7.1 INTRODUCTION

There are very few deaf people who have no hearing whatsoever; it is much more usual to have some remaining, or residual, hearing.

The residual hearing area can be illustrated on an audiogram as the area between the threshold of hearing and the point at which sound becomes uncomfortable. In effect, this is the useful hearing area. A hearing aid system is a device to enable a hearing impaired person to make maximum use of this residual hearing area and should provide:

- maximum speech clarity or intelligibility;
- maximum useful information from environmental sounds, such as the sound of the doorbell, or of an approaching car;
- minimum interference from unwanted background noise, particularly as hearing impairment restricts the ability to separate important sounds from background noise;
- minimum distortion; some distortion will occur when sound is amplified but this should be minimized so that it does not affect clarity or sound quality.

Several types of hearing aid system exist and selection from the range available involves weighing up the advantages and disadvantages of each type for the particular hearing impaired individual.

Air conduction hearing aids present amplified sound to the external ear and use the whole auditory system (Figure 7.1). Bone conduction hearing aids bypass the middle ear and are therefore useful in conditions that preclude the use of an air conduction system, for instance, if there is discharge from the ear, or the absence of an outer ear.
7.2 TYPES OF HEARING AID SYSTEM

7.2.1 AIR CONDUCTION SYSTEMS

(a) Bodyworn hearing aids

In a bodyworn hearing aid (Figure 7.2) the microphone, amplifier and batteries are all housed within the hearing aid case, which is linked by a cord to an external receiver. The receiver attaches to a solid earmould supplied with a ring and clip for this purpose.

Bodyworn hearing aids are relatively large and bulky and are usually

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Fig. 7.1 The air conduction and bone conduction routes through the auditory system.

Fig. 7.2 A range of air conduction hearing aids. (Photograph courtesy of Vennatone UK/Bonochord Hearing Aids Ltd.)