D U O D E C I M A L

N E W S C A S T

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November
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The Duodecimal Society of Great Britain,
(Incorporating the Duodecimal Association)
155, Leighton Avenue, Leigh-on-Sea, Essex.

CONTENTS

EDITORIAL

The Government is going ahead with plans to decimalize the currency without any intention of considering any further the proposals for decimal system which have the support of important trade and public bodies and, of course, without any regard for the much more efficient dozenal possibilities. The continuing and inevitable controversy over the various decimal schemes allow us to state and reiterate our case.

We still have, therefore, a large task of letting as many people as possible know about the advantages of base twelve numberring and measuring. This task must be continued, so that, with all who matter in full possession of the incontrovertible facts, improvements to our system of weights, measures and currency may be made, either direct from our present illogical complex or via a more logical, albeit badly based, decimal scheme.

Members of this Society, you receive constant exhortation to let our message be known. Please act. Your already overworked Council cannot do it all. Write to your newspapers and journals, to your M.P's, tell your friends.

The Duodecimal Society of Great Britain

(155, Leighton Avenue, Leigh-on-Sea, Essex)

GENERAL MEETING

The eighth General Meeting of
the Duodecimal Society of Great Britain
will be held at

the Raglan Hotel
Aldersgate Street

at half past six in the evening on
Thursday, the twenty-ninth day of DECEMBER, 1966 (*25 December 1172)

Agenda

1. Progress in *1172
2. Finance
3. Election of Council
4. Policy for year ahead
5. Other Business

Light refreshments

All members, friends and well-wishers are cordially urged to come along. Notify the Hon. Secretary as soon as you can whether you expect to attend or of any matters you will wish to have raised if you cannot attend. Please make a special effort.

Nearest Underground Station: St. Paul's (2 mins)
Bus routes: 7, 8, 22, 23, 25, 32 East/West St. Paul's
141, 4 North/South to St. Martin's-le-Grand (1 min.)

- -
tear off here

To: The Hon. Secretary. The Duodecimal Society of Great Britain.

(1) I *expect/do not expect to attend the General Meeting and shall bring ...... guests.

(2) I append a list of the points I wish discussed.

(3) My annual subscription is enclosed.

(4) I *support/oppose the proposal on page 3 to alter the number symbols for ten and eleven.

*(Delete as appropriate) Signed ....

MEMBERSHIP

NEW MEMBERS

Ordinary Member

R. A. Fattorini	55, Wychwood Avenue, Knowle, Solihull, Warwicks.
S. C. M. Porter	Crosby, Altwood Road, Maidenhead, Berks.
T. Pendlebury	68, Maulden Road, Flitwick, Beds.

Younger Member

R. A. S. Mason	Sowerby Lodge, Thirsk, Yorks.

PROFESSOR A. C. AITKEN

Professor Alexander C. Aitken has now retired from the Chair of Mathematics in Edinburgh University, but is unable, through chronic illness to make the full use of his retirement that he had intended. We all hope that the author of 'A case against decimalisation' and a militant supporter of our cause will before long be able to enjoy that well-earned retirement and take up the cudgels again on our behalf.

PROPOSAL ON THE SOCIETY'S DIGITS FOR TEN AND ELEVEN

"Proposed that this Society reconsider the choice of the digits for ten and eleven, and, as an interim measure, adopt symbols already available on the keyboards of all ordinary typewriters and typesetting machines, preference being given to those adopted by the "Duodecimal Society of America". Mr. J. Halcro-Johnston. Please vote on page 2.

/N.B. Capitals X and E are, in fact, conventions used by many instead of χ (Greek letter chi) and Ɛ (inverted 3) which are the officially adopted numbers of the Duodecimal Society of America. X and E are those Mr. H-J recommends. - Editor/

COMMENTS RECEIVED

"I quite agree with H-J that 2 and 3 upside down are bad, also on X for 10. I believe I have already written to you on L for eleven. Not only does the sound L suggest eleven, but small l is used on the typewriter for one, so why shouldn't capital l(= L) be used for double one (= 11)" R. C. Gilles. /Note eleven is a single digit in dozenals, with no connexion with double one, - Editor/

"Much as I personally prefer Z and Ɛ, I agree with Halcro Johnston that X and E might be easier to put over to begin with - provided they do represent only a first bite at the cherry." R. J. P. Hewison.

"In view of the fact that algebra uses letters of the alphabet and that X is used in mathematics not only to indicate quantities but also for axes, arithmetical multiplication and also vector products it is unadvisable to use letters of the alphabet for dozenal digits. /Professor A. C. Aitken also said this some years ago./

I therefore propose that the symbol for dek should be the question-mark and the symbol for elf the ampersand. These symbols are readily typed right-way up and cannot, only under extreme exceptions, be confused with other meanings.

Continued, Page 8

FURTHER BOOK REVIEW
by B. A. M. Moon

F. J. Budden: An Introduction to Number Scales and Computers.
Longmans Green, London, 1965, 192 pp. 12s. 6d.

Designed mainly to provide material for the enrichment of school mathematics, this book succeeds in bringing together a large amount of material on the nature and use of number scales other than 'tens', with an introduction by way of the binary scale to digital computers and means of communicating with them. Written in a style which is both lucid and lively, it will appeal in many ways to school children, teachers and the lay public alike.

By doing much to correct common misconceptions about the place of 'ten', and showing the advantages of twelve, it will be welcomed by those who seek to encourage the greater use of dozens arithmetic.

So far, so good, but the presence of many excellent features only heightens one's dismay in finding that a book with such a refreshing and original approach to the description of arithmetic should reveal all the old, narrow prejudices when the practical value of dozens arithmetic to the community is discussed.

Thus (page 21): "It may be supposed that the ultimate objective of the most ardent duodecimalists would be a numerical revolution which would abolish the decimal system and replace it by the duodecimal."

This may be the view of one or two extremists - it is certainly not the view of scholars such as Aitken or practical men who know the value of dozens.

Again: "Leaving aside economic considerations, the chief factor which operates against ... adoption of duodecimal is inertia or resistance to change."

Why so? A great merit of duodecimal arithmetic is precisely that its benefits may be gained by far less change than the wholesale adoption of decimal coinage, weights, measures and so on. Moreover, since dozens bring greater benefits for a smaller investment, the economic advantage lies with them.

And: "The trouble would be with the older people ... They would not only have to learn to count all over again. They would have to learn afresh their tables ..."

An obsession with compulsion is characteristic of decimalists - only thus, for example, has the metric system been adopted by any nation. It is certainly not true that older people must abandon decimal arithmetic just because younger ones are using the simpler "shorthand" arithmetic which base twelve permits.

Such false arguments (and more which Budden presents) damn the duodecimal case. It must give deep concern to those who seek to impart enlightenment and better understanding of the use of dozens. If opinions such as Budden presents are the results of their efforts, duodecimal societies must undertake some critical reappraisals of their own work if their goals are to be reached.

SQUARES & ROOTS

by D. A. Sparrow.

In the first Duodecimal Bulletin (Jan-March, 1945) can be found an article by G.S.Terry on "the Construction of a Table of Consecutive Squares without Multiplying. This is based on the fact that the duodecimal squares are limited to numbers ending in 0, 1, 4 and 9; - best memorised by the circle (Fig.1) in my opinion anyway. Also by the fact that the dozens of all squares from 4 onward increase by a number which, for the first six is 1, and increases every six by 1. Mr. Terry did not, however, mention that these dozenal numbers are also "mirrored" from 30 onward to 60. This means that the dozen of the square of n (being less than 30) = 60 - n = 60 + n = 100 - n. This can reduce the table of squares to a gross to a small card. (Fig. 2)

In the Duodecimal Newscast for November 1178 (1964) is an article "Square Roots made Simpler" by S. Ferguson. He refers to the "methods in the text books as long and tedious". Unfortunately, I have yet to find a textbook with <u>any</u> method for finding square roots and although his article, making use of the formula $(a + b)^2 = a^2 + 2ab + b^2$, is sound and doubtless shows the Mathematician how to find square roots I did not find that it elucidated any simple method to a simple brain like my own - in fact, it showed <u>why</u> without showing <u>how</u>.

I thought it over and spoke to a friend, who showed me this method which would apply to any base, and which he claimed to have been taught at school! Would that I had had such education - I'm sure they are not taught it at school these days. <u>If</u> they are, and I merely repeat what everybody knows, please forgive me - I didn't.

The number to be rooted should be divided into pairs from the point: this leaves one or two numbers at the beginning, and to guess the root of this which is under 10 is easy: the square of this is subtracted from the number, and the next two figures brought down: The answer is then doubled to provide a new divisor (less digit): the digit is guessed and included in the answer and the divisor (+ digit) is multiplied by the digit, and deducted, the next pair are then brought down, answer doubled, and digit added to provide new divisor ..... and so on. However, I know that it is useless trying to explain without showing it in practice

We will have a simple example and find the root of ↋4↋0.↊1

```
           ↋4,↋0.↊1     Figures marked in pairs from point.
 ↋² =      ↊1           Nearest root under deducted (Ans. ↋...
 2 x ↋  = 1↊8)13 ↋0     Pair brought down. Ans. doubled
             13 14      8 x 1↊8 = 1314  Deduct     (Ans. ↋8...
 2 x ↋8 = 1↋45)  98 ↊1  Pair brought down Ans. doubled
                 98 ↊1  5 x 1↋45 = 98↊1
                 -----      Answer  ↋85. or rather ↋8.5
```

As you may have guessed, in order to show how easy it really is, I chose a number which I know to be a perfect square. How about if it isn't a perfect square? The pairs of noughts are brought down to as many places as you wish to go. This time we have 7654321 and the explanation is left out - see if you can follow it

```
              7,65, 43, 21 ( Answer  28↋4.05↋6↊
              4
        48 )  3 65
              3 14

       54↋ )   5143
               4↋61
      55↊4 )    1↊2      21
                19↋      54
   55↊805     )    2     89 00 00
                   2     35 54 21
     55↊80↊↋    )        53 67 9↋ 00
                         50 49 4↊ 01
      55↊80↋↊6   )        3 1↊ 50 ↋↋ 00
                          2 8↋ 40 5↋ 30
                            4↋ 10 5↋ 90 00 .......... etc.
```

In finding square roots to at least six places, the Duodecimal Slide Rule which is circular is invaluable, and makes the guess of the digit a certainty. I haven't bothered to check this but if you want to, do, and send me your answer. I would be glad if anyone would kindly write and tell me (a) what, in fact, the text books do day and (b)if I have been making a fool of myself and this is the "difficult" way referred to previously. I don't find it difficult.

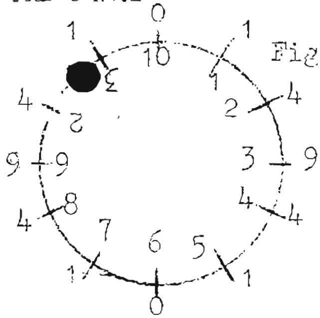

Fig. 1

This shows the digits of squares of all numbers ending with any number 0 – Ɛ

Fig. 2

g	n	n	g	d	g	n	n	g
0	00	60	30	0	30	60	100	100
0	01	5Ɛ	2Ɛ	0	31	61	ƐƐ	Ɛᘔ
0	02	5ᘔ	2ᘔ	0	32	62	Ɛᘔ	Ɛ8
0	03	59	29	0	33	63	Ɛ9	Ɛ6
0	04	58	28	1	34	64	Ɛ8	Ɛ4
0	05	57	27	2	35	65	Ɛ7	Ɛ2
0	06	56	26	3	36	66	Ɛ6	Ɛ0
0	07	55	25	4	37	67	Ɛ5	ᘔᘔ
0	08	54	24	5	38	68	Ɛ4	ᘔ8
0	09	53	23	6	39	69	Ɛ3	ᘔ6
0	0ᘔ	52	22	8	3ᘔ	6ᘔ	Ɛ2	ᘔ4
0	0Ɛ	51	21	ᘔ	3Ɛ	6Ɛ	Ɛ1	ᘔ2
1	10	50	21	0	41	70	Ɛ0	ᘔ1
1	11	4Ɛ	20	2	42	71	ᘔƐ	9Ɛ
1	12	4ᘔ	1Ɛ	4	43	72	ᘔᘔ	99
1	13	49	1ᘔ	6	44	73	ᘔ9	97
1	14	48	19	9	45	74	ᘔ8	95
2	15	47	19	0	47	75	ᘔ7	94
2	16	46	18	3	48	76	ᘔ6	92
2	17	45	17	6	49	77	ᘔ5	90
2	18	44	16	9	4ᘔ	78	ᘔ4	8ᘔ
3	19	43	16	0	50	79	ᘔ3	89
3	1ᘔ	42	15	4	51	7ᘔ	ᘔ2	87
3	1Ɛ	41	14	8	52	7Ɛ	ᘔ1	85
4	20	40	14	0	54	80	ᘔ0	84
4	21	3Ɛ	13	4	55	81	9Ɛ	82
4	22	3ᘔ	12	8	56	82	9ᘔ	80
5	23	39	12	0	58	83	99	7Ɛ
5	24	38	11	5	59	84	98	79
5	25	37	10	ᘔ	5ᘔ	85	97	77
6	26	36	10	3	60	86	96	76
6	27	35	Ɛ	8	61	87	95	74
7	28	34	Ɛ	1	63	88	94	73
7	29	33	ᘔ	6	64	89	93	71

To use this chart, find the number to be squared in the 'n' column. The gross is in the 'g' column nearest to it; the dozen is in the centre 'd' column on the same line, and the digit is found by inspection. e.g.

7ᘔ squared = 51 gross 'g'
4 dozen 'd'
and 4 as any number which ends with ᘔ has 4 as digit.

If anyone wishes to write direct to Mr. Sparrow about this article, his address is:-

31, Milton Avenue,
BATH.

ARIADNE

Some British Scientists who have worked for years with dynes and oersteds, calories and millimetres of mercury, may think they need not share the worries of their fellow citizens about metrication. If so, it is high time for them to find out what the current international system of metric units really is. The excellent new booklet which Pamela Anderton and P. M. Biggs have prepared for the Ministry of Technology (Changing to the Metric System, HMSO, 3s. 6d.) puts the obsolescent centimetre-gramme-second system firmly in its place along with metric curiosities like poises and angstroms, as something not to be perpetuated. So research workers chuckling complacently over their wives' confusion about kilogrammes and metres may be in for a shock when they find that they have to learn to replace the dyne by 10 micro-newtons, that one oersted is really 250/n amperes per metre, that a calorie should be written 4,1868 joules and that 1 mmHg or torr is properly expressed as 133,322 pascals (or newtons per square metre). Even the litre is regarded with some disdain by the new metricators, as a permissible (but rough) approximation for the cubic decimetre. I would suggest to anyone finding difficulty that they should first get a clear impression of the newton because so much hangs on this unit of force. I always think of it as the weight of an apple.

reproduced from <u>New Scientist</u>
6 January 117↊

(Continued from page 3)

The question-mark resembles the upside-down two already being used by the British dozenal society.

The ampersand has two forms:-

(i) & as found on our normal typewriters.

(ii) & one that resembles the letter E but is really a correction of ET, and is the symbol at present used by the American dozenal society.

Either form of ampersand may be used for elf but never a normal letter E."

T. Pendlebury.

"This subject was gone into at some length in *1174 (†1960). There are almost as many proposals as there are supporters of dozenals. Now that some decision has been reached and has worked, I suggest we support that decision until some more suitable occasion arises or some more competent body be found to revive it."

B. R. Bishop.

PLEASE VOTE ON PAGE 2.

ON THE NEED FOR CALENDAR REFORM
BY Sr. D. Apolo Pérez Carbonie

This need, becoming more and more urgent, is on the way to being satisfied. the United Nations has a Commission charged with studying it and bringing it into effect. This Commission has made public to the whole world a plan for a possible new calendar to see the reaction. Although I did not feel the solution to be the right one, it was precisely this that made me explore the same field, asking myself the following questions:-

- can we not follow the rhythm of time exactly?
- why do we always work with unequal bases?
- why do we always have to round up or down in order to make the year, which is the principle unit of time and is exact itself?
- why is the start of each year, a unique point in time, at different points in time according to the country, every point being wrong?
- why, when going round the earth, do we lose or gain a day according to the direction in which we go?
- why must we continue to put up with these impossibilities and as many other absurd complications?

In my opinion all this is because a "tailor" has not come forward to equip Time with a suit made to measure. The suits have been pre-fabricated and attempts have been made to modify the body so as to fit the suit as nearly as possible. This is not the way. The way to do it is to make a suit to fit the individual body with its peculiar irregularities.

And this is what I have done in my 'Apolo Universal Calendar'. I have created, not invented, for it the International Hour which would begin at the one, same, exact time throughout the whole world. At first I feared that this would involve some inconvenience, and then I saw it was so simple and easy that I thought millions of people would have already thought of it. But the more I delved the clearer I saw that this was the solution, the only possible suit made to measure: it fitted like a skin fits the human body. With it all the complications and problems we suffer at present would disappear.

Then I thought of modifications to the secondary aspects: how to make the subordinate periods more suitable. To begin with I wished to forget the familiar and explore new ways; but, realising that the man-in-the-street would find this a difficulty and that, being a very secondary matter, it was not so important, I decided to alter the present structure as little as possible. Thus I arrived, after many attempts, with two schemes in front of me: one with the months divided into 5 weeks of 6 days (duodecimal) and the other into 6 weeks of 5 days (decimal), both with an extra compensating holiday week of 5 days, 5 hours, 48 minutes, 6 seconds, at the year's end. Both schemes attracted me equally — for both are exact and convenient — but as the decimal system is the one in widest use, I was lead to decide on the latter scheme. I must make it clear that it is not important and that I feel the same affection towards either scheme. The important point is the creation of the International Hour which would be a good thing to establish even without the other improvements for the time being. We shall remember that 1967 was the FIRST year of the "space era" and of the new calendar; for all the present calendars are inaccurate right from their inception.

Now let the U.N. decide .....

[Note: Senor Pérez will be pleased to send a copy of his calendar to anyone who likes to write to him. His address is:-

Sr. D. Apolo Pérez Carbonie,
Parque de Mendivil,
Villa Apolonea,
IRUN,
(San Sebastián), Spain.]

January to December — final week 'Apolo'

					final week 'Apolo'
1	7	11	17	21	1
2	8	12	18	22	2
3	9	13	19	23	3
4	ᘔ	14	1ᘔ	24	4
5	Ɛ	15	1Ɛ	25	5
6	10	16	20	26	

Apolo Universal Calendar
(duodecimal version)

(Translated from the Spanish
by B. R. Bishop).

CALENDAR FOR 117

	JANUARY	FEBRUARY	MARCH
Sunday	1 8 13 1↊ 25	5 10 17 22	5 10 17 22
Monday	2 9 14 1↋ 26	6 11 18 23	6 11 18 23
Tuesday	3 ↊ 15 20 27	7 12 19 24	7 12 19 24
Wednesday	4 ↋ 16 21	1 8 13 1↊	1 8 13 1↊ 25
Thursday	5 10 17 22	2 9 14 1↋	2 9 14 1↋ 26
Friday	6 11 18 23	3 ↊ 15 20	3 ↊ 15 20 27
Saturday	7 12 19 24	4 ↋ 16 21	4 ↋ 16 21

	APRIL	MAY	JUNE
Sunday	2 9 14 1↋	7 12 19 24	4 ↋ 16 21
Monday	3 ↊ 15 20	1 8 13 1↊ 25	5 10 17 22
Tuesday	4 ↋ 16 21	2 9 14 1↋ 26	6 11 18 23
Wednesday	5 10 17 22	3 ↊ 15 20 27	7 12 19 24
Thursday	6 11 18 23	4 ↋ 16 21	1 8 13 1↊ 25
Friday	7 12 19 24	5 10 17 22	2 9 14 1↋ 26
Saturday	1 8 13 1↊ 25	6 11 18 23	3 ↊ 15 20

	JULY	AUGUST	SEPTEMBER
Sunday	2 9 14 1↋ 26	6 11 18 23	3 ↊ 15 20
Monday	3 ↊ 15 20 27	7 12 19 24	4 ↋ 16 21
Tuesday	4 ↋ 16 21	1 8 13 1↊ 25	5 10 17 22
Wednesday	5 10 17 22	2 9 14 1↋ 26	6 11 18 23
Thursday	6 11 18 23	3 ↊ 15 20 27	7 12 19 24
Friday	7 12 19 24	4 ↋ 16 21	1 8 13 1↊ 25
Saturday	1 8 13 1↊ 25	5 10 17 22	2 9 14 1↋ 26

	OCTOBER	NOVEMBER	DECEMBER
Sunday	1 8 13 1↊ 25	5 10 17 22	3 ↊ 15 20 27
Monday	2 9 14 1↋ 26	6 11 18 23	4 ↋ 16 21
Tuesday	3 ↊ 15 20 27	7 12 19 24	5 10 17 22
Wednesday	4 ↋ 16 21	1 8 13 1↊ 25	6 11 18 23
Thursday	5 10 17 22	2 9 14 1↋ 26	7 12 19 24
Friday	6 11 18 23	3 ↊ 15 20	1 8 13 1↊ 25
Saturday	7 12 19 24	4 ↋ 16 21	2 9 14 1↋ 26

Easter, Whitsun and Christmas marked □

Spring and Late Summer Bank Holidays marked ◇

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