There are, therefore, two qualities in sound recognisable by the ear, namely, loudness, or *intensity*, and quality, or *tone;* the former depending on the force of the vibrations; the latter, on their frequency. These acoustic principles are to be borne in mind in studying the comparative physiology of hearing; and since the functions of the different parts of the organ of this sense are, as yet, but imperfectly understood, I shall, in treating of this subject, deviate from the plan I have hitherto followed, and premise an account of the structure of the ear in its most perfectly developed state, as it appears to be in Man.

§ 2. *Physiology of Hearing in Man.*

That part of the organ of hearing, which, above all others is essential to the performance of this function, is the acoustic nerve, of which the fibres are expanded, and spread over the surface of a fine membrane, placed in a situation adapted to receive the full impression of the sonorous undulations which are conveyed to them. This membrane, then, with its nervous filaments, may be regarded as the immediate organ of the sense; all the other parts constituting merely an accessory apparatus, designed to collect and to condense the vibrations of the surrounding medium, and to direct their concentrated action on the auditory membrane.

I have endeavoured, in Fig. 390, to exhibit, in one view, the principal parts of this complicated organ, as they exist in man, in their relative situations, and of their natural size; thereby affording a scale by which the real dimensions of those portions, which I shall afterwards have occasion to explain by magnified representations, may be properly appreciated.*

The *concha*, or external ear (c,) is formed of an elastic plate of cartilage, covered by integument, and presenting va-

* In this and all the following figures, the parts of the right ear are shown, and similar parts are always indicated by the same letters.