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with his large wave-siren. Even this wider definition of timbre is, however, according to Kœnig's most recent view and experiments, insufficient, as not being applicable to certain classes of timbres—for example, those produced by most musical instruments, especially stringed instruments. In these cases the fundamental is accompanied not only by harmonics, but also by other sounds which are not harmonic, the superposition of which produces series of waves which change their form successively. These wave forms have been investigated by Kœnig in a paper "Sur les timbres à ondes de formes variables," in which he determines the conditions under which such timbres may be considered musical, and concludes that in these cases the fundamental is accompanied by harmonics which continually change their relative intensities and their phase-differences.

In conclusion, I may state that, according to Keenig, the fact that differences of phase amongst harmonies produce differences of timbre is explained for the first time by his recent discovery that the intensity of a sound can be increased by the addition of another sound when the maxima of intensity in the vibrations in the two cases correspond more or less exactly, and that several sounds produced together may reinforce a sound of lower pitch than any of them. For example, with the same six primary sounds, by changing their phases only, he produces not only timbres differing in intensity and in richness, but timbres in which, at one time, the octave (2) and at another time the fifth above (3) is heard. The difference between these two timbres is, indeed, so great that when heard in succession, there appears to be an interval of a fifth between them, although their fundamentals are exactly the same. These experiments may be said to be the last on this difficult subject in the years of the century which has just closed.