are respectively two, three, four and so on. Now if we turn such a bar into a tuning fork by bending it, we must reject the unsymmetrical forms where the number of nodes is odd; so that the fork will have an even number of nodes, equally distributed between the prongs. In the simplest case during the operation of bending, the two nodes approach, and will in the fork nearly coincide at the stem. In the next case, during the bending the inner nodes go to the stem, and the others to points on the prongs, about one-third the distance from the end. In the first case when there are only the two nodes at the stem, the fork gives what is called its fundamental tone. In order to obtain it we simply strike or bow one of the prongs at or near the end in the direction of motion. In the other case when there are four nodes, a much higher tone is produced, a harmonic of the former. To obtain it the bow must be drawn between the stem and one of the upper nodes. The fundamental tone may also be obtained by exciting the fork by an electro magnet under the influence of an intermittent electric current, the intermittence being generally obtained by what is called a *fork interrupter*. These vibrations are communicated to the air around the fork, and ultimately to the air just outside the tympanum of the ear. There small periodic changes above and below the ordinary pressure of the air are produced, and the mode in which these changes succeed one another corresponds to the harmonic motion of the fork. In other words, if we graphically represent these successive changes of pressure that take place in the air of the ear-channel during, say a second, whilst a fork is sounding, we should get a harmonic curve. If the amplitude of this curve is large, the sound is loud, and feeble in the contrary case. Different effects are obtained as the ear is placed at different points round the fork, the intensity varying from a minimum to a maximum in a quarter turn. In order to bring out the fundamental tone of a fork it is usual to join it to a *resonator*, which is nothing more than a closed pipe open at one end, and containing a mass of air capable of vibrating in unison with the fork. In this respect its office is similar to that of the sounding board, which reinforces the sounds of the strings stretched over it. Detaching the resonator, and making the air in it play the part of the air in the *meatus* or ear-channel, you can all readily perceive the alternations in intensity, as the opening is turned towards different sides of the prongs.

The chief interest in the tones of tuning forks lies in the fact that they are *simple*, in the sense in which we say that the spectrum colours are simple. A musical sound which is not simple is resolvable into those which are. The general subject of sound analysis is too wide for me to enter on it on the present occasion, but it will not be without interest if I direct your attention to one or two points in connection therewith. And first with respect to the analysing power of the ear. When one simple tone is sounding we have seen that the pressure curve for the air in the *meatus* is a simple harmonic one. What, then, is the pressure curve when several tones are sounding at the same time? We cannot, of course, have several pressures coexistent at the same point. The curve, therefore, is unique, and for musical sounds will be found to be periodic. Accordingly no matter how many coexistent vibrations there may be outside, there will be but one series of pressure changes in the *meatus*. Now it is these pressure changes which are ultimately interpreted by the ear according to a complex process which I can-