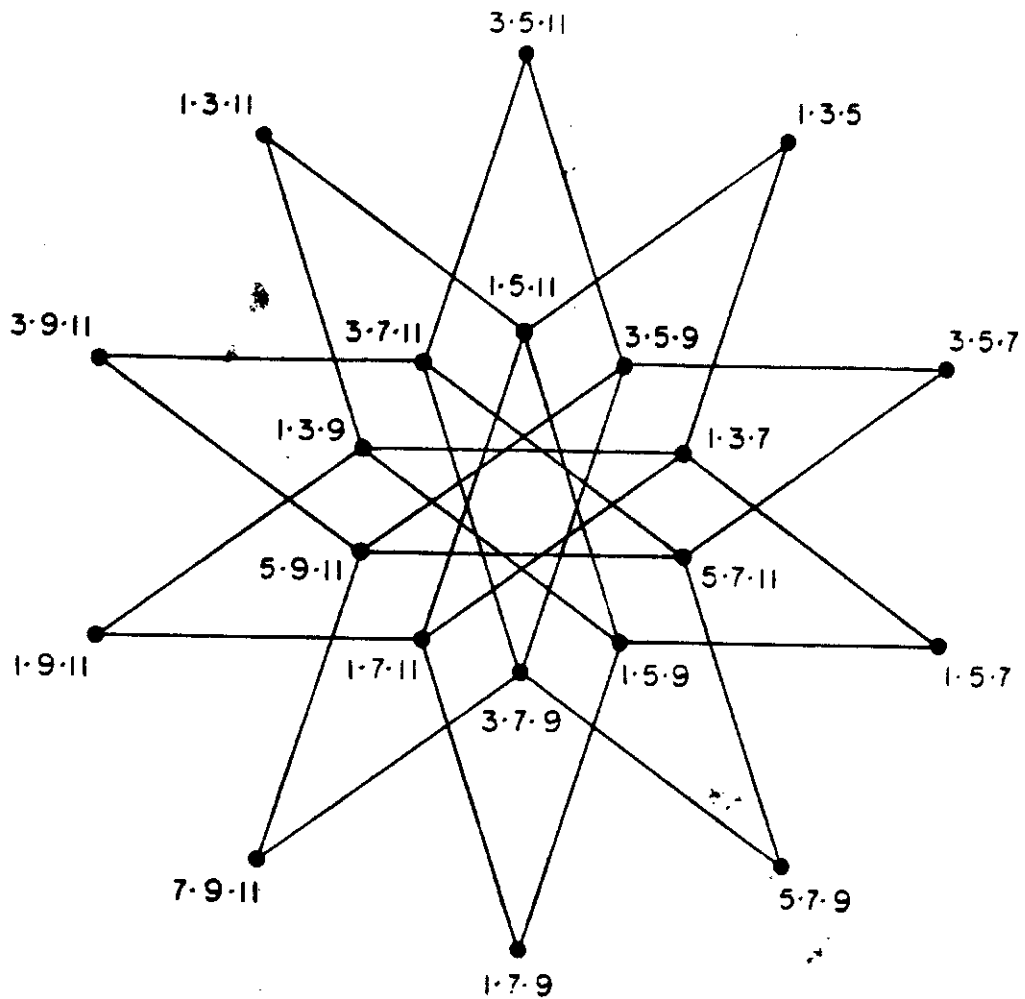


XENHARMONIKÔN 4



FALL 1975

THE 12+7+12=31 GEOMETRY
APPLIED TO 3 PERCUSSION KEYBOARDS

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1219 Poinsettia Dr. L.A. CA 90046

Because this geometry is not suited to manual keyboard design its usefulness for the percussion keyboard may be overlooked. In malletted instruments, such as vives, marimba, and gamelan it provides a pattern that is easy to perform upon and one that is readily understood by players with conventional training. The tuning is by meantone Fifths ($\frac{1}{4}$ comma small) or by the 31 equal-tempered Fifth of 18/31 Octave. The tuning series begins at F \times in the near rank, passing thru all 12 members of the near rank it then proceeds to the middle rank where it traverses all 7 members, and then continues thru all 12 members of the far rank, ending on B \prime . Thus:

start	
F \times C \times G \times D \times A \times E \times B \times C \flat D \flat A \flat E \flat B \flat	NEAR RANK
F C G D A E B	MIDDLE RANK
F# C# G# D# A# F \prime C \prime G \prime D \prime A \prime E \prime B \prime	FAR RANK
END	

and according to the accompanying diagrams.

THE CHROMASONG 31 is suited for 'vives' and other metallophones made of flat bars having a long ring time, and where, therefore, damping is required. This is the classic foot-damper, and it damps the back 2 ranks with the principal damping bar. An auxiliary bar damps the front rank only. The shown diagram is a reduction of a layout for an instrument now in construction.

THE 31-TONE TUBULONGS is suited for metal, long tubes. A 2-Octave set has been cut from aluminum tubing 5/8" I.D. with a 1/16" wall thickness (of the type found quite inexpensively at the hardware store, used for electrical conduit). 1" round brass tubing with 1/32" wall thickness has an exquisitely lovely tone and a prolonged ring time, and I will use these in a three-Octave set. 1" square brass tubing is also an interesting material, but tends to go flat if hit too enthusiastically. Perhaps one should experiment also with polycarbonate (plastic) tubing.

THE 31-TONE MARIMBA is suited for xylophones, also, and for metallophones where damping is not required. This is a good pattern for 'song-bells', and where resonating troughs are used for each of the three ranks, would make a compact instrument for classroom use. I have not begun construction on any instrument using this configuration, but do look forward to seeing any of these instruments realized.

A possible source of these and other new percussion instruments may be Wm. Dreiman/Bill Marimba (Good Vibes Malletworks, Inc., 407 Dover Road, Rockville, Maryland 20850) who has expressed an interest in building these kinds of instruments.

A second possible source of these instruments may be Hackleberry Wilson Clavichord Works, 1219 Poinsettia Drive, Los Angeles, CA 90046.

(2)

THE CHROMASONG 31

DESIGN © 1975 BY ERV WILSON

Note #	Frequency	Spelling
1	269.97	C
2	276.07	#C
3	282.32	D
4	288.70	/D
5	299.23	D
6	301.90	#D
7	308.73	D
8	315.71	/E
9	322.85	#E
10	330.15	E
11	337.61	/F
12	345.25	#F
13	353.05	F
14	361.04	/G
15	369.20	#G
16	377.55	G
17	386.09	/A
18	394.82	#A
19	403.75	A
20	412.87	/B
21	422.21	#B
22	431.76	B
23	441.52	/C
24	451.50	#C
25	461.71	C
26	472.15	/D
27	482.83	#D
28	493.74	D
29	504.91	/E
30	516.32	#E
31	528.00	E

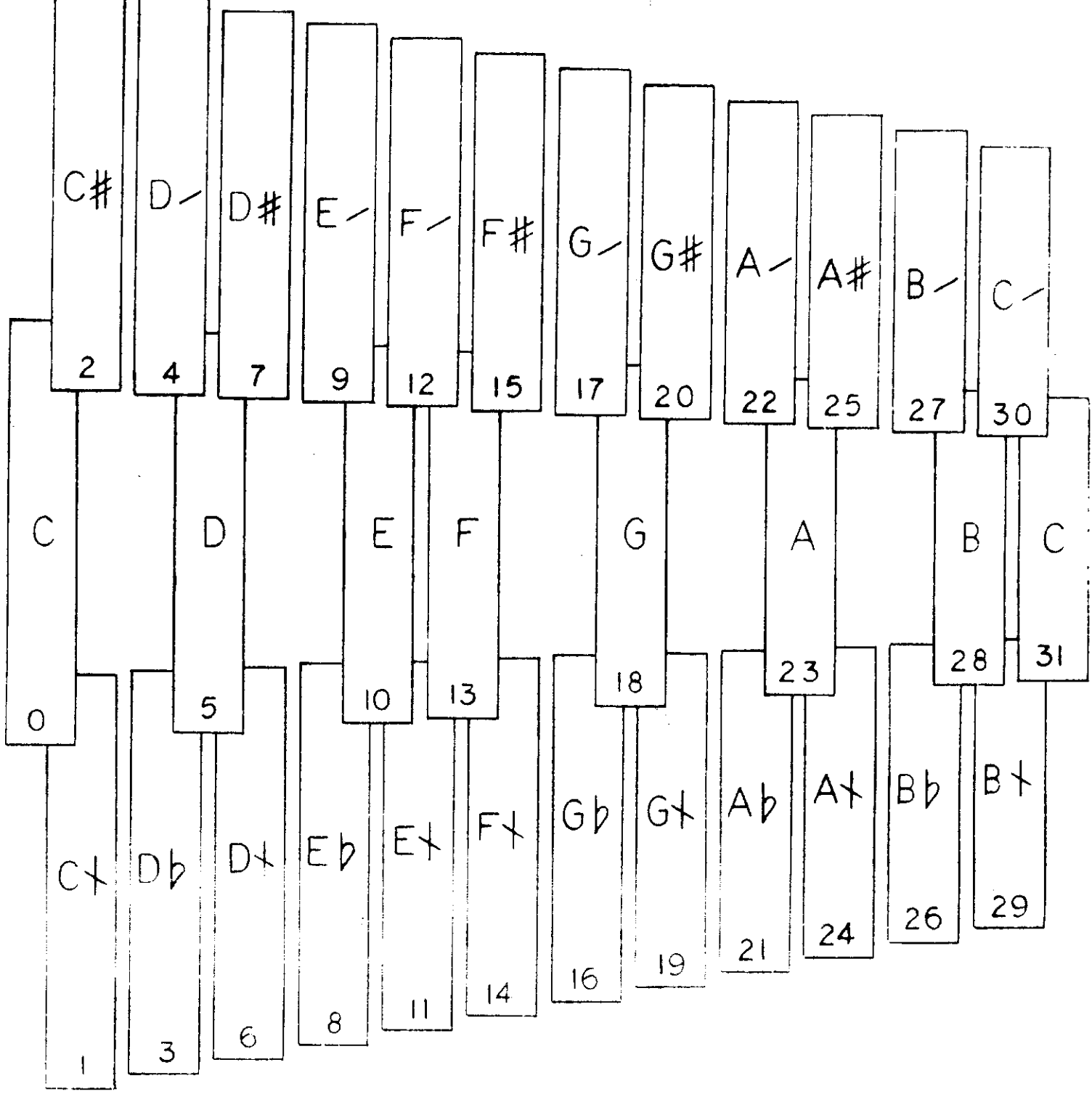
THE 31-TONE TUBULONGS

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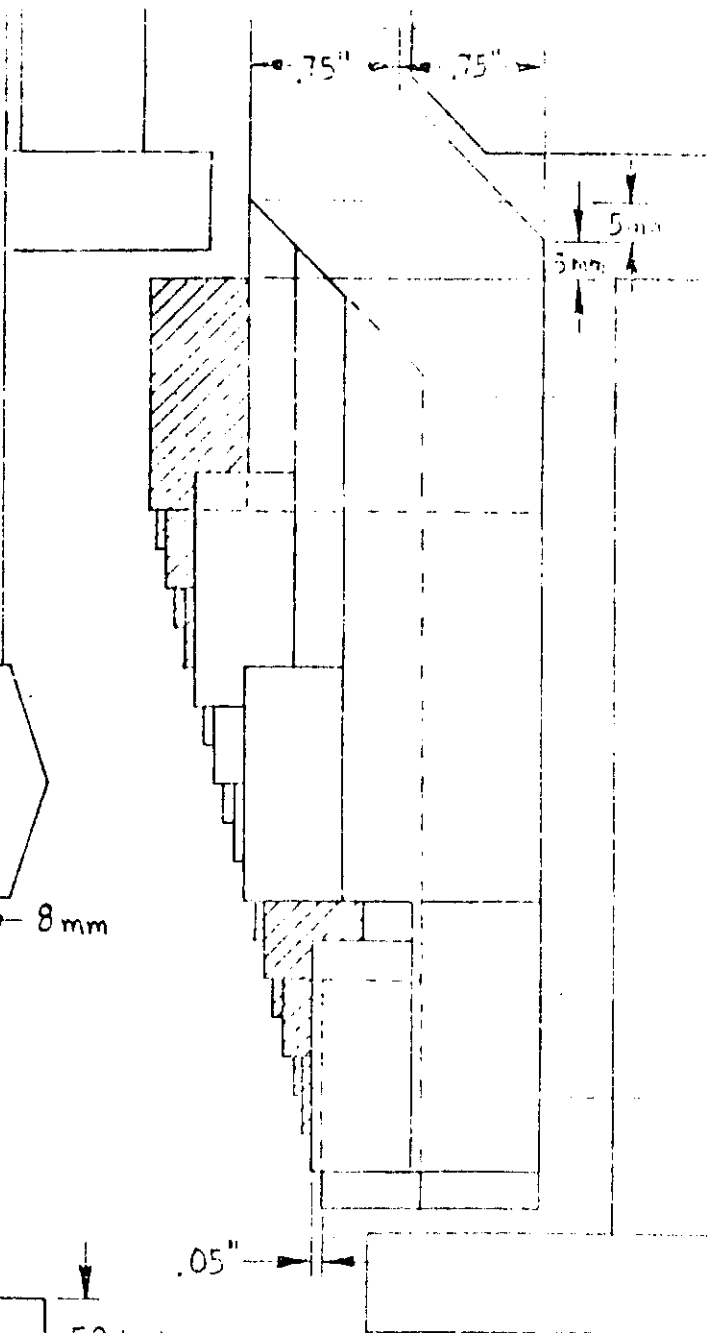
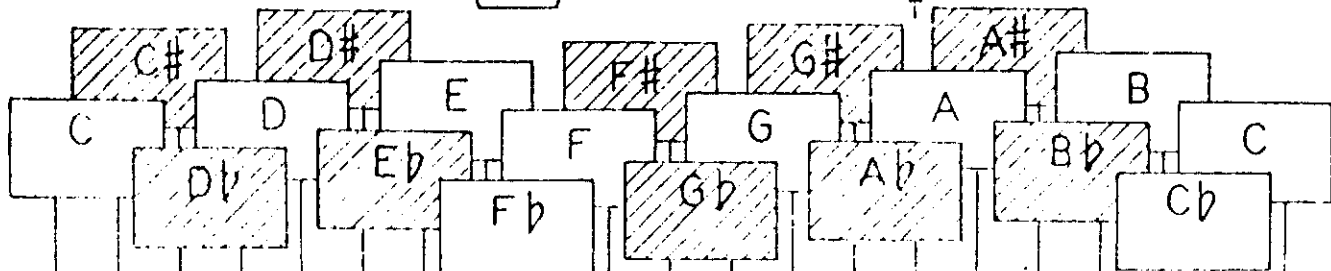
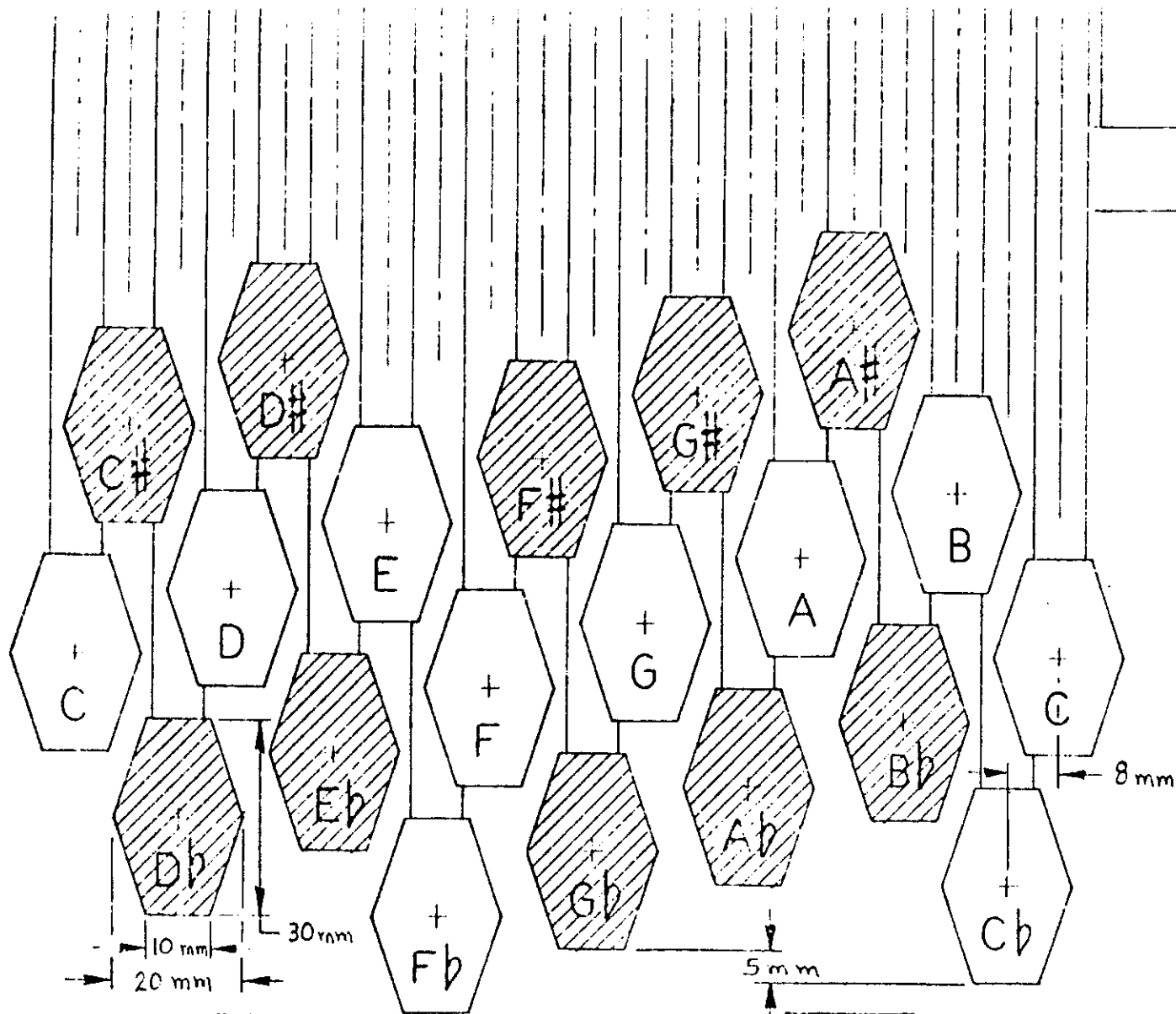
0	C	264.00
1	+C	269.97
2	#C	276.07
3	∇D	282.32
4	\D	288.70
5	D	295.23
6	+D	301.90
7	#D	308.73
8	∇E	315.71
9	\E	322.85
10	E	330.15
11	+E	337.61
12	#E	345.25
13	∇F	353.05
14	+F	361.04
15	#F	369.20
16	∇G	377.55
17	\G	386.09
18	G	394.82
19	+G	403.75
20	#G	412.87
21	∇A	422.21
22	\A	431.76
23	A	441.52
24	+A	451.50
25	#A	461.71
26	∇B	472.15
27	\B	482.83
28	B	493.74
29	+B	504.91
30	#B	516.32
31	C	528.00

Pitches to base C264 are rounded-off from tables by John Chalmers

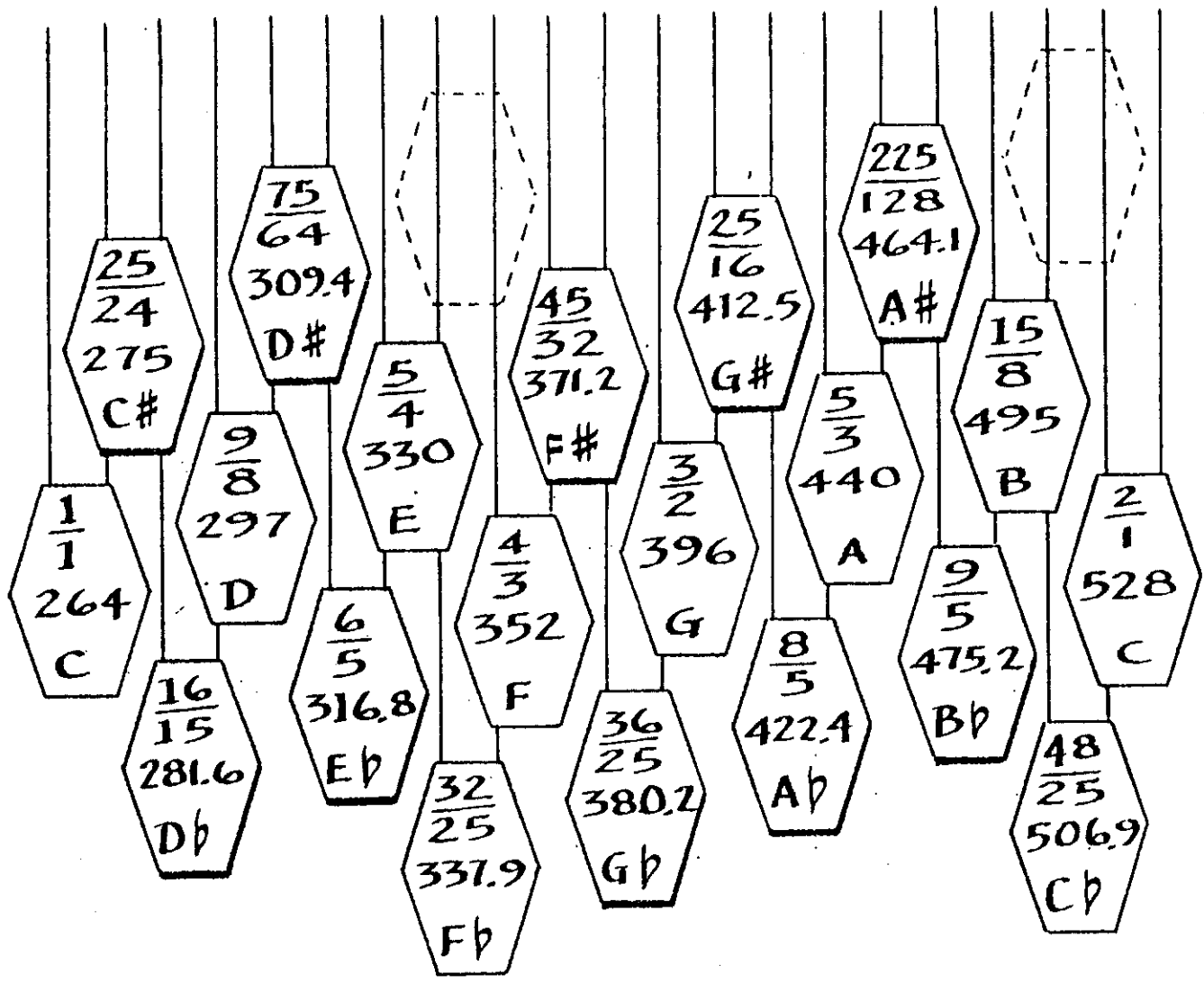
THE 31-TONE MARIMBA
DESIGN © 1975 BY ERV WILSON



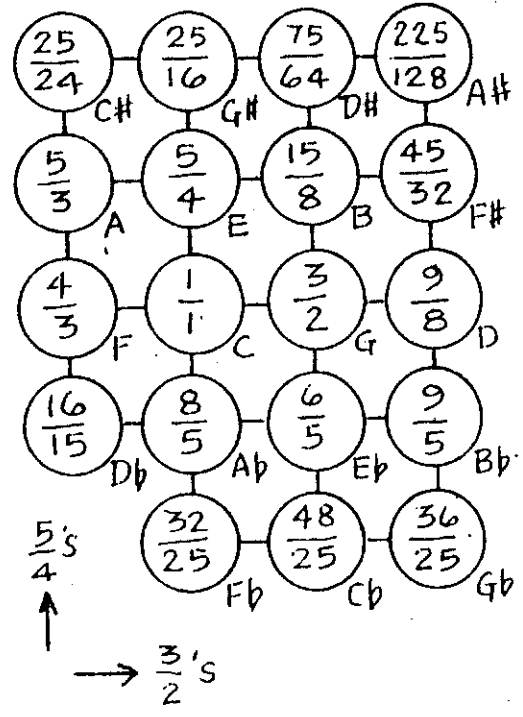
7



19-TONE CLAVICHORD
 DESIGN © 1975 by Hackleman-Wilson
 1219 Poinsettia Dr., L.A. CA90046



A Scale for Scott
 © 1976 by Erv Wilson

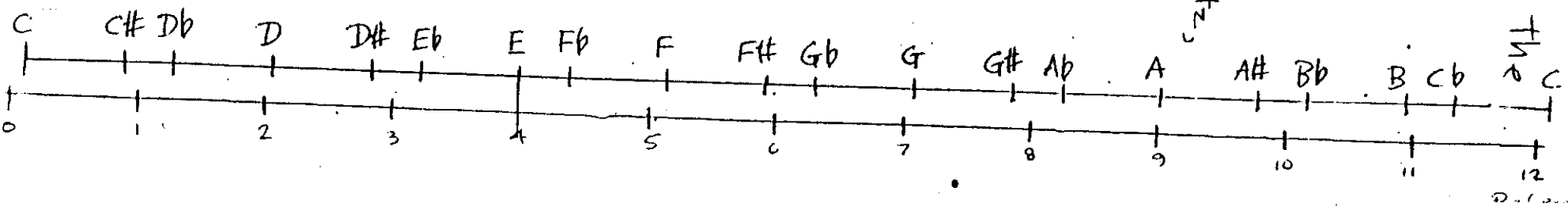
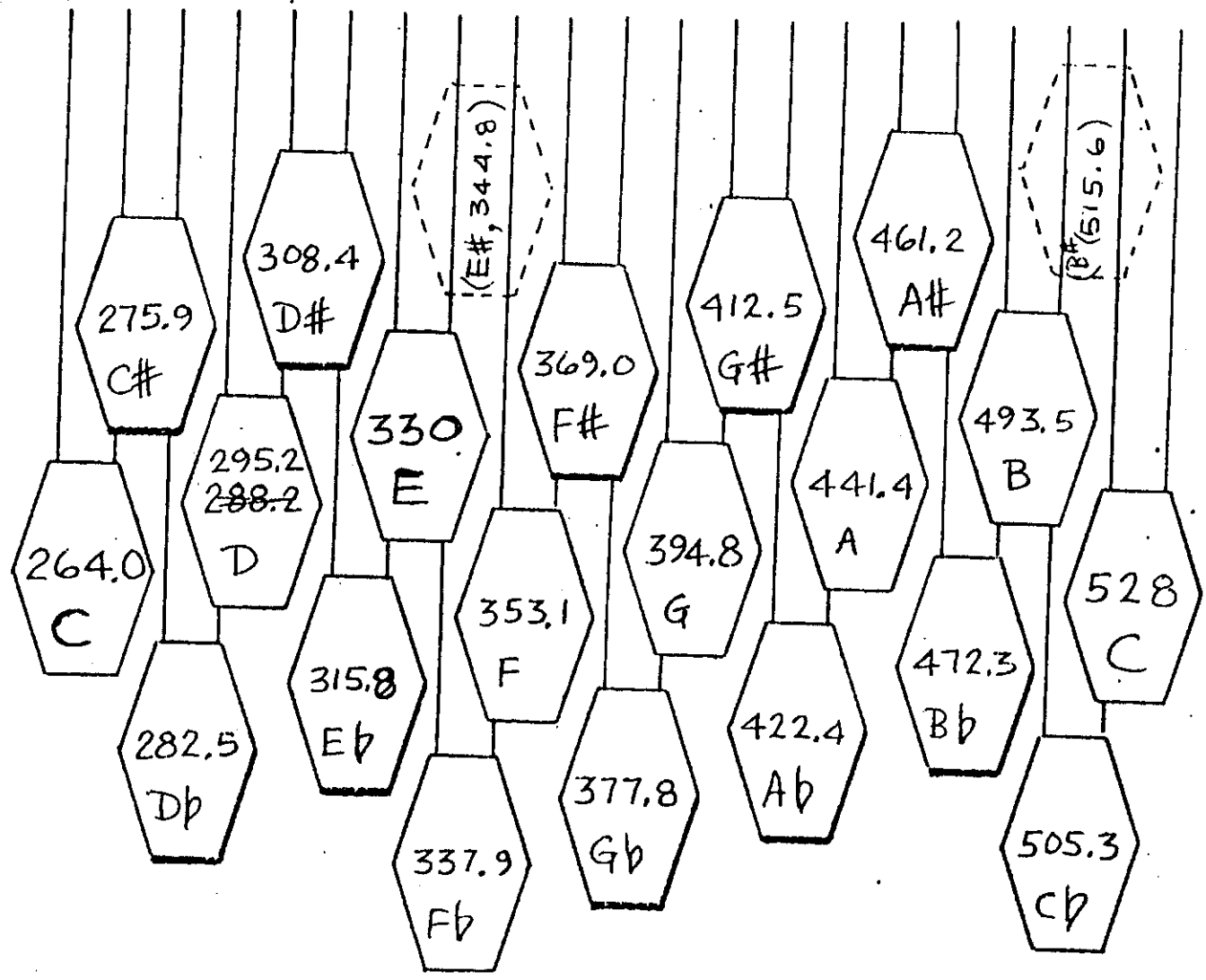


C	C#	Db	D	D#	Eb	E	Fb	F	F#	Gb	G	G#	Ab	A	A#	Bb	B	Cb	C
1/1	25/24	16/15	9/8	75/64	6/5	5/4	32/25	4/3	45/32	36/25	3/2	25/16	8/5	5/3	225/128	9/5	15/8	48/25	2/1
25/24	128/125	135/128	25/24	128/125	25/24	128/125	25/24	135/128	128/125	25/24	25/24	128/125	25/24	135/128	128/125	25/24	128/125	25/24	25/24

The Pitches* of Meantone Assigned to the 19-tone Generalized Keyboard

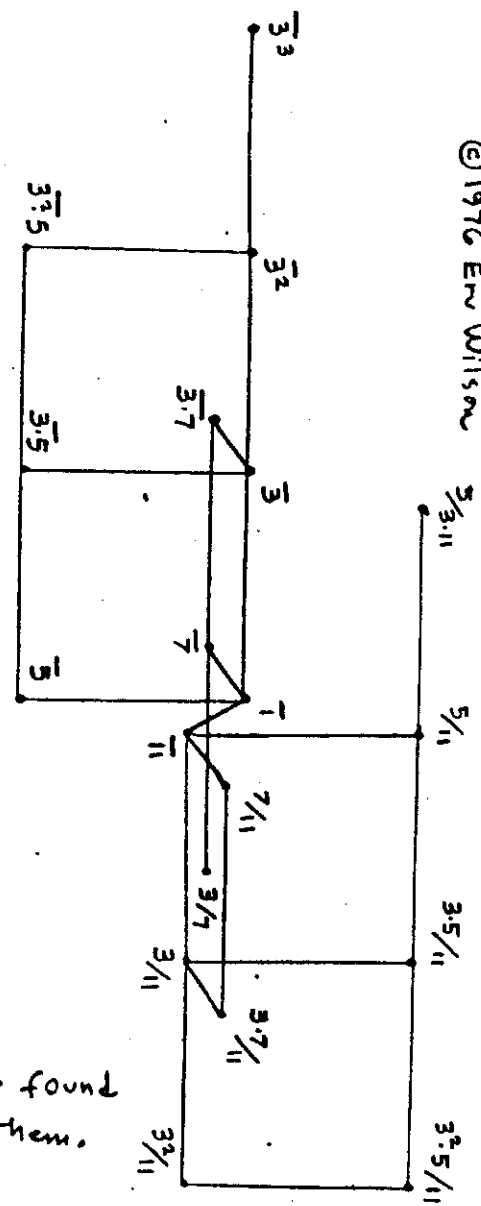
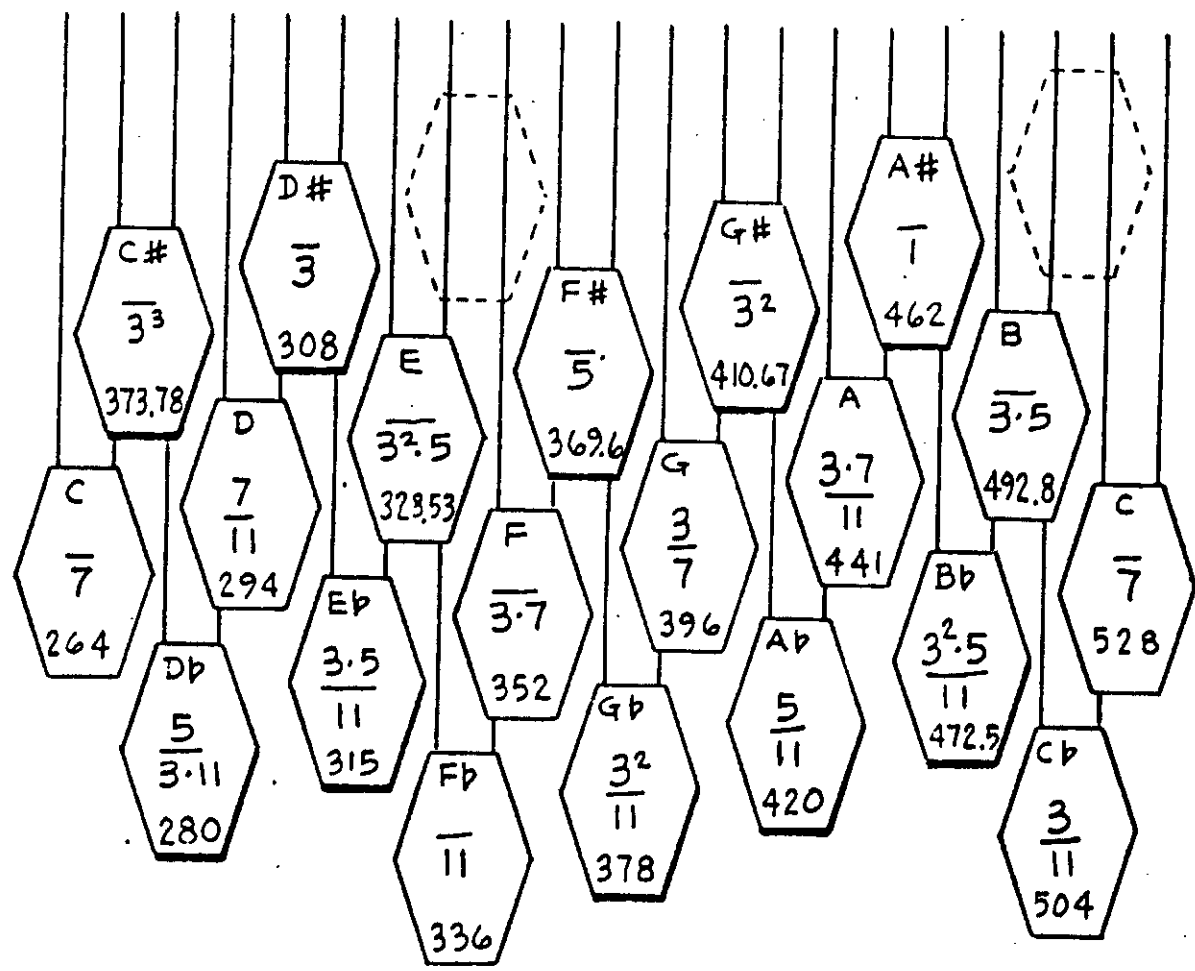
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*Pitches are as calculated by Alexander Ellis to Helmholtz's C 264. Note that this also gives E 330. (Ref. Sensations of Tone by Helmholtz, Additions by the translator)



19-Tone Scale for the Clavichord-19

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In this scale the diesis is $\frac{3^2.5}{11} (\frac{45}{44})$. It occurs 7 times.
 A harmonic hexad is found from Fb $\frac{11}{11}$. A subharmonic hexad is found from A# $\frac{1}{462}$. $\frac{11}{11}$ and $\frac{1}{462}$ are the points of intersection between them.
 This scale is linear mapped with a negative template.

