COUNTING IN DOZENS

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

Our common number system is decimal - based on ten. The dozen system uses twelve as the base, which is written *10*, and is called *do*, for dozen. The quantity *one gross* is written *100*, and is called *gro*. *1000* is called *mo*, representing the meg-gross, or great-gross.

In our customary counting, the places in our numbers represent successive powers of ten; that is, in 365, the 5 applies to units, the 6 applies to tens, and the 3 applies to tens-of-tens, or hundreds. Place value is even more important in dozenal counting. For example, *265* represents *5* units, *6* dozen, and *2* dozen-dozen, or gross. This number would be called *2 gro 6 do 5*, and by a coincidence, represents the same quantity normally expressed as 365.

Place value is the whole key to dozenal arithmetic. Observe the following additions, remembering that we add up to a dozen before carrying one.

94	136	Five ft. nine in.	5.9'
31	694	Three ft. two in.	3.2'
96	3Ɛ2	Two ft. eight in.	2.8'
19Ɛ	1000	Eleven ft. seven in.	Ɛ.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 *2Ɛ*, which is two dozen and eleven. For larger numbers, keep dividing by 12, and the successive remainders are the desired dozenal numbers.

```
12 ) 365
12 ) 30  + 5
12 ) 2   + 6
     0   + 2     Answer: 265
```

Dozenal numbers may be converted to decimal numbers by setting down the units figure, adding to it 12 times the second figure, plus 12^2 (or 144) times the third figure, plus 12^3 (or 1728) times the fourth figure, and so on as far as needed. Or, to use a method corresponding to the illustration, keep dividing by *X*, and the successive remainders are the desired decimal number.

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

Numerical Progression

1	One		
10	Do	.1	Edo
100	Gro	.01	Egro
1,000	Mo	.001	Emo
10,000	Do-mo	.000,1	Edo-mo
100,000	Gro-mo	.000,01	Egro-mo
1,000,000	Bi-mo	.000,001	Ebi-mo
1,000,000,000	Tri-mo	and so on.	

Multiplication Table

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

The Duodecimal Bulletin

Whole Number 22

Volume *11*, No. *1*
May 1957 (*1171*)

THE DUODECIMAL SOCIETY OF AMERICA

20 Carlton Place ~ ~ ~ ~ ~ Staten Island 4, N. Y.

THE DUODECIMAL SOCIETY OF AMERICA

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

Full membership with voting privileges requires the passing of elementary tests in the performance of twelve-base arithmetic. The lessons and examinations are free to those whose entrance applications are accepted. Remittance of $6, covering initiation fee ($3) and one year's dues ($3), must accompany applications.

The Duodecimal Bulletin is the official publication of the Duodecimal Society of America, Inc., 20 Carlton Place, Staten Island 4, New York. F. Emerson Andrews, Chairman of the Board of Directors. Kingsland Camp, President. Ralph H. Beard, Editor. Separate subscriptions $2.00 a year, 50¢ a copy.

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The Duodecimal Bulletin

All figures in italics are duodecimal.

THE ANNUAL MEETING

The Annual Meeting of the Duodecimal Society of America was held St. Valentine's Day, February 14th, 1957, at the Gramercy Park Hotel, N. Y. C. President Camp called the meeting to order at 20:45 EST., and called for the report of the year's activities.

Secretary Beard advised that the progress for the year had been most satisfactory. The demand for our literature continues to increase, and averages 35 individual requests a week. Bulk shipments to teachers colleges and mathematical institutes were 2100 sets.

Our general publicity has been good. Our literature is listed in The Teachers Guide to Curriculum Materials and in the bulletins of the U. S. Office of Education. Winston Churchill referred to duodecimals in his History of the English Speaking Peoples. We have received two excellent papers on duodecimals from authors abroad, who were previously unknown to us, their articles appearing in the last issue of the Bulletin. The outstanding item, of course, was the publication in France of Douze, Notre Dix Futur, (Twelve, Our Future Ten), by Jean Essig. This is the first such work published in French, and is also the only book on duodecimals published anywhere in the last twelve years.

Our membership at year's end was 96, a gain of 8. This total was comprised of 75 Members and 21 Aspirants, among these being 10 Members and 8 Aspirants of Student Grade. Several applications have been received since then.

The report of Treasurer Humphrey showed that our expenses for the year were $1650, and our receipts $1035. The deficit of $615 was caused by the costs of one issue of the Bulletin being carried over from last year because of late publication, and the billing of two issues for this year. Thus there are the costs of three issues of the Bulletin in these figures.

Our cash balance of $1380 at the beginning of last year, was reduced by the deficit to $795. Contributions by our generous and devoted members amounted to $830. It is only by their aid that we are able accomplish our work, and we owe them much. Grateful acknowledgement is also made of the work of our officers and chairmen who not only contribute their time and faithful efforts, but also absorb the expenses of their offices.

Chairman Leopold Schorsch of the Nominating Committee reported the recommendation that the Directors of the Class of 1957 be reelected as the Class of 1960, and that two new Directors be added: Henry C. Churchman, of Council Bluffs, Iowa, and Jamison Handy, Jr., of Pacific Palisades, Calif. As there were no other nominations, the recommendation was approved, and the Nominating Committee was requested to serve for another year.

Mr. Churchman is the author of the Do-Re-Mi System of duodecimal nomenclature and measures, and of numerous duodecimal papers. Jamison Handy, Jr. has been a member for many years, and is widely known among us as Editor of the Dozenal Doings. Thus, the directors of the Class of 1960 are F. Emerson Andrews, Louis Paul d'Autremont, Henry C. Churchman, and Jamison Handy, Jr.

Chairman George Terry of the Committee on Awards announced that the Annual Award of the Duodecimal Society for 1956 was conferred upon Jean Essig, of France. Mr. Terry's presentation of the Award and the acceptance for M. Essig are detailed elsewhere in this issue.

President Camp asked the Secretary to report on the transactions of the Board of Directors, today. The Society is faced with a pressing problem in the exhaustion of the current printing of The Dozen System, the brochure by Mr. Terry which has formed an important element in our information to new members, and general distribution. Various alternatives to reprinting were considered because Mr. Terry feels that fresher material would be preferable. It was decided that the Society would undertake the printing of a Manual of the Dozen System, probably a 64 page pamphlet in the format of the Duodecimal Bulletin, to contain much of the material of The Dozen System, a section of problems in arithmetic and mathematical tables such as logarithms and functions to four places, and some of the papers that have appeared in the Bulletin. This is a project of some magnitude, and it may not reach completion this year.

Our supply of the pamphlet covering Mr. Andrews' An Excursion in Numbers will also not last out the year, and a fifth reprinting will be necessary. This is our most important piece of duodecimal literature, and our distribution of this pamphlet will have reached 20,000 copies. It was first published as an article in the Atlantic Monthly for October, 1934, and formed the seed from which our Society grew.

One major change in our routine practices was considered. There have been a number of proposals that we adopt the use of the semicolon as the separatrix or unit-point, to appear at the end of duodecimal numbers and between duodecimal integers and fractionals as an additional and positive means of identifying figures on the dozen-base. The Board approved the idea, but decided that the proposal for this change of practice should first appear in the Duodecimal Bulletin, to invite comment and discussion. The meeting of the Board concluded with the re-election of the present officers.

Brother Louis Francis, F.M.S., gave us, by invitation, an account of his recent talk on duodecimals to the mathematics students and instructors of St. Johns University, and of the active interest shown. Member Charles Lipkin gave us a supply of his two booklets, Mental Multiplication, and Deft Division, with permission to modify them for duodecimal use and distribution. President Camp expressed the Society's thanks, and adjourned the meeting for the gastronomical and conversational refreshment that always follows.

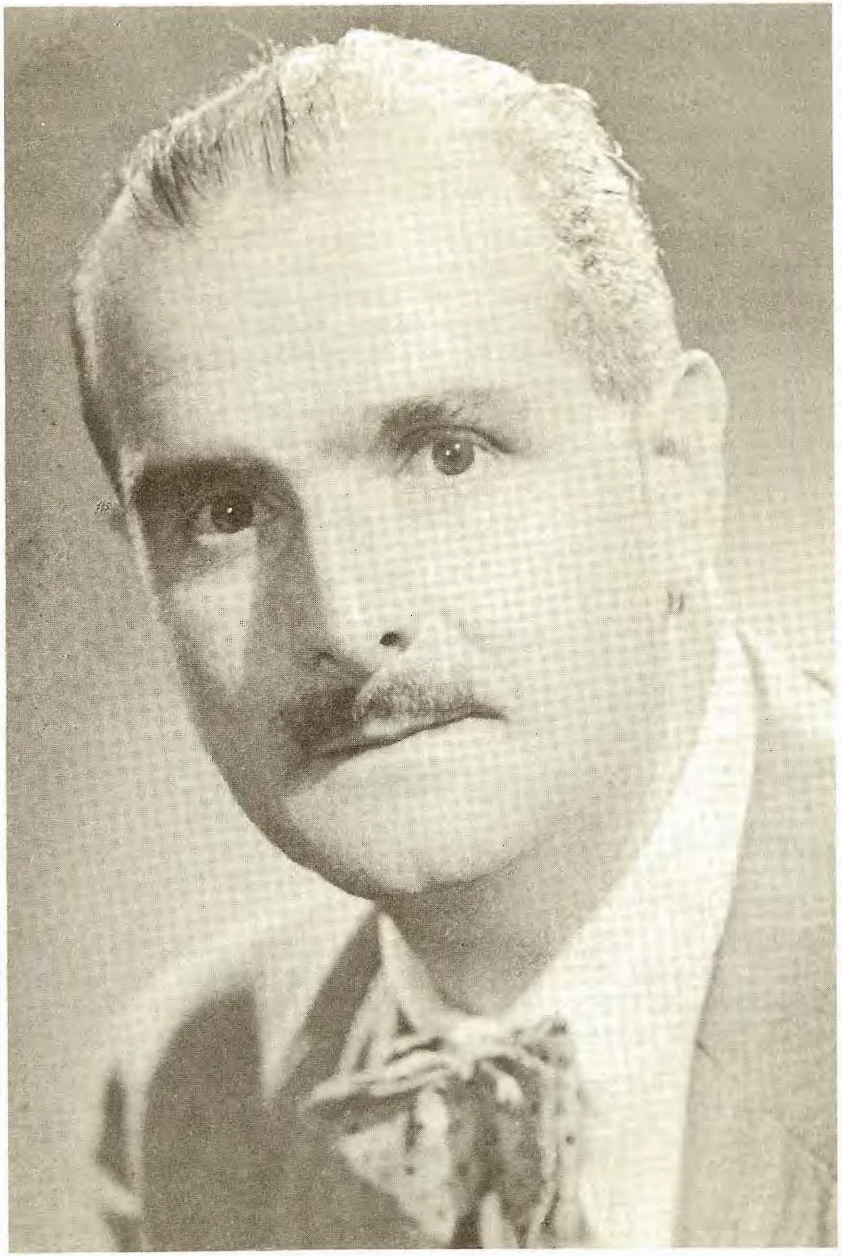
BILL DWIGGINS

William Addison Dwiggins, distinguished type designer died at his home in Hingham, Mass., on Christmas Day, 1956, at the age of 76. He created the Metro newspaper type, and the Caledonia and Electra book faces. He was the leader of his craft in this country.

He was as much annoyed by U. S. banknote design as some of us are by the quality of our postage stamps. The authoritative Layout in Advertising quotes his evaluation of our paper currency, "It is worth its face in gold, but my God, what a face."

He was a good friend of George Terry, our founder, and of this Society. In its early days, he contributed the design of its duodecimal numerals and of its official seal, which appears in reduced size on our letterheads. It is a photograph in oblique lighting of an actual impression of that seal on parchment that appears on the cover of the Duodecimal Bulletin.

He was a kindly man, a sculptor of puppets, a superb draughtsman, and a mastercraftsman. We mourn his loss.



JEAN ESSIG

ANNUAL AWARD FOR 1956 TO JEAN ESSIG

George S. Terry, Chairman of the Committee on Awards, commented on the megalithic slowness of man in modifying his accustomed habits and practices. And history is often vague on the origin of ideas, especially scientific ideas, which have generally been considered dangerous, and have sometimes led to persecution.

Alexander the Great, about 300 B.C., made great conquests from the Mediterranean eastward, - crossing the Tigris-Euphrates valley, passing Arabia, and reaching India. There is no record of his meeting one of the greatest of new ideas, - the idea of an expression for nothing at all - zero - which then existed in some form in one or more of these localities. Who had the original idea, we do not know. Some say the Hindus, some say the Arabs, some the Babylonians. That it is Eastern is certain, - also that it is old. But the idea had to wait 1000 years before entering Europe via Africa and Spain to found - eventually - all modern calculation.

There were at least two great centers of ancient scientific thought; one in Babylon on the Euphrates, and the other in Central America in what is now Guatemala. Both studied the stars, sweeping round the sky in enormous circles. Both had good calendars. Both had a method of counting different from ours. The Mayans, counting by twenties, had a better calendar than ours, though complicated.

Babylonian arithmetic is of special interest. Their counting was based on sixty, - that is, super-duodecimal, introducing 5 as a factor as well as 2, 3, and 4. And though so much of their knowledge is lost to us, we still follow them in the division of the circle into 360 parts. Modern commerce packages more economically by the dozen than by ten.

Of some thirty workers with the Dozen during the last hundred years, we may mention, Isaac Pitman, author of the shorthand system, H. M. Parkhurst, Reporter for the U. S. Senate, Herbert Spencer, noted philosopher, G. Elbrow, retired British Admiral, Grover Cleveland Perry, our Chairman F. Emerson Andrews, and now Jean Essig of France.

Probably no one imagines that the world will quickly change from counting on its fingers to a more convenient method. Many attempts have been made to produce a universal language, so far without great success. Is it therefore to be assumed that with our rapid world-wide transportation and instantaneous communication, we shall never have a universal language?

The reward for original scientific work is small, and is in fact not the object of the serious scientist. The greatest reward is doubtless in the mind of the explorer - for the discovery of truth - which adds to the sum of human knowledge, and which records that knowledge by publication for the benefit of future generations.

Here is a new book, Douze, Notre Dix Futur, by Jean Essig. It is a clear and able explanation of counting by dozens, - an original work, - yet pointing in the direction we of the Duodecimal Society have been following. This gives us of the Society great encouragement, - especially coming from France, the home of the metric system, and visualizing a metric system including the division of the circle, but duodecimally based, and therefore sharper and more concise. It is hoped that the book will have wide distribution, and that it will, in time, be translated.

M. Essig could not come from Paris for this meeting but Brigadier General Pierre Brison, Scientific Attache to the French Embassy at Washington, is here in his place. M. Essig writes of General Brison that he was "not only one of the first to study the manuscript, but that it was largely to him the author owes the fulfillment of his work."

It is an honor, General, and a great pleasure to us, to hand to you our modest award for outstanding work in the field of counting by dozens, - which you have kindly undertaken to forward to:-

M. Jean Marie Essig
Inspector General of Finances for France
Civilian Director of the
Institute for Advanced Studies in National Defense,
Commandeur de la Legion d'Honneur
Holder of the Croix du Combattant
Grand Officier de l'Ordre Royal du Cambodge
and Officier du Merite Maritime.

The citation reads

The Annual Award of
The Duodecimal Society of America
for the year 1956 is conferred upon

J E A N   E S S I G

for his outstanding contribution
to a wider understanding of the Twelve Base
and toward integration of the world's numbers and measures.
Particular citation is made for his work

DOUZE, NOTRE DIX FUTUR

the first extensive treatment of this subject
in the French language.
His work is clear, concise, persuasive, and has contributed
to the progress and understanding of mankind.

M. ESSIG'S ACKNOWLEDGEMENT

Mr. President,
Dear Colleagues:

I think this is the title by which I shall address you, since on both sides of what we call The Big Pond - the Atlantic Ocean - we are engaged in the same work and, as your Chairman F. Emerson Andrews wrote, one day we hope to enlighten human endeavor. Therefore, duodecimal thought actually transcends present problems, and if nations do not always come to an agreement on different points of view - which would happen more often if each had the good will to think about his partner's particular problem - science is there to link that which material interests would separate.

As proof, I need only cite the almost identical conclusions of our work, which is to seek in a completely disinterested way for possibilities of progress in a method of calculation and a system of units which would permit every man to profit more from his leisure, - and to meditate in a philosophical way on mankind's ultimate destiny.

But if I precede the brief report which your directors have been kind enough to ask of me, by this appeal to Christian civilization, which gives us our intelligence and guides our actions, whatever may be the race or confession to which we are related, it behooves me, in this informal meeting, to tell you in simple terms what you may expect of me.

But first, I want to thank you most profoundly for the honor you bestow upon me by the award of your annual diploma. May I also express my gratitude to your Committee on Awards, Founder George S. Terry, Chairman F. Emerson Andrews, whose profound and stimulating work I have spoken of in Paris, and Secretary Ralph H. Beard, who has so remarkably organized this meeting today.

I am sorry not to have been able to come to New York to receive your diploma personally. Technical progress really reduces distances. They are not expressed in kilometers and miles, but unfortunately in francs or dollars, and duodecimal studies represent up to now, you know as well as I do, only a speculation of the mind, obliging those who are devoted to them to pursue professional activities which keep them at home. But I could not find a better interpreter for you than Brigadier General Brison, the highest scientific authority that France has specially appointed to the United States for

National Defense. He has been one of the first to pore over my studies, my manuscript, and to encourage me before you annexed him in the United States. It is consequently to him that I owe in great part the realization of my work. No one else therefore would have been more qualified to share the honor you are giving to a French researcher.

Thus, in telling you the name of one of those who helped me in my work, I begin to answer your question as to how I came to duodecimality. But, in truth, I don't really know. I think there are in the world millions of individuals who have regarded duodecimals favorably at some time or other, simply because they reason. They do not dwell upon it because they respect tradition, or think a reform of our way of calculating impossible. And then there are others who have thought more, who when they were young enjoyed making a duodecimal multiplication table, - but all this in the same way as reading a detective novel or going to a dance with their girl friend.

Maybe this is what happened to me when I was still young. As we get older we meditate more on these problems, if we believe in them, and talk from time to time about them in our milieu. I think I remember that Mr. Andrews wrote that one foggy winter day on the Hudson he had thought about the necessity of a duodecimal system of numeration and units. Shall I confess that one day, bored at a social reception - though it was pleasant, - I had the good fortune to meet M. Lecomte du Nouy, well known in America, who was one of my acquaintances. During the conversation with this brilliant mind, we came to discuss - after many other matters - the duodecimal idea. He had indeed thought about it, but I believe he had reflected on it less than I. Interested by what I was telling him, he almost reproached me for having published nothing on this subject and spurred me on vigorously to write a paper. Moreover, he had assured me that this would be widely diffused in America, since you know that he was one of the most appreciated scholars of the Rockefeller Foundation.

Should I also admit that my laziness and my normal occupation - as I have a completely other job than that of duodecimal expert - did not hasten me to do that work? It had taken me long winter nights at the beginning of the war to think about using them other than in playing bridge or chess. It was at that moment that I started, in a student's notebook, what has become: "Twelve, Our Future Ten."

Then, you know about the misfortunes that befell France. My small notebook has followed me in the tribulations I had in my country. I kept it with me in Paris under the occupation; then I carried it to North Africa where I saw rise the dawn of better times. But there also we had to work hard. And it was there that I met your Assistant Secretary of State, Mr. Robert Murphy. I know that I talked with that dear man about many things - culminating in the landing on November 8, 1942, which made us very happy, - but I would be greatly surprised if I had time, at that moment, to deal with duodecimality. Then, we had to rebuild France, and it is far from being finished. At that time there were more urgent tasks, and I must also say that my small student's notebook stayed in a closet in the country, where unfortunately I had no time to spend sufficiently long vacations to continue writing.

And then, one nice day in 1953, when perhaps the political events or financial difficulties had made me particularly nervous, I became angry with my family because they had lost my small notebook, which I could not find. So, I buzzed my secretary, and I told her we would start all over again. She probably told herself that after all the boss was intolerable, but, as she is very nice, she carefully took in shorthand and typed the minute details I dictated to her. In this way I found an excellent remedy - that I recommend to all our duodecimalistic friends - for the nervousness we sometimes suffer in our normal business.

And that is how the first manuscript of "Twelve, Our Future Ten" was born between 1953 and 1954. It was named at that time "To Calculate Better," and as soon as I finished it, . . . inevitably I found again the 15-year old student's notebook where I had noted down my first studies.

I adapted the whole thing, showed it to a few scientists, also to some industrialists, and finally, thanks to the French Associations of Productivity and Normalization, to the Directorate of Cultural Relations of our Ministry of Foreign Affairs, and to a few important mechanical, metallurgical, and electrical organizations, I was able to publish the report which you are kind enough to honor today.

You have asked me what interest its publication has aroused in France and in Europe. I wish to point out at once that the duodecimal idea in the countries that have already adopted the metric system has only the objectives of transforming sucessfully the method of calculation, - and of improving the system of units, particularly by an intelligent division of the circumference, and therefore a logical and simple time measure. It had less interest in these countries, than in the Anglo-Saxon countries that did not adopt the metric system. The latter rediscover the principle of the metric system in imagining the application of duodecimals to new units proportioned on the base twelve, - or to some of their old units, which, as I have written, would indeed be a grave error. I make this remark because it has amused me to see in the writings of that great philosopher Herbert Spencer, under the title "Against the Metric System," the essential application of the metric system itself.

Nevertheless, I will tell you that the improvement of the basic system of numeration, and of time and angle measure, has not been considered in France without arousing much hope. I have just told you about the French services that were interested in my work. Since then, I have been able to carry along my task by giving a lecture on "Duodecimalite" at the "Palais de la Decouverte," - which is part of the University of Paris, and occupies the major part of the Grand Palais premises next to the Champs Elysees. I am happy to send you with my compliments, a copy of this lecture as a token of gratitude. In this lecture I did not bind myself to explain the problem, - indeed I had to reduce that part because of time limits, - but I wanted to develop the discussion of the possibilities the future is opening to the duodecimal propositions and to examine their advantages as well as the inconveniences. I took that opportunity to ally myself with a new time measurement system which some correspondents had suggested to me, - dividing the day into twelve "bi-hours." The basic unit of time would thus be the second, - the *10 000*th part of the "bi-hour", or *100 000*th part of the day, in duodecimal numeration of course, and no longer the "prime" that I had imagined.

In Europe, my work has of course aroused some interest, but - besides articles in the press and a few letters from German, Czech, English and Swiss scientists, - some particularly interesting remarks came to me from Spain where a scientific association became interested in my propositions. A publisher had even thought of translating my work into Spanish, but afterward he gave up. Finally, to be complete and to keep you informed, I will tell you that the President of the Legal Metrology Conference, Mr. Jacob, who holds high administrative responsibilities in Brussels, maintains a correspondence with me. I think that perhaps my lecture on "Duodecimalite" of December 15th, which has evoked some interest, will give a new scope in France and other countries, to the development of our ideas.

In conclusion, I cannot conceal from you how much this development is encouraged by distinctions such as the one you honor me with. It is indeed a wonderful chance to see

how much our concepts are joined together from both sides of the Atlantic.

However, although a very modest report for an annual meeting does not permit, I should like to reaffirm tonight with you our areas of agreement, and also to limit our rare differences. Already our angle units are the same; our time unit will surely be common, - prime or second, the *10 000*th or *20 000*th duodecimal part of the day.

Moreover, our ideas can triumph only if the whole world decides to adopt them at the same time. Of course, they should satisfy completely the "metric world," which - particularly since India's rallying - represents the great part of the world's population. Thus we can ask it to improve its basic unit of length - where our agreement is not yet perfect - but not to adopt one currently existing, whether meter or foot, which would have no significance in a new system. The minor exceptions are unimportant in view of the great number of new units, - lengths, areas, volumes, masses and weights, speeds, and powers.

As I have said, it is necessary - and I here agree with your Chairman Andrews - to seek a new basic unit, simple and incontestable for all. I think that the one I proposed, the *10 000*th part of the terrestrial circumference in duodecimal notation, (as the kilometer as well as the nautical mile - an enormous advantage, susceptible by itself of rallying many adherents), would be very attractive, and one to which you could adhere. It would result in a new meter a little longer than the present one, (about 44 inches), and the third or fourth of which - factors that we have to like - would be near your present foot. Thus we will be . . . intelligent, and we will obtain an unanimous agreement.

But on less important points our differences could quickly find a field of concurrence. No doubt our draftsmen could come rapidly to an accord on the form of ten and eleven which, I think, should be completely different from the signs already existing in mathematics or literature. This is why I approved the idea of your eleven, which is very near mine. Moreover, in my first manuscript, I had also adopted a reversed three; I gave it up when I found that it could be confused with the epsilon. The printed form you gave avoids that inconvenience completely, but we should bear in mind that in hand-written figures, without a machine, the reversed two is better.

In any case, it is a real pleasure to see in regard to this figure that there is almost no difference in our choice, even when we had not consulted each other. The possible confusion between the X and your ten makes me think however that this choice is not absolutely fortunate, but I do not care too much either for my reversed seven, though very easy to write by hand and hardly subject to error.

On the other hand, to denominate the number of dozens, I believe we could very easily come to an agreement on names similar to those Interlingua proposed at your last annual meeting. Finally, no doubt it would be very pleasant to say "big hundred" and "big thousand" for the numbers which the slow mind would continue to call 144 and 1728.

In conclusion, please forgive me for discussing those few disagreements between our work, but they are very small compared to our main agreements. I believe that the international conferences, which I hope one day may agree to give the world a great reform, will settle this - as I said - in a way not to hurt any nation. What I feel and what many Frenchmen think with me - to whom I have spoken of your works and their excellence, and of the honor you grant to European duodecimal ideas - that science has no country, as we say in France, and that it is fortunate and in keeping with the great traditions bequeathed to us by our ancestors, to see humanity guided towards new and better views. I hope with you that our ideas will become sufficiently known so that the considerable number of thinking men in the whole world (and thus, if not we - since I am not very young - at least our children) will give them birth.

I noticed that a fine group of young people are joining the Duodecimal Society of America. In France also I found much dynamism among young people. Let us place our confidence in all these who are growing up and who will create - on the modest cornerstones we have laid - a splendid structure to enlighten human endeavor, the ultimate word of your Chairman Andrews, to whose eminence I wish, in concluding, to pay my respects.

A DUODECIMAL POINT WORTH MAKING

by Henry C. Churchman

THE DUODECIMAL SOCIETY OF AMERICA has for many years, in THE BULLETIN, distinguished between decimal and duodecimal numbers by printing all dozenal numbers in italics. That is to say, all dozenal digits are shown titled a few degrees to our righthand side from the perpendicular. This is an understandable method.

M. Essig, in his work DOUZE NOTRE FUTUR DIX, enclosed each duodecimal number in a quadrilateral figure, and a group of such numbers within a rightangled parallelogram. And that is an understandable method.

The man in the street, the girl at the typewriter, the operator of a farm has neither of these aids immediately available. Yet that person is precisely the one whose love of duodecimals we must strive to encourage.

Everyone, I believe, recognizes that there is no great advance possible in anything requiring social awareness, or voluntary concurrence of many persons, until an idea is embraced by dominions of minds, by countless individuals. There is not the highest hope for rapid spread of the duodecimal idea among the rank and file by any method which requires aids not immediately at hand for everyone.

In the role of the ubiquitous "man in the street," often I have looked at the license plates of passing automobiles, picturing them silently in Do-Re-Mi nomenclature, and then pondered upon some simple sign to distinguish between decimal and dozenal numbers. Indeed, one can not be sure the number is duodecimal even though it contains a X or an Ɛ; for many license plates have had stirred into their Arabic number digits whole cans of alphabetical soup, all thoroughly mixed together. This writer had an Iowa automobile 1956 plate shown 78-H377, and a son in another country held 77-X398. The latter license shows as a perfect example of duodecimal numbering---and is not.

One of the greatest benefits to be derived from duodecimals can be achieved in the field of measurements and weights. Commercial transactions and records of accounting (particularly those requiring addition, subtraction, or multiplication) are slowed and hampered by our compound denominate numbers, such as 6 feet, 3 inches; 8 hours, 5 minutes; 3 pounds, 4 ounces. The crying need today is avoidance of that archaic method of computation.

There are at least three methods, to my knowledge, by which we may avoid compound denominate numbers.

(a) we might take any existing, unchanged, long established standard of measurement or weight and move up scale and down scale duodecimally from such unit. That is to say, we might take the United States standard foot (legally equal to twelve of 39.37 parts of the meter) and increase or decrease its table of lengths in duodecimal steps both upwards and downwards. Thus, one-twelfth of a foot is already a known quantity, equal to one inch. And we might let a "dofut", for instance, equal twelve times one foot. The standard yard then ceases to exist, but reappeared as a quarter-dofut. The fathom reappears as a half-dofut. The dofut and Mark Twain are equal lengths.

(b) Or, we might take an assumed length for any great circle around the earth (their number and length are legion), and divide and subdivide again and again by twelve. We could give to each of these subdivisions of length a new name, adopting some particular one of them, most suitable, to be our new unit of length. Such unit might be called, as delightfully suggested by M. Essig in DOUZE NOTRE FUTUR DIX, a "duodecimal meter." Then, building upon such "duodecimal meter", we might construct a totally new table of measurements and weights similar to the metric tables, but subdivided and multiplied duodecimally, to replace the present decimally divided and multiplied meter.

(c) Or, adopt outright the metric system of weights and measures (which system has not dared to divide the day or a great circle into ten equal parts, and which English-speaking peoples have, advisedly, disdained).

In either the first or the second case cited above, we shall have implicit need for a duodecimal point, recognizable universally.

Our jovial treasurer of The Duodecimal Society of America, H. K. Humphrey, has long used in common correspondence a semi-colon (;) placed at the righthand end of every duodecimal whole number. The mere presence of a (;) is there used to indicate the fact that all these digits are to be understood in their dozenal sense and not decimally. It is an understandable and simple method.

Now, if we would take time by the forelock, seize Mr. Humphrey's idea and amend it but ever so slightly, we might well find a solution suitable for "the man in the street", the banker, the baker, the grocer, the builder.

Should we not, I submit, adopt the Humphrey (;) point as our universal duodecimal point, placing it at the righthand end of a dozenal whole number and at the lefthand end of every duodecimal fraction, thus *0;123*, to separate the duodecimal fraction from the zero or whole number which precedes it. We would merely substitute the duodecimal Humphrey (;) for the decimal comma (,) or decimal period (.) if the number is to be understood in its duodecimal sense. We would (with only a few exceptions such as tables) express all duodecimal whole numbers by conjoining the suffix (*;00*) --- which is of the essence of my plea. Actually and scientifically it is no more burdensome than the writing of 1.00 for one dollar, or 1.25 to indicate one and a quarter decimally. And it does magnify one of our strongest fields --- in the area of fractions, even when we write a whole number.

Conjointly, there are two, and only two, distinct members of every duodecimal number. There are the member digits expressing values of one or more things. These are called whole numbers. There are the member digits expressing fractional values less than one whole thing. These are known as duodecimal fractions or parts of the whole of some noun. The duodecimal sign or point should appear in every duodecimal number. Its appearance serves not only as a conjunctive between the two members of every duodecimal number, but also serves to indicate that the number is duodecimally based.

I should take a moment here to state that the colon (:), but not a semi-colon, is now used as a sexagesimal point or conjunction by many persons between hours and minutes and seconds. Thus, 11:32 hours is sometimes used to indicate eleven hours and thirty-two minutes, or, actually, 11 and 32/60 hours.

This suggestion does not and should not require abandonment of the italic digits of The Duodecimal Society of America or the lifting of the Essig box or rectangle. But if we shall have gotten ourselves accustomed to the duodecimal sign and one should then find elsewhere written a number neither in italics nor surrounded by a rectangle box, but containing a duodecimal point indicated by a Humphrey (;), such as *0:456*, or *309;00*, or *2468;10*, one would give to it a duodecimal base value and not decimal, the absence of an italic slant or right-angled parallelogram to the contrary notwithstanding.

As a simple trial run, we know there are *77;00* (ninety-one) days in every seasonal quarter year. If we move the duodecimal point one place to our right, we come up with *770;000* days, which is the exact number of days in any three

Gregorian or Julian or World Calendar years (excluding only New Year's and Leap Year's days---which are intercalated differently or in unlike seasons according to Julian or Gregorian or World Calendar rules). If we multiply that number of days in three years by 48 years (*770;00* x *40;00*) we get the sum of *26400;00* days, which expresses duodecimally the precise number of days (again excluding New Year's and Leap Years' days) in a dozen-dozen years. And if we move the Humphrey (;) point to our left two places, which gives us one dozen-dozenth part of the number divided duodecimally, we come up with *264;00* days, which, of course, is the number of days, dozenally speaking, in any Julian, Gregorian, or World Calendar (again excluding New Year's and Leap Years' days only).

The duodecimal point is quite useful also in demonstrating the four-day, five-day, or six-day work week to the rank and file of labor and management. Thus, in any four-day work week, one works *44;00* days in a seasonal quarter year. In a five-day work week, one works *55;00* days in the quarter year. And in a six-day work week, one works *66;00* days in the quarter year. A soldier, working a 7-day week in time of war or emergency, is engaged *77;00* days in every ninety-one day tour. Eventually, he may be paid (and pensioned) in 7-day periods or their multiples, as we settle more deeply into seasonal quarter-year channels of accounting.

The semi-colon (;) is as accessible as the period (.) or comma (,) on the typewriter, the typographical machine, or in any printer's box. It is available to the girl at the typewriter, to the man in the street, to the farmer in the feedlot. It is equally capable of understanding in America, in England, and on the continent, or anywhere in the world.

Webster defines a semi-colon as a mark or point (;) used to distinguish the conjunct members of a sentence (or, we might add, duodecimal number). Let us say it is, specifically, the point (;) which separates a duodecimal whole number from a duodecimal fraction.

Bring out all of our heavy artillery and concentrated machinegun fire to search out its firmness or weakness. The question is not whether the duodecimal point (;) is already pre-empted by some non-duodecimalists, but will it serve our purpose to establish a claim upon it for all duodecimalists. A custom begins with the first step. Humphrey has taken it.

It might be a duodecimal point worth making.

HENRY M. PARKHURST, PIONEER IN DUODECIMALS

by George S. Terry

The discovery by Ralph Beard (Bulletin No. *21* (25) Dec. 1956), in The Plowshare of August 1889, of Henry Parkhurst's table of duodecimal logarithms of numbers *1* to *ƐƐ* to two dozen and two places, is of great importance to the history of counting by dozens. It is the earliest known duodecimal computation and is the most extended set of values for the first gross of numbers.

The table has been checked for twenty places against our manuscript table (of which there is a microfilm), and Parkhurst's last six figures have been checked among themselves, - that is, for all but the fourteen primes between *61* and *Ɛ7*. From these checks it is clear that the Parkhurst table is a very good one, each value individually computed, and not with the composites built up from primes. There is no indication of any error in computation, but there are two copying errors (or misprints):-

log *59* place seventeen should read *𝒳260*
(see his log *3* + log *1Ɛ* or his log *Ɛ6* - log *2*)

log *Ɛ3* places twenty one and twenty three *𝒳𝒳1512*
(see his log *3* + log *39* or his log *5* + log *23*)

It is a usual experience that after long and accurate calculations, it is only in copying or typesetting that the gremlin of error raises its grisly head. This report pays tribute to a fine computer and believes the table may be used with confidence to the last figure.

Parkhurst's twelve place table shows the same accuracy of computation and proves he worked with three figures more than those printed. We note, for instance, that he gives the correct last figure in the following cases:-

His log *1Ɛ9*	ends *8*	- our manuscript	*7.604*
log *3Ɛ5*	*Ɛ*		*𝒳.609*
log *699*	*8*		*8.5Ɛ8*
log *797*	*10*		*0Ɛ.603*

There are however the following single figure misprints, all being in the first half of the table.

log *29𝒳*	*3*rd group	should be	*𝒳47𝒳*
log *363*	*2*nd		*6804*
log *547*	*2*nd		*81Ɛ4*
log *5Ɛ7*	*2*nd		*4𝒳78*

The following are noted because a figure is illegible.

log 739	3185	log X83	4XX7
log X04	86X7	log X85	2Ɛ57
log X45	ƐƐ97	log X86	7Ɛ00
log X53	X638	log X87	0X04
log X55	9566	log X88	5867
log X7X	Ɛ512		

It is natural to ask how this excellent work was accomplished, for there were, before Parkhurst, no such extended decimal values. There is however this note in the Encyclopedia Britannica, edition XI, under Tables Mathematical:- "H. M. Parkhurst, Astronomical Tables, New York 1871, gives logarithms of numbers from 1 to 109 to 102 places," (!). So he was a pioneer in decimal logs as well; and no doubt converted his own decimal table, probably taking twenty eight places, multiplying by the reciprocal of log twelve, twenty eight times. Machines were simple in 1889.

The Parkhurst table is an excellent check on our twenty places in the manuscript table; especially on the last figure given. Our table was computed from the Thompson twenty place table and therefore not much confidence was placed on the last figure. Checking shows that the last figure has a tendency to be 1 low in about half the gross of checks, and never high. This table has the differences recorded; so misprints, if any, can be checked from the table itself - a check not available to Parkhurst with a shorter table; - all the more honor to him for his accuracy.

MATHEMATICAL SOPHISMS
by Brother Louis Francis, F. M. S.

A. One half of twelve is seven!
Sure. The upper half. ---XII---

B. But half a dodecagon has seven sides!
Well, if you count the halving diagonal.

C. Nevertheless, half do two is seven.
Thatjs when we know how to do.

D. Yes, and sometimes half of xii does equal vii.
Right. In Roman Dumerals.

E. And, philosophistically, half of twelve could be 7.
Of course! If the other half were 5.

There ought to be 7. But this is the other half.

INDIA AND THE SHRINKING WORLD

The ferment of nationalism throughout the world has wrought the dissolution of colonial empires and the emergence of new states. The colonial boundaries, in general, form the outlines of the territories of the new governments. The insurgence against empire dominion has served as a tie to unite the varied peoples in their struggle for self government. With the release from imperial authority, which initially assembled these separate peoples into the colonial domain, the common tie is dissolved, and divergencies in individual loyalties assert themselves, sometimes resulting in redivision into several separate states or nations. The ferment of self-determination tests the bonds of the temporary unity and successive revaluations of fundamental relationship develop.

India is living this experience. Many monarchies, kingdoms, and princely states - often warring among themselves - were successively brought under the imperial authority to form India. Now her devoted leaders are struggling to strengthen by every possible means the bonds of unity among her varied peoples, to integrate India, and to bring her to the relative economic sufficiency and productive capacity that will assure her full stature in the community of nations.

We can only faintly conceive the magnitude of the problems confronting her leaders. The density of her four hundred million population is six times ours; there are over 140 different systems of weights and measures and 30 different calendars in current use; her people live in thousands upon thousands of little villages, with tremendous differences of custom, caste, language and religion; only a small fraction of the people can read and write, and the facilities for education, travel and intercommunication are limited. Yet progress is being made in surmounting these awesome difficulties.

India has adopted a calendar of twelve months. And now is introducing a decimal currency. Her coinage has been twelve pies to the anna, and sixteen annas to the rupee. A new coin, the naya paisa, is being issued with a value of one hundred to the rupee, about twice that of the old pies. The government has distributed thousands of "ready reckoners," to ease the problems of change-making and exchange with the old coins which will continue in circulation. Postage stamps are being issued in new denominations.

These changes have been contemplated for many years. Ghandi was opposed to them because he felt that the merchants would profit at the expense of the peasants in these complex computations. But government researchers found that 103 of about 140 countries in the world were already using a decimal currency, and were well satisfied with it. So the change has been made, and in five or ten years, it is planned to standardize on the decimal metric system of weights and measures.

To Jawaharlal Nehru, who drives himself and his beloved people for the attainment of this full maturity for risen India, this is a logical necessity. We breathe a blessing upon his courage and his consecrated will.

It is the bitterest irony, that among these inspirited goals should lurk the new-formed chains of an ancient slavery - that much of the basic new education shall have to be again unlearned, to revert to an existent wisdom in the natural use of twelve. For it is in India, in Pakistan, in ancient Babylon, that the use of our today's notation was born. But it was also India and Pakistan and ancient Babylon that discovered the dozen. And Jawaharlal Nehru and India will, in the end, learn that 10 is not necessarily ten - but can instead be twelve, the heart of the lotus of number.

The bondage to ten is an insidious slavery. When the numbers are based on ten and the scales of the other measures are in steps of eight, or twelve, or sixteen, the inflexibility of ten is not apparent. But when both the numbers and the scales of the measures are in tens, there is no escape, there is no alternative, there is no flexibility. The thinking must be expressed in tens.

Number and measure are parts of one thing, and form the basis of all knowledge. Kelvin said:- "When you can measure what you are speaking about, and can express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind." Number and measure are a solvent for knowledge, ten is too stiff to be a good solvent.

We count by tens because our ancestors counted by tens, and not because it is best. The use of tens comes from our having ten fingers, and many still count by using their fingers instead of their heads. Ten is good enough for counting: - for counting beads, and cattle, and bundles, and wives. But ten is not good enough for calculating and computing. Nor is it good enough to form the pattern of today's numbers and measures and knowledge and thinking.

Back in the ancient days when trade and commerce began to replace the pastoral economy, ten was found to be inconvenient. The busy little trader had plenty of time to think - on his slow, toilsome journeys by camelback and by sea. He reasoned

that his bales and crates cost him least when they measured about the same in all three dimensions - in length and breadth and thickness. One could pack ten articles in two rows of five, laid the narrowest way. That seemed to be the best he could do.

Then he discovered the dozen. There were lots of different ways to pack a dozen. He could save money by the most cube-like packing. This gave him an advantage. He could cut his price a little, and still make a little more on each trade, and do more business at the new price. Because his bales and crates would cost him less for each article that he handled.

And the dozen came to be used all over the world. So too, were the gross and the great-gross. It is in this way that the name "grocer" began, - one who traded in grosses.

Note the significance of this step. These people found it more convenient to trade in dozens, while they had no other way of making their numbers and records but by tens. You ask what is the matter with ten? Well, it has too few factors! It is literally "un - satis - factory." It has *not enough factors.* Ten is two times five. And that's all. Twelve is two times six, or three times four, or two times two times three. It is the most factorable number for it size.

Out of trade and commerce came arithmetic. Out of arithmetic came measurement and mathematics. And out of mathematics came science. Today, nearly two thousand years after they were born in Asia, we have found the right use of the zero and the position notation and the dozen. We have the means of counting by dozens, numbering by dozens, measuring all things by dozens, and thinking by dozens.

Some of these statements will be confusing to minds new to the arithmetic of dozens. If you can lay aside some of your habits of thinking, - and read the following paragraph over and over again, - until it is entirely clear, - it will remain clear to you - now and forever - and you will have a new knowledge.

10 is not necessarily ten. It means 1 ten and 0 units - only on the ten base. It means 1 two and 0 units on the two base. It means 1 twelve and 0 units on the twelve base. It means 1 base and 0 units. This is the positional notation. The number 365 on the ten base means 3 tens of tens, 6 tens, and 5 units. It means 3 gross, (or dozens of dozens) 6 dozens, and 5 units, on the twelve base. It could not be used on the two base, as each base uses only that many numbers including zero. The two base uses only zero and one, and to express 365 we would write 101101101. For the same quantity on the twelve base, we write 265, - meaning 2 gross, six dozen and 5. The twelve base uses two new single symbols for ten and eleven, perhaps Ӿ (dek) for ten, and Ɛ (el) for eleven.

Of course, 10 is then twelve, and we carry one or borrow one every time we reach twelve in addition and subtraction.

The benefits of the twelve base are myriad, but a few should be pointed out. The zero occurs oftener because there are more ways to make twelve. Parts of things more often come out even, as 1/3 is .4, and 1/4 is .3, and 1/6 is .2. The numbers hold more, as 1000 represents 1728, and 1 000 000 represents 2 985 984. The figures are more exact, just as .001 represents 1/1728, rather than 1/1000.

But it is in the measures that the twelve scales show their great advantages. Thirds and quarters and eighths and ninths are exact marks on the scales, as they cannot be on the scales of ten. There is a dozenal metric system based on the yard, which co-ordinates the palm, the pint, and the pound. The palm is .1 (1/12) yard, or 3 inches. The cubic palm (27 cubic inches) is the pint, and that quantity of water weighs the pound,- about the same weight as the avoirdupois pound. Many familiar old measures fit exactly into this system, such as the digit, cubit, span, fathom, as well as the line, the inch and the foot. It includes measures of time and accommodates the division of the day as well as the twelve month year. Monthly rates are .1 (1/12) of the yearly rates. In short, it provides a system of number and measure more natural, more flexible, more convenient and more comprehensive than the decimal metric system, and at least equally precise.

It is approximately correct to say that everything that is done in tens, - and much that ten cannot do, - is done easier and better in twelves. The mathematical tables of the dozen for logarithms, functions, constants and coefficients are available.

India is already familiar with twelves in her thousands of villages, where pies and annas are the natural idiom, traditional where tradition is strong. Shall she be educated away from her twelves into tens, only to find that tens are too awkward, too cumbersome, too limited, - and then face reconversion to twelves?

France has come to question the ten. Jean Essig, Inspector General of Finances for France, has written "Twelve: Our Future Ten," which urges that conversion of the decimal metric system to the twelve base be considered. He is entirely familiar with the advantages of twelve and the limitations of ten.

As the New York Times said:- "Forms of computation and measurement have no intrinsic sanctity, even when they are hallowed by long usage. The media of exchange, the modes of measurement, are tools and nothing else. They have no more moral value than a chisel. A tool is 'good' or 'bad' precisely as it does the job for which it was designed. A dull tool is a 'bad' tool in the technical, not the moral sense."

For India, the decimal currency may offer closer touch with the international trade and commerce of today, but will place an added strain on the bonds of unity among her people. When the change to decimal weights and measures is proposed, it may happen as in France, that there flames a rancor of resistance to conformity with a system that is less than the best that we know, - with an artificality which abandons long hallowed usage and natural habit.

If Iskandar had carried back from his far-eastern campaigns knowledge of the zero and the position notation and the dozen, which he must have encountered, the classic measures of Rome would have had a true system to accommodate them, and the scientific acceleration may have carried forward without the waste of the centuries of the intervening dark ages.

Is India to repeat these wasted centuries, jeopardize the unity of her people, and add to Asia's turmoil, - when she has a unique opportunity to lead the minds of men - again - into an easier mode of thought and the naturalness of twelve?

TIME OF DECISION
by Ralph H. Beard

In its first dozen years, the Duodecimal Bulletin has published every comprehensive proposal for a practical duodecimal system that we have received, or have been able to find in our bibliographical searches. Our members and the interested public in general have been invited to express their ideas, and their criticisms of these proposals. The Duodecimal Society has not yet taken any selective or affirmative action on any one duodecimal proposal.

The time has now come when such action should be taken. It is not necessary, at this stage, that such action should be considered final. But a definite proposal should be integrated, as a basis of argument - pro and con - to result in a final clear proposal for the duodecimal system, symbols, numeration, units of measure, and usages, acceptable to those informed on this question, for proposal for world consideration.

In large areas of the world, tremendous changes are under way in the establishment of national governments to replace outmoded forms. In many such new nations, illiteracy and a low standard of living make general education and training in modern technology of the most immediate necessity. Perhaps we can aid these people to escape the problem of re-education which they will have to solve later, if the clear advantages of basing their numbers and measures on the dozen were available now for their consideration in a definite duodecimal proposal.

In the countries with a highly developed technology, the rate of scientific advance is rapidly accelerating. In some such nations, as in our own, the standards of weight and measure have not been systemized into congruence with the number system. While the advantages of congruence are recognized, there is a real reluctance to confine their measures, as well as their numbers, within the cumbersome limitations of the decimal base. If a definite duodecimal proposal were available for alternative consideration, the advantages offered would enhance the prospect for a change of their numbers to the dozen base, and the adoption of the duodecimal system. The pressures of progress are working toward one change or the other.

The educational problems are not less pressing these more productive countries. The surging wave of scientific

research has brought new products and changes in production methods. The marshalling of our engineering capacity has made apparent some disturbing inadequacies in our basic education. Intensified scrutiny has been focused on arithmetic and mathematics, where elements of aversion and avoidance have been discovered. Too large a part of the youth of our schools drops mathematics as soon as it can. Many teachers are as much antagonized to the subject, and they help to develop a similar attitude in their pupils unconsciously. In a recent analytical study, three fourths of a class of elementary student teachers expressed a hatred of arithmetic.

In view of the increasing technics of our daily living, this is alarming. But the remedy seems clear. The teacher who introduces his students to the twelve base finds eager interest refreshing the grim atmosphere because the naturalness of the dozen answers their critique of reason. The students acquire a knowledge of the operations of arithmetic and measurement which they can get in no other way. We have a quite especial responsibility to provide a clear, concise duodecimal system for their fresh attention. We must not dissipate this rich resource.

We have parallel responsibilities in fields not as directly associated. Among these is the necessity for better communication with peoples of other tongues, and more particularly with the teachers among these peoples. We receive requests for duodecimal information from the students among all races and nationalities. These requests originate from that fraction that learns about our work from the dissemination of our English-phrased literature, and is able to comprehend it. Admittedly, English is the most difficult language for people of the other tongues to learn. The representation of the sounds of words of our language by our present alphabet is so remote from practicality that many have abandoned all hope of any improvement. This interposes an additional step of bi-lingual education before a limited comprehension of English text is attainable. Yet English is probably the most widely used language in the world. Here we can introduce a ray of hope for those hopeless in the dark. Read the delicious article in Time for 6 May 1957 captioned A Drim Kum Tru. It attributes to the Smithsonian Torch a plan for the correction of most of our alphabetic sins in five easy annual steps. The closing paragraph says:-

"Kontinuing cis proses year after year, we would eventuali have a reali sensibl writen languag. By 1975, wi ventyur to sa cer wud bi no mor uv ces teribli trublsum difikulties. Even Mr. Shaw, wi beliv, wud bi hapi in ce noleg cat his drims finali kam tru."

So there is at least one hopeful sign. But other means of dissolving the language barrier, - or surmounting it, - must be found, in order to reach a larger fraction of the foreign students with the duodecimal proposal. A review of the possible use of the two promising interlanguages, Esperanto and Interlingua, suggests that a modest program of translation might be effective. We are testing the response to an article in Esperanto, as a guide to further development. Here, again, it is important that we present to these eager eyes a clear duodecimal proposal that will be easily visualized, and will least assault their long-honored traditions and customs.

We have come to a time for decision. Our reviews and our deliberations, our preferences and our inclinations must be distilled into a crystal-clear duodecimal proposal. We cannot expect such clarification to be more than a major step forward. For example, the proposal for the World Calendar is admirably simple and clear, - and look what happened to it because of the astigmatic eyes of our adored Department of State. Our own vision is being tested, and good seeing will bring the far horizon within view.

THE MAIL BAG

Over the last three years, we have much enjoyed, and profited from, an exchange of correspondence with Professeur Maurice Frechet of the Faculty of Sciences of the University of Paris. In his courteous way, he has expressed the feeling that we ignore the merits of the French decimal metric system. To him, the basic contribution of the metric system is, not the choice of its numerical base, but in the establishment of a rational system of weights and measures to replace the chaos of unrelated units that previously prevailed.

We have written Professeur Frechet that we agree that the adoption of a system of measures, integrated with the number base, was an accomplishment of grandeur. Our regret is, that after considering the possible use of the twelve base, it was decided that the French Metric System should be decimal. We believe that if the Commission had chosen the twelve base and formed a system of measures about the pied, pouce, ligne and the old point, the world would be using it almost exclusively today.

This is, in no sense, to be interpreted as a justification of the English and American standards. They are entirely devoid of system. And there are really few examples of the application of twelve among them, despite the clamor of argument as to its advantages. The foot, the English penny, the Troy pound, and partial use for the hour, and the calendar are about all there are. Even the inch customarily uses binary divisions.

We are greatly indebted to Professeur Frechet, and appreciate his consent to the publication of his comment. It becomes increasingly important that we reach a concensus on a definite proposal for a dozenal metric system.

. . . .

Eugene Scifres writes from Denver that he is now with the Southwest Computing Service, putting an IBM 650 through its paces. We have recently heard that one of these amazing computing machines is being designed to handle translations. We would like to run one of such machines backward to derive practical terms for the dynamic units of the do-metric system.

More than ten years ago, Eugene Scifres presented to the Society a microfilm of George Terry's Duodecimal Arithmetic and the Dozen System. The film reproduces each page of these books in a 1" x 1" space on the same standard 35 mm. film as fits the Leica, Contax, etc. It also fits the standard slide-film projector, and does not require a special projector or reader. This film has become especially valuable as both these books are now out-of-print.

That is now also true of Mr. Andrews' valued New Numbers. We have a similar problem with back issues of the Duodecimal Bulletin. We have no more copies of Vol. 1, No. 2, June 1945, nor of Vol. 5, No. 2, Sept. 1949. If any of our members have spare clean copies of these issues, we would be grateful to receive them.

Several of our Directors have bound complete sets of the Bulletin, but we need to bind additional sets for future reference and research.

. . . .

We are gratified by the comments on the recent issue of Dozenal Doings. We hope Editor Jamison Handy, 659_ Via De La Paz, Pacific Palisades, Calif., is also receiving them. He is entirely responsible for the entire job of style, production and distribution. The excellent typography and the justified right margin are most satisfying. We delight in congratulating him.

. . . .

We get an occasional letter from Jay Anderson, who is now completing his freshman year at Swarthmore. Jay, in addition to his service as Chairman of the Member Qualification Committee, organized the Ridgewood High School Duodecimal Mathematical Society. Allan Brison, an associate of Jay's in the RHSDMS, is a freshman at Rice Institute and has infected a fellow freshman, David L. Borland, with the dozenal idea. We welcome Student Aspirants heartily, and hope this becomes an epidemic.

. . . .

Tom Linton, who has the interesting address of 11561 Candy Lane, Garden Grove, Calif., is a Project Engineer with Cal. Tech. He has been operating at great speed and High efficiency. He has drawn and reproduced an 8" circular log scale to fit the Gilson Circular Slide Rule and sent us several copies. He is now working on a table of values for the Acceleration Due to Gravity in

duodecimals, and on production of a geared circular protractor which he has designed. The protractor is a marvellous device, and the way in which the gear-driven circles mutually register is admirable. God Bless! And we thank him for the copies of the log scale.

Ye Ed.

WANT AD

WANTED: Men and women between the ages of 15 and 150 with at least one eye, one arm, and something between the ears as well as under the diaphragm, - who would like to put some meaning into their lives, and who will enlist one-twelfth of their spare time in technical assistance in freeing mankind from its long slavery to the ten-base.

The Duodecimal Society needs help in carrying on its dissemination of information and literature among the peoples of the world on the advantages of the dozen-base, and in maintaining liaison with those who realize the necessity for integrating our numbers and measures.

Write to Ralph H. Beard, 20 Carlton Place, Staten Island 4, N. Y., who will advise on how to escape boredom how to influence people, and what to do with your money.