A most important step in advance was made in 1834 by Henri Scheibler of Crefeld, who in that year invented his tonometer, consisting of a series of 56 forks going from A (440) to its octave (880), the vibrations increasing regularly by differences of eight, any two adjacent forks thus giving four beats per second. Curiously enough, although Scheibler went to Paris and exhibited his tonometer there, he was unable to interest savants in his discovery; and it was not until the London Exhibition of 1862 that the attention of physicists and musicians was directed to the value of the instrument by Kœnig. The apparatus in its new form contained 65 forks going from $C = 512$ to $C = 1024$.

Notwithstanding the great utility of this tonometer to the acoustician, it still left undetermined the absolute pitch of the fundamental note, and hence of the whole series. This problem of realizing a standard of pitch remained practically unsolved even after the French Government in 1859 decreed that the standard should be $A = 870$ v.s. at 15 ° C. The standard then constructed by Lissajous was found, in 1880, to be too high by 9-10 of a vibration. The acoustical standard employed since 1880 by Kœnig is $C = 512$ v.s. at 20°. The acoustical standard before that date was in reality 512.35 at 20°. The problem of realizing a standard fork, which had given rise to much controversy among physicists, was finally solved in 1880 by Kœnig, who in that year published his paper "Recherches sur les vibrations d'un diapason normal." In this paper Kœnig describes how by means of a clock-fork (horloge à diapason comparateur) he established a standard fork, the error of which did not exceed 1-6000 of a vibration. The clock-fork method enables us at the same time to determine readily the variations in the number of vibrations due to a rise or fall of temperature. Having established in this way an absolute standard of 512 v.s. at 20° C., Kœnig commenced the construction of a universal tonometer based thereon, a colossal undertaking which he finished in 1897, after working on it for nearly a score of years. This tonometer consists of the following:

1. Four forks giving vibrations from 32 to 128, with differences at first of $\frac{1}{2}$ v.s., and afterwards of 1 v.s.

2. One hundred and thirty-two large forks, tuned to give (without the sliders) the 127 harmonies of $c_{-1} = 64$ v.s., c_2, c_3, c_4, c_5, c_6, being in duplicate. Each fork can be lowered, by means of sliders, to unison with the fork next below. The differences immediately obtainable by sliders are:—1 v.d. between c_1 and c_3; 2 v.d. between c_2 and c_3; 4 v.d. between c_3 and c_7.

3. 40 resonators to reinforce forks of (2).