

SOMETHING ABOUT SCALES

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Let us consider for a moment what would be the condition of modern society if the little machine we call "scales" had never been invented. In the very earliest ages man lived by agriculture only, but as the human family multiplied, other means by which to subsist became a necessity, hence the gradual development of trades. With this development there arose the necessity to assess the values of the multifarious merchandise which the skill and ingenuity of the artizan classes produced, and this essential requirement of the merchant was supplied by the invention of scales, an invention which has been elaborated to such an exquisite degree of perfection as to enable the diamond merchant to ascertain to the $\frac{1}{64}$ part of a grain the weight of his precious gems, and the constructor of the most ponderous steam engine to know the weight of his powerful machine with an equal degree of nicety. By this invention it was rendered possible to arrive at an exact balance of parts. This is the idea conveyed to the mind by *scales*, and from them was derived the idea of book-keeping, which is the art of discovering balances.

It is not, however, the merchant's scale, but the musical scale, which we are about to investigate. Nevertheless, the scale of the merchant is the most fitting object we can select to illustrate the true meaning of the musical scale. This scale has passed through various forms and modifications from the time of the Egyptians down to the present, until now its formation corresponds to the structure of a pair of scales. Five tones and two

semi-tones constitute what is termed the scale. This is the material of the major scale which must be so arranged that two whole tones shall always precede a semi-tone. Hence it follows that what is usually termed the scale is really a succession of two series or consecutive scales of two tones and a half, each held in balance by the remaining whole tone. These two series, or *tetrachords*, are identical in structure, quantity and time.

Thus the beam of a weighing machine may be said to represent the central tone which holds in suspension the remaining four tones and two semitones in equal quantities, securing the exact balance of parts, which has led to the development of the Science of Harmony. The earliest tonal system of which we have any authentic record was invented by Pythagoras, a celebrated Greek philosopher, about 500 years before the birth of Christ. His scale consisted of seven tones, which were said to correspond to the seven planets, Mars, Jupiter, Saturn, the Sun, Venus, Mercury, and the Moon.

Music, in all ages, has originated with the prevailing religions, whether pagan or divine. Even in pagan countries it was always considered an incentive of virtue, and the Egyptians confined their musical talent almost exclusively to the priesthood, who cultivated the art secretly and employed it to intensify the mystery of their sacerdotal office.

The Chinese have had a musical system from time immemorial, but their predilection for drums has led to the confinement of their system to their own country: this no one appears to regret.