

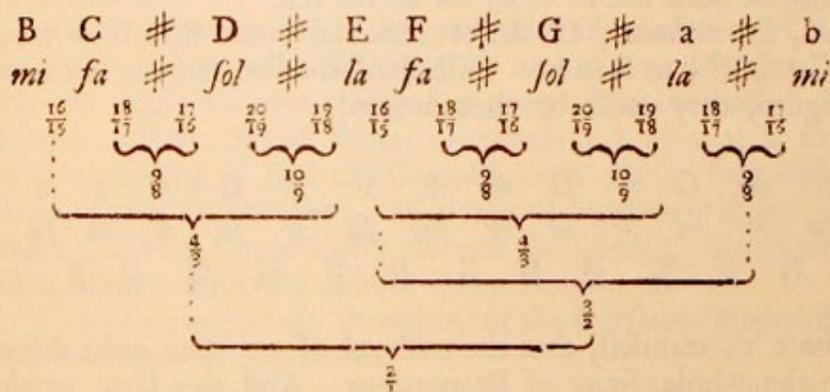
Letter from Wallis to Pepys

Philosophical Transactions, Vol. 20, No. 241, May 1698, 249-256.

(253)

Thus, by the help of *Flats* and *Sharps* (dividing each *Whole-note*, be it the Greater or the Lesser, into two *Half-notes*, or what we call so,) the whole *Octave* is divided into Twelve Parts or Intervals (contained between Thirteen Pipes) which are commonly called *Hemitones* or *Half-notes*. Not, that each is precisely *Half a Note*, but somewhat near it, and so called. And I say, by *Flats and Sharps*; For sometime the one, sometime the other, is used. As, for instance, a *Flat* in D, or a *Sharp* in C, do either of them denote a *Midling Sound* (tho' not precisely in the Midst) between C and D; Sharper than C, and Flatter than D

Accordingly; supposing *Mi* to stand in B *fa* b *mi* (which is accounted its Natural seat) the Sounds of each Pipe are to bear these proportions to each other, viz.



And so in each Octave successively following. And if the Pipes in each Octave be fitted to sounds in these proportions of Gravity & Acuteness; it will be supposed (according to this Hypothesis) to be perfectly proportioned.

But, instead of these successive proportions for each Hemitone; it is found necessary (if I do not mistake the practice) so to order the 13 Pipes (containing 12 Intervals which they call Hemitones) as that their Sounds (as to Gravity & Acuteness) be in Continual Proportion, (each to its next following, in one and the same Proportion;) which, all together, shall compleat that of an Octave or Dia-pason, as 2 to 1. Whereby it comes to pass, that each Pipe doth not express its proper Sound, but very near it, yet somewhat varying from it, Which they call *Bearing*. Which is somewhat of Imperfection in this Noble Instrument, the Top of all.