines.*
3. *Fold the strip of months lengthwise.*
4. *Glue facing page onto heavy paper or light cardboard, and then cut out the six slots with a razor blade.*
5. *Insert the three strips from the rear and adjust for the proper date.*

-Gene Zirkel

1191; 1981	1192; 1982	1193; 1983	1194; 1984	1195; 1985	1196; 1986
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JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP	OCT	NOV	DEC

							1	2	3	4	5	6	7
2	3	4	5	6	7	8	9	#	#	10	11	12	
9	#	10	11	12	13	14	15	16	17	18	19		
14	15	16	17	18	19	1#	1#	20	21	22	23	24	
1#	20	21	22	23	24	25	26	27					
26	27												

A PERPETUAL BASE TWELVE CALENDAR

Compliments of:

The Dozenal Society of America
Nassau Community College
Garden City, New York 11530

twelve inches	YEAR (cut slots)	twelve months
a dozen		a gross
twelve tone scale		twelve pence
twelve ounces =	MONTH (cut slots)	twelve Apostles
one Troy pound		twelve Tribes
twelve Patriarchs		of Israel

S M T W T F S

DATE

(cut slots)



AN OLD CANARD PUT TO REST

We sometimes see in print the statement that mathematicians would prefer a number base which is a prime number. Some people even try to invent reasons why this might be true. Nothing, however, could be further from the truth. Mathematicians, like everyone else, prefer a number base with lots of factors.

The source of this oft-repeated error is a statement by the French mathematician, Lagrange. It happened at the time of the French Revolution when he was a member of the commission studying a metric system. The commission was debating the two obvious choices for the base of the number system, ten and twelve. Recognizing the advantages of twelve, but erroneously feeling that the common people would more readily accept a change to ten-based weights and measures, Lagrange PLAYFULLY suggested base eleven. This jocular remark from a man who lacked vision has been cited too often as a serious statement.

(Thanks to Prof. Kolk, the Hartford Graduate Center,
Hartford, Connecticut) —

HONORARY MEMBERS, LIFE MEMBERS, AND FELLOWS

Our Society provides the above three categories of special memberships; however, our records of who holds these distinctions are very sparse. Past Bulletins indicate that in 1963 over 0;27 of our members were Fellows. In 1968 there were 8 Honorary members, 9 Life members, and 18 Fellows. But who are they? If you have received any of these distinctions in the past, please contact us and let us know so that a correct listing may be made in the Society's records. Thanks. —

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, man'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 accomodated 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.

In a related development, man awoke to the fact that different number bases could be used, and as early as 1585, Simon Stevin stated that the duodecimal base was to be preferred to the base ten.

The parallel seems tenable. The notation of the dozen base better accomodates 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 unsatisfactory 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, that base should be used which is the most advantageous, and best suited to the work involved. We expect that duodecimals will 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.

COUNTING IN DOZENS

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

Our common number system is decimal—based on 10. 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.

We use a semicolon as a unit point, thus two and one-half is written 2;6.

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	3#2	Two ft. eight in.	2;8'
19#	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 2#, which $12 \overline{) 365}$ is two dozen and eleven. For larger numbers, $12 \overline{) 30} + 5$ keep dividing by 12, and the successive remainders are the desired dozenal numbers. $12 \overline{) 2} + 6$
 $0 + 2$ 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 #, and the successive remainders are the desired decimal number.

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

For more detailed information see *Manual of the Dozen System* (\$1;00).

We extend an invitation to membership in our society.
 Dues are only \$6 per year; the only requirement is a constructive interest.

Application for Admission to the Dozenal Society of America

Name _____
LAST FIRST MIDDLE

Mailing Address (for DSA items) _____

(See below for alternate address)

Date & Place of Birth _____

College _____ Degrees _____

Business or Profession _____

Employer (Optional) _____

Annual Dues \$6.00

Student (Enter data below) \$3.00

School _____

Address _____

Year & Math Class _____

Instructor _____ Dept. _____

Other Society Memberships _____

Alternate Address (indicate whether home, office, school, other)

Signed _____ Date _____

My interest in duodecimals arose from _____

Use space below to indicate special duodecimal interests, comments, and other suggestions:

Mail to:
 Dozenal Society of America
 c/o Math Department
 Nassau Community College
 Garden City, LI, NY 11530

DETACH HERE