D U O D E C I M A L

N E W S C A S T

Year 5
No. 2
October
*1177 (1963)

The Duodecimal Society of Great Britain,
106, Leigham Court Drive, Leigh-on-Sea, Essex.

Price:
1 shilling.

Contents

Editorial

It was strongly suggested at the last General Meeting that it might prove more popular if we were to make the date of the General meeting in the Spring or Autumn instead of at about the turn of the year. We have therefore brought the date forward to Tuesday the 18 October (22nd October decimally).

It is hoped that as many Members as possible will come, especially those many living in and near London, if only for a short time during the evening. Our Society needs the fullest support you can give.

We are sending out (to Members only) with this 'Newscast' a 'Sample Newscast' which will be used to send to enquirers. We have tried to make it as useful and relevent a publication as possible for a short introduction to some of our ideas. If Members would like further copies, or if non-Members would like to have a copy, please write in.

Meanwhile, the regular editions of this journal are in constant need of articles, even if they merely repeat in new words the basic advantages of dozenals. We all see these facts, and apply them, in our own ways. It will certainly help others if we can explain our viewpoints, applications and conclusions. All readers are asked to record their explanations in an article.

The Duodecimal Society of Great Britain

(106, Leigham Court Drive, Leigh-on-Sea, Essex)

GENERAL MEETING

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

the Raglan Hotel
Aldersgate Street

at half past six p.m. on
Tuesday, the twenty-second day of OCTOBER, 1963 (*12 October 1177)

Agenda

1. Progress in *1177
2. Finance
3. Election of Council
4. Policy for next year
5. Report of Decimal Currency Committee
6. Other Business
7. General discussion

Light refreshments

All members, friends and well-wishers are cordially urged to come along. Please 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. Use the slip below if you wish.

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.)

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

I expect/do not expect to attend the General Meeting and shall bring ..... guests. I append a list of the points I wish discussed.

Delete as appropriate) Signed .....

BRISTOL GRAMMAR SCHOOL DUODECIMAL SOCIETY

A report by J. C. Longhurst

On March 18th of this year I addressed the first meeting of the Bristol Grammar School Duodecimal Society. For some time prior to the meeting I had been strongly urged to organise a society in which members of the school could express their views concerning duodecimals, and at the meeting as well as support, we had constructive criticism which proved useful. Mr. Bishop sent us a generous selection of publications, some of which have formed the basis of a small library; the leaflets were handed out at the meeting.

In planning my lecture (which was limited to *26 minutes so that ample time was left for discussions and questions) I found the booklet 'An Excursion in Numbers' by F. Emerson Andrews a useful foundation on which to build, and a source of inspiration. The lecture ran on the following lines:

Why do we count in tens? — ten fingers.

What were the ancient forms of counting and why do we not use them now? — at this point I attempted sums using Roman numerals.

What has our present system got that the Romans did not have? — zero.

Where do we find the dozen in our present way of life? — money, time, the circle, lengths, nautical lengths .....

What is the Duodecimal System and how do we convert from decimal to duodecimal and vice-versa? — I wrote on the blackboard the numbers one to one dozen, explaining what *10 meant very carefully and then asked members of the audience to tell me what they understood by certain duodecimal numbers. The fundamental idea was grasped very quickly, and they were soon able to convert in either direction.

How bad is ten compared with a dozen? — here I used the now familiar arguments, shewing the factors of 10 and *10, difference in packing arrangements, multiplication tables, prime numbers and the holding of more numbers in the duodecimal notation for a given number of digits.

Finally I told the audience the aims of the Duodecimal Society and it was agreed that our School Society should have the same aims, with particular emphasis on bringing duodecimals to the notice of as many people as possible. I encouraged them to join the Duodecimal Society of Great Britain.

I have given this outline because I hope other schools may follow our lead and form their own branches. I am sure they will not find apathy, for our meeting was well attended. The audience consisted of:

Ordinary Members of D.S.G.B.	1
Younger Members of D.S.G.B.	2
Other members of staff present	3
Other pupils (including *19 members of sixth-form	*43
Total	*49

Several questions were asked which may be of interest to the reader:

1) Why are there so few members of the Duodecimal Society of Great Britain?

This question is extremely difficult to answer as I should have thought any reasonably sane individual presented with the facts, would support our cause. A dozen shillings is surely not a deterrent. Finally we decided that it must be that the majority of the population have never had the opportunity to consider the question, and that it was up to us to remedy this.

2) The unit of 8 or *14 was put forward as it would be more convenient in computer work. This was not disputed, but it was pointed out that computers are not every thing. The lack of factors of these bases led us to reject them.

3) By now it was agreed that theoretically duodecimals are superior to decimals but a generation of mixed up people seemed too great a sacrifice. We must take the changeover in easy steps. At this point I told the audience how easy they are to use in practice (marking O and A level questions out of *10 instead of 10)

D U O D E C I M A L P U B L I C I T Y

B.B.C. Television — Item on "That Was The Week That Was" 2 March 1177

Institute of Weights and Measures Administration, West Midland Branch -- paper by T. I. Wright April 1177

The British Amateur Scientific Research Association Journal -- article by D. A. Sparrow June 1177

'The Daily Telegraph' -- mention in article 'Pointing the Way to New Money' 10 June 1177

NEWS FROM AMERICA

We have been very pleased to receive after a long, but unavoidable delay, the last issue of 'The Duodecimal Bulletin' the Journal of the Duodecimal Society of America.

It contains a full account of the successful Meeting of the Board of Directors on Thursday morning, *10 (12) April, 1176 (1962), in Alamogordo, New Mexico. (A brief mention was made of this in 'Duodecimal Newscast', Year 4, no. 2, for July last year). The Secretary gave the Membership figure as *98 (116), an increase of *2 7 (34). Many publicity successes were reviewed, including Professor Aitken's B.B.C. broadcast published in 'The Listener'. Mr. Henry C. Churchman was elected Vice-President of the Society with the special assignment of heading of 3-man committee to elaborate the By-Laws of the Society. General discussion included proposals for changes in grades of Membership and the resulting by-law changes.

The Annual Meeting of the membership was held on *15 (17) May, *1176 (1962) in the Carnegie International Centre, New York. This meeting approved the new membership structure which eliminated the grade of Aspirant. The new grades of Membership are:- Members (all accepted applicants); Senior Members (Members who have demonstrated competence in dozenal computation); Fellows (Members who have made major contributions to literature, application or developments of dozenals). Fees are $6 p.a., students paying $3 p.a. The Pope's approval to include consideration of a fixed-date Easter at the Ecumenical Council lead the Meeting to remember the World Calendar Association. The feature of the Meeting was the talk by Mr. R. Stern on South Africa's change to decimal currency.

Other articles cover the proposal by Mr. Charles H. Brittain, a recent Member who had reached dozenal conclusions independently, for a new metric system based on the unit equivalent to 1/32", derived from standard screw threads; 'Palindromic Numbers, by F. E. Andrews, 'More Abacus' by T. B. Linton (more interesting facts on calculations using the abacus); a review of A. C. Aitken's 'The Case against decimalisation' by F. E. Andrews; 'Casting out ᘔ's' by W. B. Knapp; and some smaller items.

(Continued overleaf)

STOP PRESS

The Report of the Committee of Inquiry on Decimal Currency was published just as this Newscast had been sent for printing. A review and commentary on it will be included in the next Newscast. Readers may like to send us their views and reactions.

There is a very interesting article by H.C. Churchman 'About that length'. After a long insistence on the arguments in support of the use of semicolon for the dozenal point, he gets down to the essential philosophy of the imperial and decimetric systems as they have been defined. The well-explained conclusion is that it would be within the spirit of the present systems to change gradually through near-equivalent units to a system based on the 'metron', as he calls the unit, a dozen of which make the 'dometron', equivalent to /1·1176 metres or one yard eight inches. (This is essentially the same as M. Essig's new metre, Shaun Ferguson's ell, and other proposals.) He goes further, however, and proposes the interesting and original point that we should define the 'dometron' as *750 000 (1 845 504) wavelengths of Krypton-86 exactly, which makes more convenient definitions. This definition is only about one part in three thousand larger than the present definition derived from the latest agreed optical definition of the metre (see Duodecimal Newscast Year 4 No.2 page 3 July 1176 (1962), and deserves serious attention by those working to a dozenal system of units along the same lines.

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On the 8 June, the Secretary of the Duodecimal Society of Great Britain had the pleasure of the company of Mr. Kingsland Camp, a very prominent member of the Duodecimal Society of America, who called in at Leigh-on-Sea for a day during a tour of the United Kingdom. Whilst on an extensive look-round of Leigh-on-Sea and Southend-on-Sea, they could not help touching on matters to do with duodecimals and the two Societies: the former included some interesting investigations of geodetic dimensional units and map referencing systems, the latter a fervent desire for a continuation of the close ties across the Atlantic.

N E W M E M B E R S

Younger Member

D. M. Groves — 17, Compton Drive, Sea Mills, Bristol 9

Ordinary Member

Harry C. Robert, Jr. — 2631, Ellwood Drive, N.E. Atlanta, Georgia 30305, U.S.A.

PLAN OF CAMPAIGN

by J. Halcro-Johnston

To draw the attention of responsible people and organizations to the superiority of duodecimal arithmetic is one of the accepted aims of this Society. The corresponding aim of the American Society is, I feel, rightly, less restrictive: the education of the Public in the use of base twelve. The clear implication is that, if and when the public has been fully informed, twelve arithmetic will then be able to replace the present system based on ten. (See note (1) at the end)

The case for a policy of education is based on two facts:
(a) the great majority of the public, not excluding the educated, are under the delusion that the present arithmetic based on ten is the only possible system; and
(b) the practical and economic advantages of changing to base twelve and the simpler arithmetic that follow would be so great that it could replace the present system if these advantages were better known and appreciated.

The advantages of twelve arithmetic are like the potential energy stored in an atomic nucleus which became available as soon as a way of releasing it had been discovered — the chain reaction based on the neutron. Can we find a similar neutron that will start a chain reaction in the sphere of education?

This question can, I believe, best be answered by experiment: we must try out different methods to discover which works best. The newcomer, a schoolboy perhaps, on realizing the advantages of reform is often an enthusiast, eager to pass on the new to others. To take advantage of this enthusiasm he must be provided with the means to drive home the attack and start the chain reaction. Otherwise his enthusiasm will be lost. These means might take the form of a supply of free leaflets supported, if required, by a simple manual on twelve arithmetic.

The design of a suitable leaflet, or of leaflets, should be based on experiment, (see note (2) at the end) we might be guided by the reactions of those who read them. I would suggest that the following principles be followed:

(a) The leaflet must be sufficiently interesting to be read by all and not dropped unread into the waste-paper basket. It should present a <u>talking-point</u>.

(b) It must be written in simple language. To call ten, eleven, and twelve, dek, el, and do, for instance, will only annoy the reader and give the impression that the case for reform is equally trivial.

(c) It should stress the practical and economic advantages of reform, since these are the only justification for the proposed change.

(d) Controversial matters should be avoided; a teacher must be impartial. I refer in particular to the possible introduction of a decimal coinage. It must not be forgotten that the case for reform rests on two principles — first, the use of the same base for arithmetic and metric, and second, the need for a base having the simple factors, 2, 3, and 4. Those who advocate the introduction of a decimal coinage are following the first of these principles only. Much as we may deplore half measures we can only weaken our case by condemning the following of a principle on which that case itself is based.

Finally this educational campaign must not be confined to the English-speaking public; reform to be successful must be worldwide. We might study the methods used by the National Bible Society. It should not be difficult to enlist the help of volunteers with a knowledge of other countries and their languages and the Duodecimal Society might help in the printing of leaflets suitable for their use. (3)

NOTES by the Editor

(1) The three aims of the Duodecimal Society of Great Britain as stated in our latest Rules, published in the last Newscast, are:
— To conduct research into mathematical science, and to disseminate the result, with primary reference to the use of base twelve, in all branches of that science; to also investigate the applications of base twelve to all other branches of natural, pure and applied science
— To conduct research into the application of base twelve to coinage, weights, measures, standardized units and to machinery.
— To further the advancement of learning and commerce and the education of the public.
(2) Copies of the Society's present leaflets will be sent on request
(3) This article gives a good idea of the sort of suggestions we welcome. Such ideas and offers to carry out such ideas are ever earnestly sought

BOOK REVIEWS

Numbers, Please by Frank Emerson Andrews, Published by Little, Brown and Co., *1175 (1961), price $3, *85(101 pp.

The Dedication to Numberless People and to Those who have Some Numbers and might enjoy More is very apt. Although written for young folk, it will give pleasure and instruction to people of any age. Arithmetic is fun.

It is well that one should pause and consider the origins and principles of simple counting, progressing from the animal world and primitive man, through the importance of nought, the reasons behind multiplication and division to dozenals. Some of the digressions, whilst perhaps too unusual and even complicated for some readers, will nonetheless provoke thought and lead to original ideas in others. The short cuts in arithmetic, some of them left unaccountably in oblivion these days, will prove useful.

The progress to dozenals prepares the ground for the full understanding of base twelve. Of the eight dozen and five pages of the book, nine only are devoted to dozenals; but these few pages suffice to give the primary essentials. Mr. Andrews is the Chairman of the Board of Directors of the Duodecimal Society of America.

The very last paragraph of the book will illustrate how down-to-earth he is:- "It is doubtful that the world will again change its system of numbers - though it did a few centuries ago when we changed from Roman to our present Arabic numerals. But is it fun to experiment with a different system that in many respects is better, and to realize that the final word has by no means been said in arithmetic". It is, perhaps, by this sort of attitude that we may get those who are opposed to any change under any circumstances to consider dozenals, and then, seeing the indisputable advantages, be more kindly disposed to the much needed change.

A revised currency by Shaun Ferguson, published by the Duodecimal Society of Great Britain, Second (revised) edition, 1176(1962) December, 1176 (1962), price 3d., 9pp.

This is the second edition of a paper that first appeared as the reprint of an article in 'Duodecimal Newscast' Year 2, no, 2, for June 1174 (1960). The basic explanations and conclusions remain the same.

Dozenalization of the currency is considered against decimalization, and is seen on all counts to be a more practical proposition, a conclusion supported by Decimal Coinage Reports and Debates. Mr. Ferguson gives some interesting facts in the history of our currency. There is a comparison of the various proposals for decimalization, which shews that all have some fundamental defect. There is a critical comparison of several dozenal proposals, from which it is seen that one based on the existing duodecimal relationship between the shilling and the penny will prove the most convenient. Mr. Ferguson as an expert numismologist is qualified to conclude with proposals for the composition and sizes of the coins needed for the new system.

This little book has been sympathetically received by the Halsbury Committee considering the decimalization of the British system of currency.

To convert a four-figure time reference from the present notation and time system to the new duodecimal notation and time system which divides the day into twelve parts called duors

Resulting duodecimal digit	Action to digits in present twentyfour hour clock system	Example 9.54 p.m.= 2154 hrs.
1st	divide first 2 decimal digits by 2 and take whole number	2)21 $10\frac{1}{2}$ = ƨ·6 ƨ
2nd	take 3rd decimal digit as it stands, and add the digit of any fractional over from the last calculation	5 + 6 ɛ
3rd and following	divide final decimal digit by ƨ and express as a duodecimal fractional. This can be done with fractional conversion tables. Approximate as appropriate	4 + ƨ = ·497 24ƨ
		∱2154 hrs = *ƨ·ɛ4ƨ duhours

THE LIBRARY

of the Duodecimal Society of Great Britain

It was agreed at the last General Meeting that the list of books in the Library should be published in the 'Duodecimal Newscast'

L -- available on loan -- loanee pays registered postage both ways, and is responsible for any loss or damage
R -- reference only -- available at Society headquarters
S -- available on sale from publishers -- for details consult Society's booklist or ask Hon. Secretary.
A -- personal property

E. Achelis	The calendar for the modern age	SL
A. C. Aitken	The case against decimalisation	SL
F. E. Andrews	New numbers	PR
"	Numbers, please	SL
H. C. Churchman	Calendars and P.M. days	R
	December, critical month in the World Calendar	R
	Nu modern world calendar	R
D.S.A.	Manual of the dozen system	SL
J. M. Essig	Douze, notre dix futur	SL
"	La Doudécimalité: chimère ou vérité future?	SL
I.C.T. Ltd.	An introduction to binary arithmetic	SL
L. Loynes	Byraz colour coordinating	SL
L. A. Pondlden	The duodecimal book	SL
D. E. Smith	Number stories of long ago	PR
R. Taton	Histoire du calcul	PR
H. Teitze	Gelöste und Ungelöste Mathematsche Probleme	PR
G. S. Terry	The dozen system	L
"	Duodecimal arithmetic	PR
Wightman's	Arithmetical tables	L

The Society also possesses:-
various decimal currency reports
miscellaneous dozenal papers and proposals
many extracts from publications going back to the 17th century

If you have any publications, closely or loosely associated with our aims and ideals, which you are willing to give or loan to the Society, would you please let the Secretary know.

CONVERSION OF RADIO FREQUENCIES

BY Shaun Ferguson

Radio frequencies are at present expressed in metres or in cycles per second. An alteration of the second to a dozenal time-unit will involve the revision of the radio-frequency numbers. Taking the dozenal unit of 0·000 01 day as the time unit, the conversion necessary is

1 cycle per second = 0.42 cycle per dozenal unit
1 cycle per dozenal unit = 2·88 cycles per second

Larger units:

⊀100 cycles per second	= *22·88 cycles per dozenal unit
1000 " " "	= 24ᘔ·48 " " " "
414,72 " " "	= 100 " " " "
4,97664 Kc/s	= 10000 (new Kc)
8,59963392 Mc/s	= 1,000,000 (new Mc)
Metres: 1 metre	= approx 0·29 ell (say 0·ᘔ)
1 ell	= 1,12 m

DUODECIMAL PUBLICATIONS, etc.

The following publications are available through this Society Prices are in dozenals, packing and inland postage a penny in the shilling extra. Please obtain those marked ∅ through shops.

Logical Money, Weights and Measures		free
Duodecimal Leaflet		free
Duodecimal Newscasts for *1174 (1960) to *1177 (1963)		1.0s (1s.0d.)
Offprints:- New duodecimal notations (2)		
Duodecimal metric proposals (4), Report of Duodecimal Summit Conference (5), Measuring our way (6), New duodecimal notations and names (7), A set of symbols (8), A suggested series of notations and names (9), The 1, 2, 3 of dozenals (ᘔ, ᘓ, 10)		.2s (2d.)
S. Ferguson A revised currency		.3s (3d.)
∅Prof. Aitken The case against decimalisation	Oliver & Boyd	2.6s (2s.6d.)
F. E. Andrews An excursion in numbers (English or Esperanto)		free
F. E. Andrews Numbers, Please (Little, Brown-Boston, U.S.A.)		20.0s(£1.4s.)
R. H. Beard Antipation al aritmetiko (in Esperanto)		a few free
∅J. Halcro Johnson The Reverse Notation (Blackie & Son)		13.0s (15s.0d.)
∅Joan Essig Douze notre dix futur (in French)	Dunod	ᘔ.0s (10s.0d.)
∅ " " La Duodécimalité: Chimère ou vérité future		6.6s (6s.6d.)
Duodecimal Society of America Manual of the Dozen System		7.6s (7s.6d.)
" " " " The Duodecimal Bulletin		3.6s (3s.6d.)
" " " " Circular Slide Rule ∅ or £2:0:0		