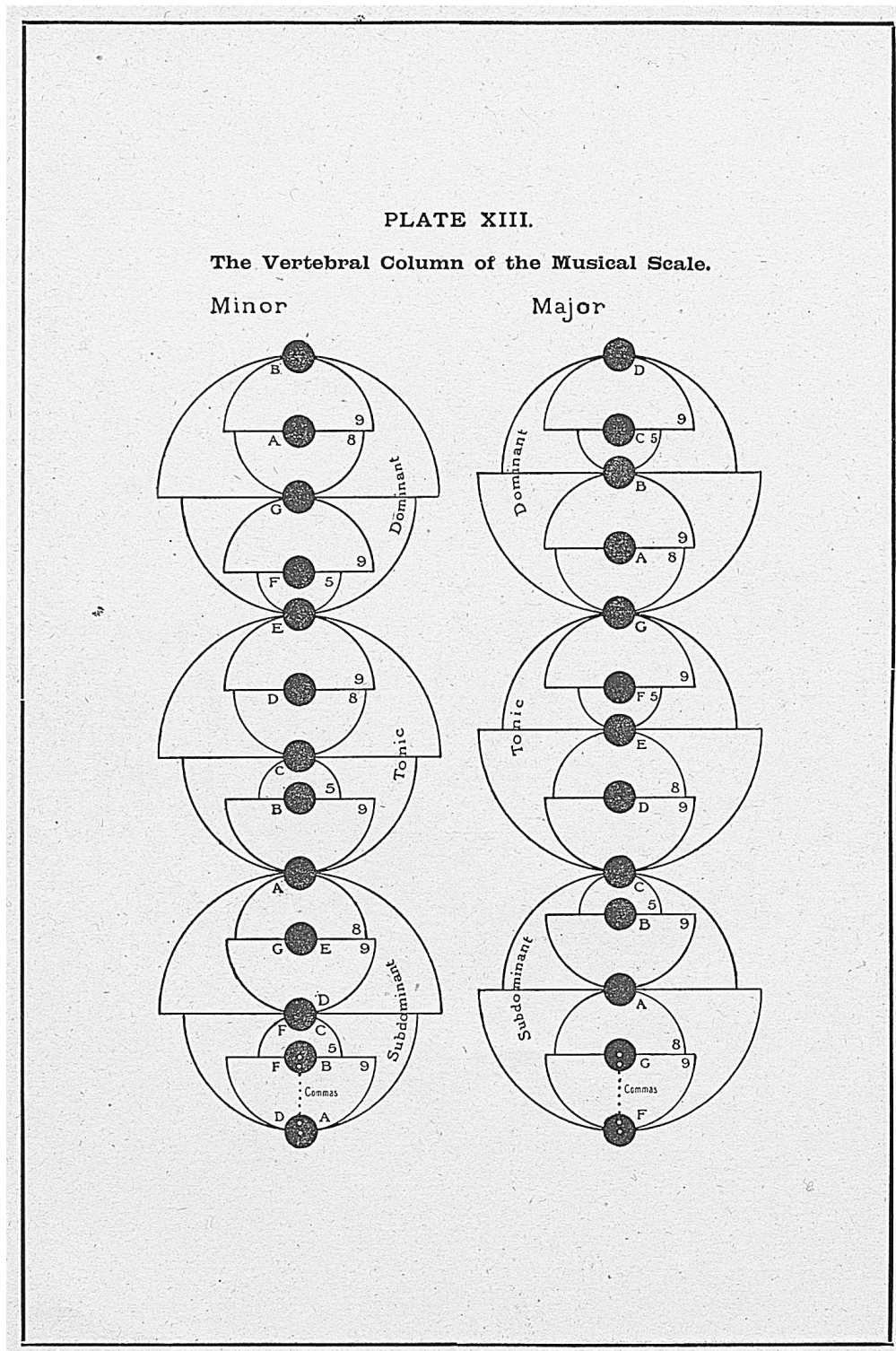


Ramsay - PLATE XIII - The Vertebral Column of the Musical Scale



([click to enlarge](#))

page 137

[<- GO PREVIOUS PLATE](#) | [GO NEXT PLATE ->](#)
[\[RETURN to Scientific Basis and Build of Music\]](#)

Major and Minor.

The **Octave** being divided into 53 **commas**, the **intervals** are measured, as usual, by these, the **large second** having 9-commas, the **medium second** having 8, and the **small second** 5. These **measures** are then made each the **radius** by which to draw **hemispheres** showing the various and **comparative areas** of the **seconds**. The **comparative areas** of the **thirds** are shown by the **hemispheres** of the **seconds** which **compose** them facing each other in pairs. The **comma-measures** of the various **thirds** thus determined are then made the radii by which to draw the two **hemispheres** of the **fifths**. The **areas** of the **three fifths** are identical, as also the **attitudes** of their unequal **hemispheres**. The **attitude** of the **six thirds**, on the other hand, in their two kinds, being reversed in the upper and under halves of the **scale**, their **attitude** gives them the appearance of being attracted towards the **center** of the **tonic**; while the **attitude** of the **three fifths** is all upward in the **major**, and all downward in the **minor**; their **attraction** being towards the **common center** of the **twelve scales** which **Nature** has placed between the **second** of the **major** and the **fourth** of the **minor**, as seen in the **two D's** of the **dual genetic scale**, - the two **modes** being thus seen, as it were, revolving [**Scientific Basis and Build of Music**, page 113]

round a **common center** which is lying between them, as the **double stars** do in the **astral heavens**. When this plate is reversed we have before us exactly the **minor scale**, and all the parts and **attitudes** related in exactly the **inverse** way, each to each, so perfect is the **duality in unity** of the two **modes**. [**Scientific Basis and Build of Music**, page 114]

PLATE XIV. THE VERTEBRAL COLUMN IN MODULATION.

When **Plate XIII.** is divided up the middle of the column, as in **Plate XIV.**, so as that one side may be slipped up a **fifth**, representing a new **key one-fifth** higher, its **subdominant** made to face the old **tonic**, the two new **notes** are then pictorially shown, the second being altered **one comma** and the **seventh four commas**. The **key** at this new and higher **pitch** is by **Nature's** unflinching care kept precisely in the same **form** as the first; and wherever the **major scale** is **pitched**, higher or lower, the **form** remains unaltered, all the **intervals** arranging themselves in the same **order**. The **ear**, and the **voice** obedient to it, carry **Nature's measuring-rule** in them, and the writing must use such marks as may truly represent this; hence the use of **sharps**, **flats**, and **naturals**; these, however, be it observed, are only marks in the writing; all is **natural** at any **pitch** in the **scale** itself. All this is equally true of the **minor mode** at various **pitches**. These two plates are only another and more pictorial way of showing what the **stave** and the **signature** are usually made to express. [**Scientific Basis and Build of Music**, page 114]

See Also

5.2 - Vortex Motions in Resonators

air column resonance

Cavity Resonator

double column

Figure 6.17 - Areas and Volumes - Relations and Proportions

Helmholtz Resonator

organ pipe

Ramsay - The Genesis of the Chromatic Scale

Resonance

Resonator

Table 12.02 - Length Area and Volume Math

Volumetric Resonator