

## HEARING IMPAIRMENT

### Introduction

Attitudes towards the deaf range from fear and apprehension to amused tolerance or embarrassment. In the developing countries especially, the profoundly deaf person who has never learned to speak may attract the fearful revulsion afforded to the leper, the mentally ill or the epileptic; the person suffering from a mild degree of impairment in his hearing, on the other hand, may be regarded as a slightly eccentric buffoon. Rarely does imperfect hearing reduce the sympathetic response of visual handicap, yet poor hearing is more widespread than poor sight, probably exerts a more deleterious effect on the personality, and calls for particular expertise in education and treatment if the sufferer is to be enabled to play a full role in his community.

"If I had had to choose between being blind and being deaf, I would have preferred to be blind", wrote Helen Keller in her autobiography (1). Educationally there are few problems greater than those pertaining to deafness (2). Deaf children are triply handicapped. They cannot hear. Because they cannot hear they cannot speak. Because they can neither hear nor speak, they cannot think in words and so their mental growth is severely retarded (3). In the developing countries hearing-impaired children whose health is otherwise reasonably good are often not offered for education because they can do useful work in agriculture, and the family will suffer an economic loss if the child is sent to a residential school (4). Even in an enlightened society the person hard of hearing senses the embarrassment which he is likely to cause. In the words of John Kitto in his book "The Lost Senses" published in 1845:

"Those around him will be uneasy if they neglect him and will yet feel that in attending to him they are making a sacrifice of some part of their own enjoyment in the 'flow of soul' around." (5)

The deaf person commits the unforgiveable social crime of existing as an inconvenient embarrassment, assuming that his condition is accurately diagnosed. Incorrectly assessed he may be mistaken as retarded, aphasic or autistic.

Mr. R.T.C. Munyembe, the first Malawian to train as a teacher of the deaf, sums up the problem facing the deaf in many parts of the world:

"To most people, other forms of physical deficiency seem to be worth more sympathising with. Blind men, for example... much vaster quantities of money have been spent on helping them. It is easy to appreciate that the person who cannot see is 'obviously' handicapped. The one-legged man, laboriously propelling himself along on his crutches ... it is easy to sympathise with him. Motorists will patiently slow down for a polio-stricken man with withered legs to slither across the road. But when you are deaf, the story is different. People cannot 'see' your deafness; but the irritating results of it quickly register on them. Their patience snaps fast when they have to

repeat things to an upturned face of a man hopelessly trying to let the meaning of words seep through his deaf ear, causing lots of annoying embarrassments in the process. When you are 'stone' deaf, they leave you to your own sorry devices ... an object of apathetic, uncomprehending interest." (6)

### Incidence

Few statistics have been compiled to indicate the incidences of hearing impairment in developing countries, so that the best estimates are subject to very considerable reservations. A summary of information available is presented in Table 2.

Some estimate of total numbers can be arrived at by means of the following computation. The Danish estimate is of 4% to 5% of children with impaired hearing in that relatively developed country (7). The estimate for Uruguay (a less developed country) is of a hearing-impairment incidence about ten times that of blindness (8). Fifteen million children in India probably have a hearing loss requiring attention and treatment, which gives an incidence of about 6% (9). From these indications of countries in different areas and at different stages of development it may be expected that there will be some 24 million hearing-impaired children in developing Commonwealth countries. Taking as a rule of thumb two severely deaf children for every three blind children in developing Commonwealth countries (10), this gives a total of about 500,000 severely deaf among the 24 millions with all degrees of hearing impairment. No consolidated information is available to show how many of these hearing-impaired children are in school. It must be assumed that a very considerable number pass unrecognised through the normal school systems. The total enrolment in special schools and classes as estimated from the information available is probably in the order of 10,000 or 2% of the severely deaf children in these countries. The calculations, however, are worked on a basis of so many variables and unknowns that this estimate should be regarded with extreme caution as probably giving an overoptimistic picture of the true situation.

Lest it be thought that this lack of information is particular to the developing countries, a sense of perspective should be introduced:

"Any estimate of the number of deaf and hard of hearing children either needing or receiving special education in Western Europe would be misleading, since the data are fragmentary. Available statistics are frequently not comparable, because they have been collected on the basis of differing definitions and/or age-classifications." (11)

Difficulties in definitions and sampling in Britain have caused surveys of incidences to vary quite considerably:

"At borderline zones examiners may differ widely between 'deaf' and 'partially hearing' and between 'partially hearing' and those remaining in normal schools and not considered 'partially hearing'." (12)

The Council of Europe even reports that in a number of countries legal definitions of the term "persons suffering from hearing defects" do not exist, and

TABLE 2  
HEARING IMPAIRMENT  
ESTIMATED INCIDENCES IN DEVELOPING COMMONWEALTH COUNTRIES

AREA/COUNTRY	TOTAL POPULATION (a)	INCIDENCE OF HEARING IMPAIRMENT PER 100,000	APPROXIMATE NUMBER OF HEARING IMPAIRED PERSONS (j)	APPROXIMATE NUMBER OF HEARING IMPAIRED CHILDREN
World-wide	4,318m.	1,600 "marked impairment" (b)	69m.	30m. (m)
Commonwealth	890m.	470 severely deaf + 5,500 some impairment (c)	4.2m. + 49m.	2m. + 20m. (m)
Commonwealth Africa	120m.			up to 5,000:100,000 = 6m. (n)
Ghana	8.6m.		4,600 required	
India	533m	50 profoundly deaf (d)		15m. school age children in need of treatment (o)
Kenya	10.5m.	300 "to a degree of incapacity" (e)	27,000 (k)	4,000-8,000 severely deaf (p)
Malawi	4.4m.	2,600 moderate to severe (f)		600:100,000 = 26,400 (q)
Pakistan	112m.		68,080 (1961 census)	
Tanzania	13m.			6,000-9,000 gross hearing defects (r)
Uganda	9.5m.		minimum 33,000 severely deaf (l)	6,000 severely deaf (s)
Zambia	4.2m.			4,600 (t) 3,500 severely deaf (u)
Hong Kong	4m.			2,409 known deaf children 6-16 years (v)
Australia	12.3m.	45 (g)		600:100,000 = 74,000 profoundly or moderately deaf (q)
Britain	55.5m.	40 profound: 50 partial: 60 with hearing aids (h)		1:2,300 receiving treatment. Partially hearing about the same number again (w)
New Zealand	2.8m.			1 in 570 with hearing aid: 1 in 1,300 in special education (x)
U.S.A.		60-80 pre-lingual deafness 1000 "no useful hearing ability" (i)		

## NOTES ON TABLE 2

- (a) Population figures are those estimated for mid-1969 by the United Nations, except for Ghana (1970 census figure) and Uganda (1970 figure by U.N.E.C.A. Population Programme Centre).
- (b) United Nations estimate quoted in Education News (Commonwealth Department of Education and Science, Canberra, Australia), June 1969, p.6.
- (c) Calculated from Clifford, P. "Causes of deafness in Africa", Report on the First Seminar on Deafness to be held in Africa 8 July - 12 June 1968, London, Commonwealth Society for the Deaf, 1969, p.55.
- (d) Calculated from estimates in De Sa, N. "The problems of the deaf in the country", Kapur, Y.P. (ed), Research, Training and Rehabilitation in Speech and Hearing in India, Vellore, Deafness Research Project, Christian Medical College, 1969, p.38.
- (e) Quoted by Anderson, E.M. The Education of Physically Handicapped, Blind and Deaf Children in East Africa, London, National Fund for Research into Crippling Diseases, 1968, p.103.
- (f) Drummond, A. Deafness in Malawi: Case Finding Survey 1968, London, St. John Ambulance, 1968, p.2.
- (g) Quoted by Paltiel, F.L. Problems Connected with the Special Education of Handicapped Children. Background paper prepared for a study group of the International Social Security Association XVIIth General Assembly, Cologne, September 1970, p.19.
- (h) Quoted by Drummond, A. op.cit. p.2.
- (i) Quoted by Paltiel, F.L. op.cit. p.19.
- (j) Numbers calculated from incidences except where otherwise explained.
- (k) Hayden, R.J. "Care of deaf children in Kenya", Report on the First Seminar on Deafness to be held in Africa, 8 July - 12 July 1968, London, Commonwealth Society for the Deaf, 1969, p.20.
- (l) Anderson, E.M. op.cit. p.103.
- (m) Calculated from incidence.
- (n) Sinnette, C.H. "The handicapped child in tropical Africa", Courrier: Revue Medico-Sociale de l'Enfance, XX, 4, July-August 1970, p.339.
- (o) Herrick, H.M. and Kapur, Y.P. Education of the Deaf in India, Vellore, Deafness Research Project and Hearing and Speech Center, Christian Medical College and Hospital, p.1.
- (p) Clifford, P. op.cit. p.54.

- (q) Drummond, A. op.cit. p.3.
- (r) Anderson, E.M. op.cit. p.103.
- (s) Figure from 1966 Registration of the Handicapped.
- (t) McGregor, G.P. (et al). Educating the Handicapped: The Report of a Special Committee of Enquiry into the Education and Training of the Handicapped in Zambia, Lusaka, Government Printer, p.30.
- (u) Quoted by Sinnette, C.H. op.cit. p.339.
- (v) Return of the Hong Kong Government to the Commonwealth Secretariat, 1970.
- (w) Jackson, S. Special Education in England and Wales, London, Oxford University Press, 2nd edition, 1969.
- (x) Parr, W.G. "The current situation of hearing impaired children in the transition from secondary school to post-school education", Handicapped Youth: Preparation for Life and Work, Sydney, Australian Council for Rehabilitation of the Disabled, 1969, p.193.

"The question whether or not legislation distinguishes between persons without hearing and persons hard of hearing was answered in the affirmative only by the Italian delegation." (13)

In view of the uncertainty and lack of information it will be advisable for the developing countries to distinguish between the two categories in terms that are both general but easily understood and usable, such as those based on the means and ease of communication:

"I have used the term 'hearing-impaired children' to cover the entire range from partial hearing to profound deafness and including any who might be completely deaf. By 'partial hearing' I mean those whose hearing is sufficiently impaired to require special arrangements for their education but not necessarily the same as that required for deaf children. Such children will normally receive communication more through hearing than through lip-reading, although the latter may play an important part in receiving oral communication. By 'deaf' I mean those who will normally receive oral communication more through lip-reading than through hearing, although in most cases these children will have some residual hearing which may be useful in receiving oral communication and also in developing their own speech patterns." (14)

The picture of hearing-impairment in the developing countries of the Commonwealth is blurred by a lack of basic information and an absence of agreement on definitions. All the indications are that the numbers involved are large: it has been suggested, for example, that 18,000 additional deaf children are born annually in India - a compound growth rate of some 2% (15). A report from Northern Nigeria indicates that of 641 children with poor achievement in basic subjects of language and arithmetic, educational retardation was probably due in 12% of the cases to hearing defects (16). These general figures, too, conceal wide variations in incidence in certain areas or among particular groups, as, for example, the Ghanaian village of Adamarobe, where 15% of the inhabitants are deaf (17), or among the Asian community in East Africa, where familial nerve deafness, probably due to consanguinity in marriage, raises the deafness rate to about 2½ times that for the rest of the population (18).

#### Identification and assessment

It is generally agreed that early identification and assessment is probably more important than in any other handicap, yet the chances of a child with hearing impairment being found before the age of five or six years in the developing countries are far from good. When to the problem of assessment is added the possibility of the child suffering from more than one handicap the difficulties for the overstretched health services are all but insuperable. Brain-damaged children, for example, present a particularly difficult problem; some are almost certainly deaf, others may well be so, but diagnostic and assessment services are rarely adequately staffed to deal with such cases.

As with other handicaps, there is frequently a reluctance on the

part of parents and communities to admit to the presence of deaf children. Drummond succeeded in investigating 19,000 people during his survey of Malawi, 95% of whom were primary school pupils, the remainder being infants, children not in school and adults collected and registered in village surveys "or in random investigations at road halts." (19) One suggestion is for the inclusion in census forms of a series of questions on the deaf (20), but it seems likely that, as for other handicaps, the most effective means of identification will be through school teachers, school friends and other children. From these informal sources will come indications upon which a diagnostic service can base its work. "At risk" registers represent a degree of sophistication which is not likely to be possible in the developing countries for a number of years outside major centres of population.

Two aspects of the problem should be mentioned here. One is that the status of a child as "deaf" or "partially hearing" is not necessarily static or permanent; his physical condition may change, as may his facility to communicate. The second is that a child with some hearing impairment will frequently learn to use his residual hearing, acquire some skill in lip-reading and so disguise his impediment sufficiently to escape detection. He may appear mildly retarded, perhaps just a little backward, but it is unlikely that an untrained teacher in a rural school would suspect poor hearing unless there is a markedly high incidence in the vicinity.

### Causes

The major causes of deafness are well known but in the circumstances of the developing countries it is not always easy to ascribe specific causes to individual cases. Of 606 cases seen at the Kenyatta National Hospital 189 were recorded as suffering from severe nerve deafness from birth due to unknown causes (21). Even to distinguish with some degree of certitude between congenital and acquired impairment is often impossible because of the lack of health service provision and progressive records of individual children. One hearing impaired person in a thousand is profoundly deaf (22), but even in more developed countries such as Britain the causes of half the cases of profound deafness remains unknown (23).

The following table represents a reasonably comprehensive classification of causes of deafness:

#### CLASSIFICATION OF CAUSES OF DEAFNESS

- I Prenatal
  - A.1. Hereditary: dominant, recessive
  - 2. Familial
  - B. Non-hereditary:
    - 1. Maternal infection, especially virus diseases: rubella, glandular fever, influenza.
    - 2. Maternal nutritional deficiencies: beri beri, diabetes, the malabsorption syndrome.
    - 3. Drugs and chemical: quinine, streptomycin, salicylates, thalidomide.
    - 4. Toxaemia of pregnancy  
Endocrine - cretinism

## II Perinatal

1. Birth injuries
2. Haemolytic disease, due usually to Rh incompatibility  
- kernicterus
3. Prematurity

## III Postnatal

1. General infections, virus and bacterial:  
mumps, measles, other specific fevers  
tuberculous meningitis  
meningococcal and pneumococcal meningitis  
encephalitis
2. Otitis media
3. Trauma
4. Ototoxic antibiotics:  
streptomycin, neomycin, Kanamycin (24)

Hereditary deafness has been noted as the result of consanguinity of marriage in parts of Malawi and especially among the Asian communities of East Africa (25). In Nairobi and Mombasa cases have been recorded of some parents having three or more deaf children; in one deaf unit half the children come from only three families. Stenosis, or atresia of the external auditory meatus, are believed to be the commonest congenital abnormality responsible for permanent deafness from birth (26).

Of the virus diseases rubella and smallpox are probably the most common causes of deafness. Periodic epidemics of rubella, such as that which affected the Caribbean in 1959 and 1960, result in the birth of an abnormally large number of children suffering in various degrees from visual and hearing impairment, and often from heart trouble and cerebral palsy as well.

Malnutrition, both maternal and postnatal, almost certainly plays a larger part in causing deafness, directly or indirectly, than has been propounded so far. Low protein diets, the sudden weaning of children on to unsuitable diets, lowered resistance to infection, all provide for a high incidence of hearing impairment.

After malnutrition, postnatal virus diseases probably accounts for the largest number of cases of severe deafness. Cases have been recorded in Malawi of severe deafness following high fever, encephalitis and meningitis (27). He notes the frequent occurrence of Japanese B, one of the best known types of virus encephalitis, in Malaysia and India, and the incidence of deafness in the coastal region of Ghana following non-specific fevers with severe prostration. Measles, malaria, cerebral malaria and rickettsial fevers all play their part, as do mumps, viral and bacterial meningitis, and an Arbor virus, the vector of which is a mosquito (28). The widespread threat of deafness due to virus infections is made more serious by the absence of any specific therapy.

Chronic suppurative otitis media, though widespread, is often unilateral. One authority suggests that the greatest risk from chronic otitis is subsequent meningitis or tetanus (29). This opinion is not shared by others, who say that in cases of deafness caused by suppuration, very often the entire machinery is lost and the little bones of the ear destroyed, so that the patient becomes "very deaf indeed" (30). A survey in the Central and



Southern Region of Malawi records that the discharging ear accounts for 73% of the cases suffering from impaired hearing, and that the incidence is higher in children than adults and at all social levels (31). An elementary toilet for the discharging ear could sharply reduce the incidence of damage to the ear by simple and cheap measures (32).

Causes of trauma reported from the developing countries include brain abcess (33) and the results of treatment for other infections (34), while in the urban areas traffic accidents are noted increasingly in the records.

Two causes of psycho-somatic deafness not mentioned in the table quoted above are alalia prolongata and maternal deprivation (35). Alalia prolongata cases are most commonly children of between three and five years of age who are apparently physically and mentally normal yet do not speak. They usually come from above average homes in terms of income. The factor they have in common is no consistent language pattern in the home (a confusion of local languages and English frequently.)

"In one case the child's home language was Luo, the servants were Kikuyu but used Swahili, the first school the child went to was an Asian nursery school where the official language was English but most children spoke Gujarati or Punjabi." (36)

The child simply gave up any attempt to speak in the face of this incomprehensible babel.

Maternal deprivation in the African sense is often rather familial deprivation. The child brought from the security of his extended family in the rural areas to an urban area where his daytime companions are unrelated strangers (his mother being away at work) sometimes develops a psychosomatic deafness.

#### Problems of hearing loss.

The deaf child's major problem is that of achieving social acceptance. His appearance of normality often makes this more difficult. Very many find themselves in the state of mind of Beethoven:-

"From then on he became deafer and deafer and increasingly mistrustful of people. It is a typical picture of people in this predicament: they fear that they are making fools of themselves and so they distrust all other people and this makes them very difficult people to deal with". (37)

Deaf children are exactly the opposite of blind children in one important respect. While the blind child spontaneously neither offers nor responds to facial gestures, the deaf child is unusually sensitive to facial expressions. A smile is an important symbol of approval:

"Children and their parents require skilled guidance in fostering the understanding of those gestures which promote social and intellectual growth and development." (38)

The hearing-impaired child faces heavy problems in coming to terms

with his environment. Less mature in judgement and social competence than his fellows, the gap in social maturity between the deaf and the normally hearing child widens with increasing age, often resulting in marked maladjustment (39).

Hearing is not automatic. The child must be taught to hear and then to talk, and the longer the delay in providing the training the more difficult the task becomes and the less satisfactory the result. The deaf child must struggle for every word he learns (40). An almost insurmountable obstacle is raised by the virtual impossibility of talking to a seriously deaf person about things with which he is not familiar from his own experience (41.) The deaf child lacks a sense of continuity. No sound announces the arrival of familiar figures. Innumerable events which have a continuous character for those who can hear are for the deaf more abrupt, isolated and lacking in relationships. Sir Alexander Ewing, however, believed that the communication barrier for 75% of children who are born deaf or acquire deafness during infancy can be broken down by the use of hearing aids (42). Unfortunately, in the developing countries hearing aids are in short supply, as are speech therapists, other specialists, and informed parents.

Deaf children present a problem for even the most enlightened parents; deaf children of deaf parents suffer doubly. They not infrequently develop emotional disturbances and are often markedly maladjusted (43). Since deafness can be hereditary, as in the case of East African Asians, this may be a problem of appreciable dimensions in many closely-knit communities in the developing countries. In these countries, too, the traditional reluctance to admit to the existence of handicapped children and the embarrassment which their presence causes is often accentuated by disappointment. When wage-earning opportunities are so few in relation to the number of qualified applicants, parents regard the handicapped child as virtually excluded from the hunt for jobs. The resulting attitude tends to be either overprotective or neglectful. In many countries the partially-hearing child is underprotected, his impediment undervalued, his backwardness attributed to mental retardation or laziness. For the hearing-impaired child probably more than for any other handicap, help and education of the parents is a basic part of the therapy.

Hearing-impaired children in the developing countries are faced with one problem which affects children in Europe and America less. This is the problem of the choice of a language in which they should learn to communicate. All educational principles point to the desirability of promoting communication in the mother tongue, but if this is a language restricted to a relatively limited area it may not be possible to find a specialist teacher familiar with it. Nor may there be sufficient deaf children of any one language group to warrant a special class or unit. Yet to attempt to teach the techniques of communication in a foreign language to a young deaf child is against any teacher's better judgement. There may be cited for example:

"the Norwegian mistake of bringing children from their homes (Lapland) and teaching them a foreign language (Norwegian) so that one return to their homeland they could not make themselves understood or understand what was said." (44)

Practical difficulties in terms of the recording of language and the availability of teachers mean that deaf children in many developing countries must labour to learn to communicate through the medium of a foreign language, either a dominant vernacular, or English in the case of Commonwealth countries. Such language problems for the deaf have been mentioned recently as important in Ghana, India, Malawi, Mauritius, Nigeria and Uganda, a list which must be incomplete.

Once the choice of language is made a further problem arises with respect to many African and Asian languages. This is the fact that they are "tonal" languages, that is, meanings are distinguished not only from the sequence of sounds but from differences in the pitch and intonation of each word. The same set of sounds may have several meanings according to the intonation; a simple example from Hausa is that while *kajā* (low-high) means "a charm-belt", *kāja* (high-low) means "an old goat". Yoruba contains a large number of words - pairs or groups of three or four - differentiated by tone alone, perhaps a larger number than in the other highly tonal languages of West Africa, such as Ibo or Efik. In Yoruba, for example, depending solely on the tones employed, the word *ɔkɔ* can mean "husband", "hoe", "spear" or "canoe", and the word *awo*, "dish", "guinea-fowl", "secret", or "fishing net" (45). The context will not always clarify the meaning. In order to anticipate such difficulties, a teacher must have a full working knowledge of the language of instruction.

Yet another problem of communication is not limited to the developing countries. This is the decision on the choice of oral, manual or combined methods. The oral method, whereby a child is taught to lip-read and make the fullest use of any residual hearing, seems to offer the best opportunity for integration into the ordinary community, and the techniques learnt for one language can be transferred to a second. Manual methods (finger-spelling and signing) are successful only when the recipient also knows the code, and thus restrict free communication largely to the deaf community. Combined methods, or "simultaneous" methods, use finger-spelling, signing and speech, and, again, are probably or most use in a deaf community. One possible approach is to attempt to use the oral method for all beginners, moving on to combined or manual methods only for those who cannot cope orally.

All these problems depend for their solution on the availability of personnel and facilities. In developing countries these are inadequate even for the 2% of hearing-impaired children who can find special school places. The situation in India is underlined by the finding of a survey of Indian hospitals in 1966 that there were only three persons who had adequate formal training in audiometry (46). An authority, speaking of the African continent, says:

"Speech therapy will not be available except at a few teaching centres for many years to come." (47)

In the Progress Report on Special Education presented by the Commonwealth Secretariat to the Fifth Commonwealth Education Conference (48), all the ten developing countries which submitted information stressed the need for more personnel and training opportunities. Apart from informal in-service training

facilities, only seven of the developing Commonwealth countries have organised training courses for specialist teachers of the deaf, Ghana, India, Kenya, Malawi, Malaysia, Pakistan and Hong Kong. The others must rely on bursaries, foundation grants and informal regional arrangements. The problem of the continuity of staff is acute; once they are trained as specialists many teachers tend to be moved or aspire to promotion elsewhere at relatively short intervals.

The major difficulty in terms of physical facilities for deaf children, as for other handicaps, is that the problem is widespread in the rural areas while facilities are concentrated in the towns. Lack of financial resources, long distances, sparse populations, the need to provide longer courses for children who are slowed down by their handicap, all these factors militate against the successful building up of a comprehensive service. Hostels are often necessary, thus limiting the child's contact with his family and raising costs. Government preoccupations with more threatening problems limit the official participation in programmes for the handicapped. Educational facilities for the deaf in the developing countries, with some notable exceptions, remain largely a private venture.

### Education of the deaf

Deafness is probably a greater barrier to learning than any other physical handicap, and the primary object of education for the hearing impaired is to break down this barrier by enabling the child to communicate, and thus be able to receive information. Unlike his hearing fellow the deaf child learns very little in a passive way, by overhearing conversations, for example. Everything must be taught positively and relevantly in order to establish a body of experience. Acceptance by their hearing contemporaries is difficult to achieve. It is often not until the secondary and university levels that they are accepted by their normal peers, though even in the more developed countries very few deaf children continue this far in school (49).

Education for hearing-impaired children in developing countries is still in the early pioneering stage, with little in the way of precedent on which to draw. Kenya, with perhaps 45% of severely deaf children in school (50) is ahead statistically, but this is a percentage affected very much by the provision for the urban Asians among whom the incidence is so high. Otherwise provision lags far behind the need, except perhaps in Singapore, where a recent report indicated that not all available special school places had been taken up. This compares, however with reports from India of four schools for the deaf in Madras State with a total waiting list of 600 (51), 157 applications for 60 places in Tanzania (52), or Jamaica with a very long waiting list for St. Christopher's, Brown's Town (53). Similar accounts come from Nigeria, Uganda and Zambia. The needs for specialist teachers, expensive equipment, small classes and extended courses all add to the costs of deaf education and limit the possibility of making adequate provision.

Pre-school provision for deaf children can assist greatly in promoting speech, but such facilities are very limited in developing countries where, in any case, diagnosis is frequently not made until much later. The Government of Hong Kong has recently established a Speech and Hearing Centre for audiometric and speech screening, audiological testing and auditory training for pre-school hearing-impaired children. The population density and short distances make this more feasible in Hong Kong than in countries such as Tanzania, but this type of provision represents the goal towards which other countries should be working.

As for the blind, there is considerable debate about the best type of school provision for the deaf. Authorities mention the very desirable separation of the profoundly deaf from the partially hearing since each needs to be taught by different methods in different classes(54). The numbers of profoundly deaf in any one country are likely to be small so that boarding special schools are probably the best solution to their educational problem. For those with some residual hearing special units or classes attached to ordinary schools, and full integration whenever possible, give the deaf child the best chance of schooling, since costs can be limited through the sharing of facilities. Units are also said to have a salutary effect on public attitudes towards deafness (55). Deaf units have been established for some years in Kenya (where they are attached both to ordinary schools and to special schools), Uganda and Hong Kong, while programmes of integrated education have been reported recently from East Africa, Fiji, Malaysia, Nigeria, Singapore and Zambia. Several authorities recommend the integration of deaf students into ordinary schools beginning at the secondary level rather than at earlier stages (56), a system which is supported by the evidence from Japan where better results have been observed in those cases integrated during or after junior high school level (57).

Other types of provision for hearing-impaired children which may be considered by developing countries include special holiday courses to supplement the work of deaf units, as in Denmark (58), the use of ordinary school buildings when the normal school has finished work for the day, as in the early days of the Schools for the Deaf in Ghana and Sierra Leone, or the use of correspondence instruction courses such as those of the world-wide John Tracy Clinic courses for children with hearing disabilities. Particularly valuable, too, are informal educational activities, through groups and societies attached to schools, such as Scouts, Guides or Young Farmers, through visits to places of interest, such as football matches or shops, or through a network of social clubs, such as that in Bombay or the six clubs in Hong Kong which cater at present for some 250 deaf children.

#### Some special schools for the deaf in developing Commonwealth countries

##### (a) GHANA: School for the Deaf, Mampong Akwapim (59)

Opened in 1957 by the Christian Mission for Deaf Africans, an American voluntary organisation, this school pioneered deaf education in Ghana. Its founder, Mr. Andrew Foster and his first pupil-teacher, Mr. Seth Tetteh-Ocloo, were both profoundly deaf. Like the school in Sierra Leone, this school began by using classrooms of an ordinary school in the evenings. As its numbers grew from 13 to 50 it moved out of Accra to a rented house at Mampong, and in 1962 Government accepted responsibility for the school. The normal school curriculum is followed as far as possible, supplemented by extra language work and prevocational training. Because of the diversity of language among the pupils, teaching has to be in English. Informal activities and social training are included in the activities of the school, which by early 1970 had grown to 96 pupils (64 boys and 32 girls). Although the school buildings are far from ideal the new classroom block is a great improvement on the old house, where the lighting was so poor that the lip-reading must have been virtually impossible for all but the few children closest to the teacher.

##### (b) INDIA: Church of South India School for the Deaf, Mylapore, Madras (60)

Reports from this school for 175 children underline the problems of the voluntary school, short of staff, equipment and finance, subject to Government control but receiving only limited assistance. Most of the female teachers are married and have done several hours work in their homes before travelling some distance to the school; most of them are malnourished, as are the pupils. Children have low resistance to disease such as chicken-pox, while tuberculosis is very common in the area. Many children have multiple handicaps (one boy of six is deaf, visually impaired and has both feet crippled). The turnover of staff is high, and an average of one and a half teachers are absent daily through the year, factors which help to explain the relatively low standards achieved by the children.

(c) MALAWI: School for the Deaf, Montfort College, Blantyre (61)

Brother Hortensius, a qualified speech therapist and audiologist from Holland, worked for three years before winning Government approval for the opening of a class for deaf children in a borrowed classroom at Montfort Teacher Training College. Ad hoc arrangements for weekly boarding for five children and in-service specialist training for two experienced teachers made the class possible. There followed the problem of language; Chinyanja was tried as the medium of instruction but later abandoned in favour of English. The school has now been incorporated into a major project for deaf children sponsored by the Commonwealth Foundation. The capital investment in the school and a clinic, supported by regular visits by E.N.T. consultants from England, means that this school could develop as both a direct service to Malawi and neighbouring countries and a model for developments elsewhere.

(d) MALAYSIA: Federal School for the Deaf, Penang (62)

Deaf education in Malaysia began in 1954 when 7 pupils made up the first class at this school. The present enrolment (1970) is 216 pupils, aged from 6 to 17 years, with 19 qualified teachers of the deaf. Residential facilities are available for 300 children. The medium of instruction is the national language, with English taught as a second language. The curriculum follows that for ordinary schools as far as possible with additional emphasis on speech, lip-reading and auditory training. Secondary courses are available in academic and technical subjects. Vocational instruction includes hair-dressing, beauty culture, typing, tailoring, typewriter repair and servicing, printing, woodwork and draughtsmanship. A number of leavers have been found employment. In 1967 the Government took over the school at the request of the School Board, and the school now operates as one element in the overall national programme for handicapped children.

(e) SIERRA LEONE: School for the Deaf, Freetown (63)

For six years from its foundation in 1964 this school of 20 pupils operated in the corner of a large room of a school for normal children during the afternoons when the main school was not in session. It moved recently into a new building, the completion of which has been delayed by lack of funds. The headmistress is a qualified teacher but is not specially trained for work with deaf children, although she has made a study tour in England. Her class, with which she deals aided by part-time help, ranges in age from 6 to 16 years. The teaching problems are great and concentration is on basic skills and social training. All the children have hearing aids but the Pure Tone Audiometer and Speech Training Unit have deteriorated in the climate and were no longer serviceable in 1970.

(f) TANZANIA: Deaf-Mute Institute, Tabora (64)

The Tanzania Roman Catholic Episcopal Conference runs this Institute, the only school in the country accepting deaf children aged between 7 and 12 years. Restricted funds limit the enrolment to between 60 and 70 children, the majority of whom are severely deaf. A Government grant is intended to cover teachers' salaries and the maintenance of equipment. Other expenses must be covered by donations and fees, but, although a nominal fee is charged, not all the children can pay, so that a considerable sum must be found each year by the Archdiocese. Two teachers are employed specifically for lip-reading and speech work, the remaining seven teach normal subjects. The school aims to give a full primary education, but over a period of ten years instead of the usual seven. Swahili is the medium of instruction.

(g) UGANDA: Uganda School for the Deaf, Namirembe, Kampala (65)

Run by the Uganda Society for the Deaf since its foundation in 1959, the school receives annual subventions from the Government. 44 pupils aged from 3½ to 16 years attend the school, including ten in a nursery class. The nursery serves the dual purpose of allowing children to become accustomed to the school and also provides an opportunity for parent guidance. The pupils in the school follow a normal syllabus as far as possible with particular attention paid to speech and auditory training, prevocational activities, sports, visits, informal activities and social training. Finance is a major problem inhibiting the expansion of the school.

(h) ZAMBIA: Magweo School for the Deaf, Fort Jameson (66)

Managed by the African Reformed Church from its foundation in 1955 but now assisted by Government, this school had an enrolment in 1970 of 76 pupils, 8 of whom came from Malawi, and a staff of six teachers, five of whom were professionally qualified but not specialised in the teaching of the deaf. One teacher was himself handicapped. The pupils are taught by an outdated sign language system and it is hoped that a special class for teachers of the deaf recently started in Lusaka will enable oral methods to be taught soon at Magweo. An investigation in September 1969 showed that one third of the pupils are only partially deaf and could be taught in ordinary classes with the help of hearing aids. Other children could be taught in special classes, leaving only the profoundly deaf in need of this special school. The school buildings are good but badly maintained, and the school is short of even basic materials, lacking audio-visual materials completely. There is no electricity supply, which means that sophisticated audiological equipment could not be used even if it could be procured. Children start at about eight years of age, very late by modern thinking, and the school offers little except academic instruction. In 1967 it was noted that a well equipped carpentry room lay idle for the lack of a teacher competent to teach the subject (67). In-service training for the staff to add some expertise to their enthusiasm seems to be the outstanding need. One tribute to the school's effectiveness despite its shortcomings is that, as far as is known, 33 ex-pupils have undergone vocational training and found paid employment.

Equipment and Aids

While many very valuable aids exist, their costs, complexity, and, often, their dependence on a supply of mains electricity limit the possibilities of their use in the developing countries. Teachers and others working in

these circumstances must learn to depend primarily on a minimal supply of basic aids, accepting anything beyond this as a bonus. Where mains electricity is available, as in Freetown, there has been listed as minimal the following items of electronic equipment: (a) individual hearing aids, with inductance loop coils; (b) three speech training units, which could be used to drive inductance loop systems for whole classes, as well as serving for individual speech training; (c) a pure tone audiometer; (d) a group hearing aid (68). Such equipment deteriorates rapidly in hot and humid conditions (and had indeed done so in Freetown), so that an air-conditioned room is essential for the storage of these items. Of the fourteen schools in East Africa, only one is listed in 1968 as having all the equipment thought minimal by Redgate, two as having three of the four items, four with two of the items, four with one item, and one with none; two schools made no return of their equipment (69).

When so many schools are so short of even basic supplies of books and writing materials it is unlikely that the equipment listed by Skamris (70) as needed by Magwero School can be provided, including as it does a tape recorder and projectors. These recommendations compare with the situation revealed by the Head of the B.Y.L. Nair Audiology and Speech Therapy School, Bombay, who speaks of the difficulty and delay in obtaining books even when money is available, owing to "procedural formalities" and the hesitancy of local booksellers to stock or order small quantities of specialised books (71). Many schools and colleges would add to the problem of a lack of foreign exchange that of a lack of funds of any sort for adequate purchases.

Unlike the blind, the deaf cannot take advantage of the recent vast increase in the availability of low-priced transistor radios for the dissemination of centrally-produced educational programmes. Television coverage in the developing countries rarely extends beyond the major urban areas, so that there is little likelihood of their being able to replicate Japan's NHK Television School for the Deaf (72).

### Hearing Aids

Battery-operated hearing aids may be regarded as essential for most hearing-impaired children, although not all children gain the same benefits from hearing aids, which assist especially those with relatively undistorted hearing losses (73). Advice from an audiologist is essential if the best value is to be obtained. The earlier an aid can be fitted the more a child will benefit from it and the less self-conscious he will be about wearing it (74).

The development of relatively inexpensive hearing aids has been a matter of concern in many countries, and particularly in India among the developing countries. A moderately priced hearing aid in India cost in 1967 between \$ 60 and \$ 80, while the average daily income of families in the area was less than \$ 1 per day (75). In consequence fewer than 10% of the pupils in schools for the deaf had been fitted with hearing aids. By 1969 an indigenously made aid had been developed costing under \$ 13. Even so, the problem of distribution without adding to the cost substantially, the need to restrict production to 2,000 units a year instead of the anticipated 4,500 in order to maintain standards, import restrictions, taxes on batteries and imported components, sales taxes on complete units imposed by various Indian states, all militate against a rapid increase in the availability of locally made aids (76). The scale of the need is rarely appreciated. It has been calculated that hearing aids could be useful to 6 per 1000 of the population of Malawi (77). This implies a supply of 24,000 aids plus a 75% reserve to cover



replacements during repairs. At £5 each, 42,000 aids would cost £210,000 plus maintenance costs. Assuming the incidence in India to be similar (and there are certainly no grounds for believing it to be less), the need would be for some 30 million aids plus a 75% reserve. At £5 each (a little less than the \$13 mentioned above, and considerably less than the sums mentioned at the Third All India Workshop (78), the cost for 52.5 million aids would be £262.5m. If Kapur's estimate of 15 million hearing impaired children in India is accepted (79), the cost of fitting them all with hearing aids would be £75m., or, with 75% reserves, £130m. The numbers thus calculated highlight the total inadequacy of the present local production rate of 2,000 per year. Although on a larger scale, the Indian problem serves to illustrate the situation in many developing countries.

The solution to the problem of supply and maintenance of equipment lies probably in the establishment of central depots. These have been suggested for India, Sierra Leone, Uganda and Zambia, although none have yet been set up. The starting of a federal co-operative store has been put forward as a means of reducing costs, a system which might be modelled on that at Poona University where books and other materials are sold to students at low cost (80). Bulk purchase and low-profit sales conducted by charitable organisations represent the best solution to a basic problem during the period in developing countries before governments can assume full responsibility for the education and welfare of the deaf.

#### The training of teachers

Experience in the more developed countries has all indicated that deaf people cannot be trained to a satisfactory standard as teachers of the deaf, yet, because of the circumstances prevailing in the developing countries, hearing-impaired staff are found frequently working with deaf children (81). Of all handicaps, teachers of the deaf probably need the greatest range of depth of expertise in order to undertake their work successfully:

"The teacher of the deaf not only requires to know about methods specific to teaching the deaf, and about recent developments in audiology and linguistics, but also, in view of their widening functions, needs knowledge of other branches of special education, developments in ordinary education and methods of working with parents." (82)

Institutional facilities for training teachers of the deaf exist in only five of the developing countries of the Commonwealth (Ghana, India, Kenya, Malawi and Malaysia), although in-service training is undertaken in special schools in other countries including Pakistan and Tanzania, while the Hong Kong Education Department conducts seminars, courses and lectures. A training college is planned for Ceylon. The other countries rely largely on scholarships and bursaries for teachers to undergo specialised training overseas, primarily at London and Manchester Universities in Britain, or at the Perkins School in the United States, which specialises in training teachers of the deaf-blind. The Leverhulme Trust in association with the Commonwealth Society for the Deaf has played a valuable role in providing assistance in the form of bursaries in addition to the official awards under the Commonwealth Bursary scheme. Nevertheless, training overseas has serious disadvantages in terms of "culture shock" among students, unrealistic expectations being aroused in relation to the availability of sophisticated equipment in the circumstances pertaining in a developing country, and, most

important, in the language to be used on return home. The recent increase in fee charges to overseas students in British universities has also played some part in limiting the use of these facilities. The Department of Audiology and Education of the Deaf at Manchester University was able to train only 112 overseas students (not all from developing Commonwealth countries) in twelve years, so that, even if it were desirable, the supply problem could not be solved by overseas training facilities. The use of overseas courses for the production of teacher-trainers seems to be the best approach in the immediate future.

Courses provided in the developing countries have many advantages, not least being the fact that the cost of moving one lecturer to the developing country is less than that of moving a class of students to the more developed country. As such courses are developed it may be questioned as to whether all teachers need to be trained to the same level. The time may be appropriate for pioneering in special education a development which seems inevitable eventually in ordinary educational circumstances, that of differing grades of teaching staff, ranging from specialists to aides and auxiliaries, each responsible for different aspects of the school's work. The number of training courses should not be allowed to proliferate unduly. Despite the proved difficulties of regional centres, the number of specialist teachers which can be afforded by any single country is unlikely to warrant the introduction of a semi-permanent course. If political pressures can be overcome and sensitivities placated, a small number of efficient regional centres, linked to universities rather than government institutions, would be able to meet all needs for the foreseeable future.

The motivation for teachers offering themselves for specialist training merits investigation. Some may see in the course an opportunity for study on full salary, extra increments on completion, and a niche in a small educational sector where they may be more likely to be selected for promotion to administrative posts. The common practice of requiring applicants for specialist training to have some years of service as qualified teachers in ordinary schools may tend to attract the ambitious young man who sees opportunities outside education decreasing, and the unpromoted older teacher who grasps at this as a last chance of advance. Such motives do not guarantee stability or success in a most demanding occupation.

Once trained, the specialist teacher needs continuing support. If he is attached to a deaf unit or class in a rural area the teacher will be the only specialist in the area, and will probably have to involve himself in preliminary diagnosis and assessment as well as indirect teaching. To bolster his morale regular visits should be planned by specialist advisers, a radio series might be prepared to assist him professionally, and a magazine issued by the training college to keep him up to date. Refresher courses serve the dual purpose of improving his professional competence and enabling him to exchange experience and ideas at first hand with those involved in similar work.

### Conclusion

Many of the proposals already mentioned in connection with the blind, relating to surveys, public enlightenment, teacher-training, career service, educational provision and professional information, are equally valid for the deaf. If particular aspects are to be stressed they should perhaps include the necessity, even more than for the blind, of early identification and assessment, the active participation of parents in helping their deaf children, and the vital roles for paramedical and auxiliary staff. For efficient programmes to be undertaken in the developing countries basic data must be

assembled, realistic plans formulated, adequate finance committed from public and private sources, and a follow-up service organised for school-leavers. In the final analysis the value of education for deaf children will be judged by the community at large on the success which they achieve in living independently as contributing members of their society.

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