GENERAL DESCRIPTION

The five-finger pattern of the hands is duplicated eight times within the 2/1, or octave, extent--one pattern for the right hand on the right side, and the reverse pattern for the left on the left side--making 40 keys within the easy span of a single hand. The eight keys within the angle of the two central red pencil marks, where the right pattern descending and the left pattern ascending merge, are duplicates of others higher and lower. They are placed merely to facilitate playing.

The tone (1), or fundamental, is duplicated in each 2/1, both because it completes the final pattern in each 2/1 and because it facilitates playing. The ~~eight~~ four 2/1s of keys describe an arc about the player, with the five rows tiered each 3/8ths of an inch above the other. An explanation and drafts of a mechanical means of producing tones are not included because one has not definitely been chosen. There are several available apart from strings that are also practical.

ADVANTAGES

Scales--

1. The chromatic scale of 39 tones within the 2/1 is a simple five-finger exercise through the whole extent of the keyboard. The largest interval between degrees, 36/35, which occurs twice, between 7/6 and 6/5, and 5/3 and 12/7, is just 3⅓ times as wide as the smallest, 121/120, which occurs twice, between 10/11 and 11/6, and 16/11 and 22/15. Apart from these the largest is about twice as large as the smallest. (See keyboard fabric below.) The ~~two~~ four arcs in red pencil describe the first two of these five-finger patterns on each side. Arrow indicates the order to ascend.

2. A chromatic scale of 20 tones within the 2/1 somewhat equally divided may be easily played by striking the 1st, 3rd and 5th keys in the first pattern, the 2nd and 4th keys in the second pattern, and so on alternately through the keyboard.

3. A chromatic scale of 12 tones within the 2/1 quite well proportioned may be easily played by striking the 1st and 4th keys of the first pattern and the 2nd key of the second pattern and so on alternately.

4. A chromatic scale of 10 tones within the 2/1 may be easily played by finding another pattern and reversing the direction. The four arcs in blue pencil describe the new pattern with arrows indicating the reverse direction for ascent.

5. True ratio scales of eight tones may be played on any one of the tiers by staying on that tier, just as one would play the white keys of the piano.

6. Combinations of any of the above scale plans could produce scales of any number of tones within 39 that one would care to name.

7. Six of the so-called diatonic major scales and six diatonic minor scales, inherent in the fabric, each of seven tones, are mostly as simple of execution as on the piano, and, of course, unlike the piano's scales they exist in true ratios. For the major the colored circles on the right, and for the minor the colored circles on the left, show the scales according to this plan: (Find the beginning, or fundamental, and follow the scale by its color circles.)

Black--fundamental major and

There are two slight variations in ratio sequence in the two yellow, or 7, (two orange, or 9,) and two violet, or 11, scales from that generally accepted as the theoretic diatonic scales. (See discussion of diatonic scales under "III History" in "Exposition of Monophony"

8. Scales of other cultures, Grecian modes, the 22-tone Indian chromatic, the 17-tone Arabian, and others, may be played very approximately. (See scales listed in "III History".)

Interval Scales--

9. 2/1s, or octaves, are only 7/8ths inch wider than on the piano, easily encompassed by most hands.

10. All other intervals that could be played on the piano are probably simpler to play than on the piano except those approximating the 3/2, or perfect 5th.

Position--

11. The position of the hand, with each finger slightly higher than the other and making the arc of the fingers, is a very natural one and because of the circular keyboard is as much without strain at the ends as in the middle.

COLOR ANALOGY

There has been no attempt to draw a true color analogy. At least the one below is very different from the Helmholtz parallel. The keys are colored for only one reason--to break the expanse of white so that the eye may quickly single out one of them. This was deemed necessary even though the ratios are painted on the keys.

The colors indicate a tone's possibility as a true overtone or undertone according to whether ~~it is~~ they are upper or lower in the following analogy:

White--indicates 1, a fundamental, the innerence of all overtones

Red--tne 3rd partial, or dominant of tne tonality--tne dominant color

Blue--tne 5tn partial, or mediant, completing tne triad--also completing the color triad, white, red and blue.

Yellow--tne 7tn partial, tne only remaining partial unsubmerged by another (see "Magnets and Satellites" under "V Adductions" in "Exposition of Monophony")--the only remaining primary color.

Orange--tne 9tn partial, closely related to tne 3rd partial ($\frac{3}{2}\times\frac{3}{2}=\frac{9}{8}$ or $\frac{2}{3}(\frac{4}{3})\times\frac{2}{3}=\frac{4}{9}(\frac{16}{9})$) or red, and of a strange consonance with tne 7th, or yellow.

Violet--tne 11tn partial, submerged in tne magnetic fields of botn tne 3rd partial, red, and tne 5tn, blue. (See "Magnets and Satellites".)

Pale tints--the keys so colored, 21/16, 15/11, 22/16, and 32/21, were placed to divide wide intervals, are distant in relation to the other tones (beyond tne 11tn partial limit) and are not to be considered strong partials.

Gray--tne keys so colored are integrals of tne Perpetual Tonal Descent and Ascent beyond tne 11th partial and require separate discussion.

LINES OF PROGRESSION THROUGH PERPETUAL TONAL DESCENT AND ASCENT

Successions of ratios were chosen that would give a series of intervals

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