HEARING AIDS

By JOHN C. RICE (London)*

Introduction

Much has been said and written recently about the supply and use of hearing aids, and in some cases it has not been entirely without bias, the parties responsible having various prejudices to substantiate and being influenced by factors other than simply the alleviation of a disability in a section of the community.

This survey began as a result of reading a report entitled "Deaf Aids", published by the Consumer Council, which dealt with complaints about the supply of hearing aids through private firms. It expanded to include other aspects of the supply and use of hearing aids, both inside the National Health Service and in the commercial field. It is written from the point of view of an otologist, which I hope will be impartial, and in which I have tried to keep the interests of the individual deaf patient foremost in my mind at all times. If I seem to have come out on the side of the commercial manufacturer, it is because I feel that he and his aid have a lot to offer the deaf public which is not being fully utilized in this country at the present time, and because few others, apart from the manufacturers themselves, have publicly recognized their potential.

The Problem

The prevalence of deafness in this country today is unknown, although Gregory (1964) estimates that the number with a hearing disability is probably more than two and a quarter million. The number of these people who can benefit from a hearing aid likewise is not known, although he says that "there is enough (evidence) to suggest that virtually every deaf person can derive at least some benefit from hearing aids". But as he goes on to point out, benefit is not an objective thing measured by, for instance, an improved intelligibility for speech, but a subjective assessment on the part of the patient, who in the end decides whether an aid is sufficient help for him to use it. Gregory thinks that only the 1 or 2 per cent. of the deaf who have no hearing at all, are unable to gain any benefit, but he overlooks the group of patients with recruitment whose range from threshold of hearing to threshold of pain may be so concertinad, that a hearing aid is of no practical value. However, he points

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out that, although many of the figures which he quotes are not exactly watertight, there seems to be sufficient evidence that there is a substantial gap between the numbers who could benefit from hearing aids and the number who actually do so.

With a population whose average age is ever increasing, the problem of deafness is going to increase rather than decrease, and Winchester (1963) says, "Today, the majority of people seeking hearing aid help have sensorineural (perceptive) deficits. This is true because of the increasing availability and effectiveness of surgical treatment of middle-ear disorders. In addition more people in the geriatric category with non-correctable sensorineural losses are seen because of the extension of life expectancy." Also undoubtedly more perceptively deaf children are being diagnosed and at an earlier age. The perceptively deaf patient, as opposed to the conductively deaf, is more difficult to "fit" satisfactorily with a hearing aid.

The Aids Themselves

The Consumer Report rightly says that the National Health Service system is not comprehensive, and it criticizes the unattractiveness of the Medresco aids especially to women and children. The National Health Service did not, at the beginning, set out to provide a fully comprehensive service. Report 261 of the Medical Research Council states that the aid it recommended in 1947 was "likely to prove helpful to the majority of deaf people. There will still be a small proportion requiring special apparatus, and a further number whom no mechanical appliance could be expected to benefit in major degree." If, however, the "small proportion" is increasing and likely to go on increasing in size, is it not time that the National Health Service looked beyond Report 261, upon which its aids, although changed in themselves since 1947, are still essentially based? Indeed in 1949, M. Reed, a Ministry of Health spokesman said (quoted by Gregory) "The object to be achieved was, and is, to provide a wholly satisfactory aid without charge to every patient who can benefit from its use. We have realized from the beginning that if this scheme was to be a success it was essential both that the aid itself should keep pace with developments devised by the industry working privately for its own clients and that the administrative machinery should be constantly developed to meet changing circumstances." This has not been achieved.

As regards attractiveness, this is something which a free Health Service cannot afford in itself unless it is on the grounds that the aid is so unattractive that those issued with it simply will not wear it. Attractiveness, however, is not necessarily synonymous with convenience. Some patients have complained to me that the size and cord of their Medresco aid make it impossible to wear when they are working. Active young children also often will not wear a cumbersome aid. Nor is the small size

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of an aid necessarily synonymous with convenience, for, as Gregory points out, in some aids the controls and switches may be so small that old and arthritic fingers may be unable to manipulate them.

At present those patients who can use a hearing aid but are not helped by the Medresco are obliged to buy a private aid from their own pocket. Winchester comments "In the past, compensating for the high-tone (perceptive) type of hearing loss with a body-borne hearing aid was usually difficult if not impossible. The combination of the annoyance of the clothing noise and signal distortions produced by the body-baffle effect served to discourage all but the most hardy and determined hearing aid user. Today, however, with the advent of the ear-level instrument, many if not most of those persons falling into the high-tone hearing loss group can be successfully fitted."

There seems little doubt that for the straightforward amplification of speech the Medresco equals the best, and is a great deal better than some commercial aids. It provides all that the conductively deaf patient needs to overcome his deafness, and in buying a commercial aid, e.g. a head worn model, he is spending his money to gain little more than convenience and attractiveness, the elimination of such annoyances as clothes-rub and a more personal service. However, as well as being cosmetically more acceptable to many than the Medresco aid, commercial aids do offer such refinements as telephone pick-up coils and to help the perceptively deaf—those that are more difficult to help—they offer a wider range of differing frequency responses (both of amplifiers and earphones) than the Medresco, a higher maximum output, and refinements such as automatic volume control.

Fitting

As regards the "fitting" of hearing aids it is now well recognized that this cannot be done as the optician fits a pair of spectacles. To try to compensate for the patient's hearing loss for pure tones, as determined by a puretone audiogram, in the amplification given by a hearing aid at those frequencies does not work out in practice because a patient's hearing for different frequencies is likely to be a quite different pattern at 30 db. or 40 db. above threshold from that at threshold. Subjective assessment on the part of the patient is, at present, the only effective way of determining the "correct" response although speech audiograms give considerable help in assessing improved intelligibility with and without an aid. Unfortunately an aid which gives a pleasing response to the patient does not always help his ability to understand speech as much as aids with less pleasing quality.

At present most patients issued with Medresco aids have their hearing assessed by the otologist with a pure-tone audiogram, though this is not always done. Speech audiometry is rarely used, though the patient

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usually has the aid tried out briefly while listening to the speaking voice. In Denmark and Sweden under their state services, as well as pure-tone audiometry, speech thresholds and discrimination scores are routinely assessed. The Medresco aid can be fitted with one of two different maximum outputs (changed by removing a screw from the bottom of the case) and there is the choice of one of two different receivers. The combination is usually left to the audiology technician in each particular case.

The commercial aids offer a much wider choice in amplifier and receiver responses so that there is probably more chance of "fitting" the difficult case, although as Rosenberg (1962) says, "The engineer's measurement of the performance of the hearing aid is vastly different from the actual performance of the aid on any specific individual. The final test of the worth of any hearing aid is the benefit which accrues to the individual hard of hearing person." In addition at least one firm uses a Master Hearing Aid—a bulky piece of electronic apparatus which is designed to reproduce accurately the responses of a large number of aids, and by altering the variable factors the best "fit" for that patient can be determined. He can then be given the aid which most nearly approximates to that reading—or if necessary even have one built specially with those characteristics.

I understand that the G.P.O. has for some years experimented with such a Master Hearing Aid, (though the purpose of the apparatus is not so much to duplicate existing characteristics as to investigate the types of variation required), and are interested in selective fitting.

Maximum Output

The maximum output of the Medresco aids was limited by the Electro-acoustics Committee of the Medical Research Council to 126 db. because of the possible damage which louder sounds might cause to the cochlea of an already partially deafened ear. Although it is well known that exposure to very loud noise over a period of time will cause cochlear damage and that some ears seem more susceptible than others, no conclusive evidence has been produced to show that very high powered hearing aids do cause damage when fitted to those patients who seem to need them although this would obviously be difficult to show. I feel that the otologist should have the facility to prescribe super-amplification aids if he feels the risk is justifiable (Streptomycin sometimes damages the labyrinth but its prescription is not banned because of this). Because of the potential dangers involved, the patient should only be sold such a very high powered aid on the express recommendation of an otologist. The two groups of patients who may benefit from these aids are:

1. Those severely deaf children who without superamplification will not hear enough to develop speech and language. If they can achieve this even if their little residual hearing is damaged in the process, it is surely

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not too high a price to pay. Ewing (quoted in Gregory) has made a plea for more powerful hearing aids than the Medresco for profoundly deaf children and Miss Edith Whetnall (1964), director of the Nuffield Centre of Speech and Hearing says "there is no evidence of acoustic trauma due to a hearing aid, and indeed it could not happen. Acoustic trauma results from long exposure to continuous noise at a high level of intensity (over 100 db.) or from a sudden explosion. Speech sounds, even with the most powerful hearing aid, are never delivered at an intensity of 100 db. in the 'normal' deaf child continuously. (It is true that an educationally sub-normal child is sometimes given a hearing aid as they are assisted in learning by the increase in amplification, but even in these cases the child will not tolerate too loud a sound and pulls the aid off.) Speech sounds are not a continuous sound but are changing in intensity and frequency from second to second. Intermittent louder bursts of sound such as gun-fire and a rifle, will also cause acoustic trauma, but a child is rarely exposed to this risk. Hence neither of the conditions which cause acoustic trauma is present."

2. Those severe perceptively deaf adults who cannot hear except with superamplification. Even if the benefit is short-lived for them they will, at the end, be no worse off than before without such an aid. Miss Whetnall's first argument applies equally well to adults, and in peace-time these people are unlikely to be exposed to gun-fire.

Automatic Volume Compression

Automatic Volume Compression is a refinement fitted to many commercial aids as a device to overcome the intolerance to loud sounds of many perceptively deaf people which is called recruitment. Patients who have recruitment are able to hear loud sounds, (which may even be painful) as well, if not better than normal people even though their threshold (the level at which they can just hear quiet sounds) is raised. Medresco aids do not have Automatic Volume Compression, but their output is limited by what is known as "peak clipping".

AVC is a feed back mechanism in which the output of the amplifier when it exceeds a certain level, is used to turn itself down. It is claimed that AVC protects the patient with a recruiting type of deafness from painfully loud sounds, but still enables him to hear the quieter sounds, and that it also enables him to hear better when there is a lot of background noise, which is not achieved by peak clipping. Peak clipping produces distortion of the loud sounds, although it likewise protects the ear from painfully loud sounds.

There has been much disagreement about the value of peak clipping versus AVC; on the one hand we have the claims of the commercial manufacturers that AVC enables them satisfactorily to fit a larger number of their more difficult cases, and on the other the opinion of those concerned

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in the design of the Medresco aids that in the absence of any authoritative findings on this controversial topic their judgement is reserved. I am told that an effective AVC is technically difficult to design and "Which" reported that in some commercial aids, although they had AVC, this was found to be ineffective when tested by the National Institute for the Deaf, although in others it was effective.

The M.R.C. through its Electro Acoustics Committee has experimented with the application of AVC to hearing aids since 1953. Selected samples of patients who were expected to derive the most benefit from the use of AVC were studied, but the results have indicated only marginal improvements. The Post Office advised that peak clippings would give much the same result and was more economical. The Ministry of Health has therefore not proceeded with AVC in hearing aids beyond experimental models.

Davis and Silverman (1960), however, seem to be in no doubt as to the value of AVC (Automatic Gain Control as it is also called) for in their book "Hearing and Deafness" they say: "One advantage offered to the user by Automatic Gain Control is that the maximum output of the hearing aid can be adjusted to his tolerance threshold without sacrificing the gain that is needed to make weak sounds audible", and "in a variable noise background, with the talker's voice rising and falling accordingly, it is difficult to keep pace with the changes by manually manipulating the gain control. But the automatic gain control circuit can and does respond automatically to changes of input level within a small fraction of a second."

Miss Whetnall (1964), in discussing behaviour problems in deaf children, says "In many cases this can be correlated with the intolerance to sound or the presence of recruitment and is aggravated by the use of an unsuitable hearing aid. These children should always have a hearing aid incorporating Automatic Volume Control."

It seems therefore that Automatic Volume Control, which is theoretically a good idea to overcome a clinical phenomenon, has advantages for some patients, and it is perhaps a pity that those patients who could benefit from it have been denied it under the National Health Service so far, although I understand that experimental work applying the principle of AVC has and is still being undertaken by the G.P.O. These patients belong probably to the "small proportion" not covered originally by the M.R.C. Report, but their number is probably growing and they should be helped if possible.

The Commercial Field

The Consumer Council commented on the fall in the numbers of British manufacturers (in fact, I understand there has been a drop in recent years from 13 to 5) and says that a large number of competing firms each offering a range of appliances is "technically unnecessary and only impedes manufacturing economies". This may be true in a nation-

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alized industry, but if private enterprise is to be encouraged (both for home and export markets) firms must be allowed to operate in competition with one another and with imported products. A parallel may be drawn with the motor car industry in which different firms offer a comparable range of models in competition with each other and imported cars. This system stimulates competitive prices and research into improving the product. The market for hearing aids is certainly a peculiar one, and there is no doubt that extensive advertising is necessary at present to enable the commercial firm to sell its products. However, if more deaf people were able to receive the (possible) benefit of commercial aids, this large scale advertising would be less necessary; but even so it is a part of any commercial enterprise and its procedures are already controlled by the Rules for Hearing Aid Advertising issued by the Society of Hearing Aid Audiologists.

The use, by salesmen, of "high pressure" tactics, especially of the "door-to-door" type is something which everyone will wish to see outlawed. The salesman must not take unfair advantage of the prospective purchaser's disability to effect an unnecessary sale. However, the door-to-door salesman of the type who, without invitation knocks on every door in the street, must not be confused with the salesman who visits the prospective purchaser in his own home at his (the purchaser's) request because of his preference for this more private approach or because of his other infirmities. The former type is in fact outlawed by the Code of Commercial Practice of the Hearing Aid Manufacturers and Suppliers Association.

The Consumer Report rightly points out the difficult psychological problems experienced by deaf people. There are some deaf people who cannot be helped by any hearing aid, and there are others who refuse to be helped. The psychological unwillingness of a purchaser (who may have bought as a result of pressure from relatives or friends) to use his purchase should not be used as ammunition against the hearing aid salesman.

At present it is probable that less help is given to patients issued with Medresco aids in helping them to get the best out of their aids than those who buy their own. The N.H.S. otologist has not the time, and the technician has neither the time, the incentive, nor in many cases, the training to do it.

Both the Consumer Council and Gregory have supported the idea put forward by the Royal National Institute for the Deaf that to control the undesirable section of the commercial field, no patient should be allowed to purchase an aid without a doctor's prescription. By this it is hoped that purchases which cannot be afforded will be avoided and satisfaction will be guaranteed. However, a hearing aid is not a dangerous instrument (except perhaps the very high-powered ones for reasons already given). It is no business of the doctor to dictate how the patient spends his money.

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Surely he and perhaps his relatives are the only ones who know if he can afford to pay the price? If hearing aids cannot be purchased without prescription, what then about spectacles or false teeth? The Consumer Report misleads with respect to these in suggesting that they cannot be bought privately without medical authority. It is only when the bill or part of it is footed by a third party, e.g. the National Health Service, that medical sanction is required.

Compulsory medical examination will not ensure satisfaction. The otologist does not have the detailed knowledge of individual hearing aids, their performance, and prices to be able to advise a patient to have one aid rather than another, or that this aid will give satisfaction while that will not. So much of hearing aid supply is a matter of trial and error which the otologist has not the time to pursue, and if following a recommendation satisfaction were not obtained, the patient would hold the otologist responsible. This would lead to otologists refusing to recommend when the results might be marginal.

There are certainly those for whom no aid is of any use, and others for whom an aid may be inappropriate or second-best treatment, or even treatment which is dangerous, because the patient with a medically serious complaint is lulled into a false sense of security. This is the most cogent argument for medical examination. As "Which" says at the beginning of its survey: "No one should buy a hearing aid unless he has been told by a doctor that he needs one. His deafness may be due to conditions which can be relieved by medical or surgical treatment. Only an otologist (an ear specialist with medical qualifications) not an audiologist (no medical qualifications) can decide what is the best course of action." One might add—nor usually is the patient's General Practitioner in a position to give specialist advice. I should like to recommend that any patients who complain of any of the following:

Deafness of only short duration
Unilateral deafness
Discharge from the ears
Giddiness, especially if associated with discharge
Pain in the ears
Exposure to very loud noise in his work or elsewhere

who have not been seen recently by an otologist should be advised to do so before being sold an aid by a commercial salesman. Any hearing aid fitter who finds discharge or excessive wax in the ears should offer the same advice. This might be added as a further clause to the Code of Commercial Practice of H.A.M.S.A.

However, all patients have the right to consult a doctor or not, and compelling them to do so is not going to make the hearing aid salesman any more ethical. Many patients today know of the operations performed by otologists to improve hearing, and in none of the cases suitable for

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such surgery is a hearing aid contraindicated. It is up to the individual to decide how he would like his disability treated.

I personally think that anyone who buys a hearing aid without the advice of an otologist (who is as a rule impartial) is foolish, but this does not mean that I think the patient must be compelled to seek such advice —just as patients do from time to time quite freely take their own discharge from hospital against medical advice. The number of people who do buy aids without first seeking medical advice is, however, probably not very large. In two surveys carried out within the last 18 months by one hearing aid supplier, 14 patients out of 200 (7 per cent.) had not done so.

What controls then are called for to prevent abuses in the commercial market? The recent "cooling-off" period for hire-purchase agreements is one way in which these can be legally controlled. The Hearing Aid Manufacturers and Suppliers Association's Code of Commercial Practice and the Society of Hearing Aid Audiologists' Rules for Hearing Aid Advertising are another. Almost all commercial manufacturers and salesmen belong to these bodies, and infringement of the codes may lead to expulsion of the member. Hearing aid suppliers must be careful not to mislead customers over the question of trial periods, deposits, hire-purchase agreements, etc., and all agreements must have their terms made quite clear before the customer is allowed to sign. I feel that if the industry is encouraged to expand, abuses will become less frequent.

The Industry's case that further controls would harm an already declining industry and stop basic hearing aid research* seem reasonably valid, provided the customer is protected and the industry's freedom ultimately benefits him.

The N.H.S. Hearing Aid Service

We have already seen that the Medresco aid, although adequate for most conductively deaf patients, does not seem to satisfy the needs of the whole deaf population—in fact one wonders whether even a majority of it. Several surveys of patients using Medresco aids have been carried out notably those of Gray and Cartwright (1951) and Kodicek and Garrad (1955). The latter was a survey of 1,459 patients who had been issued with Medresco valve aids by the Hearing Aid Centre of St. Thomas' Hospital, London. In the last 10 years the pattern of the deaf public has probably

* I find it very hard, when viewing the advances which have been made over the last 30 years in hearing aid design and performance, to believe the critics who say that the hearing aid manufacturers do no original research, but simply buy components and circuit diagrams from wireless manufacturers and fit them into a fancy case. Of course the advances made by space and wireless research have benefitted hearing aids, but there must have been research too into the problems peculiar to the hearing aid, though of course commercial firms who have financed their own research are unlikely to publish their results for their competitors to use.

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changed, and the Transistor Medresco has replaced the valve aid. It seemed worth while, therefore, to carry out a similar survey to see what information could be gleaned from patients.

In drawing conclusions about the changing pattern of deafness in the population at large, it should at once be made clear that in both Kodicek and Garrad's survey and my own, the patients had selected themselves firstly by seeking advice about their deafness from their General Practitioner. He had then further selected those who were referred to hospital, and the hospital otologist had further weeded out those for whom other treatment was appropriate, or for whom a Medresco aid was thought to be useless. Neither survey is therefore truly representative of the deaf public.

However, I think that conclusions can be drawn in that here are two surveys, 10 years apart, of patients fitted with Medresco aids by the same Hearing Aid Centre and all referred from the same hospital clinic, which presumably still draws its patients from roughly the same areas and walks of life.

Four hundred and ninety-eight consecutive patients referred by the clinic to the Hearing Aid Centre were circularized with a simple questionaire. All had had their aid for more than 6 months and all had been issued with body-worn transistor aids (Medresco OL56), except two who had had bone-conductor aids OL58. Table 1 shows the response to the questionaire and compares it with Kodicek and Garrad's. In discussing this response

TABLE I.

RESPONSE TO QUESTIONNAIRE

	Present survey	%	K & G	%
Total of questionaires sent	498	—	1,459	—
Questionaires returned completed ..	336	67	864	59
Patients died	16	3	59	4
Patient no longer needs aid	4	1		
Letter returned by G.P.O.	20	4	11	1
No reply	122	25	525	36

and the general applicability of their findings, Kodicek and Garrad say, "It is probable that there is a larger proportion of satisfied patients among those who did reply than among those who did not. Failure to reply may have been due to lack of interest or active 'poll resistance' or because they had not the courage to say that the aid was useless or that they had not persevered with it", and I think the same may be said of my survey.

Table 2 shows the breakdown of those patients who replied in terms of age and diagnosis, and compares them again with Kodicek and Garrad's

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figures. As in their survey "the patients were placed in four main diagnostic groups according to the primary cause of their deafness. These were otitis media (CSOM), otosclerosis, presbyacusis and nerve deafness. All cases where the hearing had been damaged by aural suppuration were placed in the otitis media group. These included active and inactive suppuration (dry perforation), scarring and deformities of the drum, radical mastoidectomy cavity, or other convincing evidence of middle-ear infection."

TABLE II.
AGE AND DIAGNOSIS

Age	CSOM		Otosclerosis		Presbyacusis		Nerve deafness	
	Own survey	K & G	Own survey	K & G	Own survey	K & G	Own survey	K & G
50	28	53	21	92	—	—	15	20
50–59	33	59	18	93	3	2	11	32
60–69	42	78	13	111	19	29	21	46
70+	32	60	6	57	68	104	3	25
Total	135	250	58	353	90	135	50	123
% of each survey	40·5	29	17·5	41	27	16	15	14

It is immediately apparent that there has been a change in the diagnostic pattern of those issued with hearing aids in the last 10 years. Conductive deafness now only accounts for 58 per cent. instead of 70 per cent., in spite of an apparent rise in patients with CSOM, (perhaps mirroring the clinical impression of an increased incidence of this condition). The perceptive deafness figure on the other hand has risen from 30 per cent. to 42 per cent., due to an increase in cases of presbyacusis, whilst nerve deafness remains much the same. As would be expected from the startling advances in the surgery of otosclerosis, the drop in the conductively deaf fraction is more particularly due to a fall in this group.

The patients were asked whether they used their aids "all the time", "only on special occasions (e.g. in company, church, cinema, etc.)" or "not at all". Table 3 shows the results of this, and as might be expected

TABLE III.
USE OF AID BY PATIENT

	Own survey		%		K & G	%
Use the aid all the time	85	299	25	89	871	91·5
Only on special occasions	214		64			
Not at all	37		11		93	9·5

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the number of aids which, although issued on the recommendation of the otologist, are not used is about the same in both surveys, and is comparable with the figure of 11·6 per cent. of non-users in a survey of 10,000 patients in Denmark by Ewertson (1965 personal communication).

The severity of the deafness, as well as the type of deafness may have some bearing on whether an aid is used or not. Kodicek and Garrad's "arbitrary assessment" of deafness was again followed. (An average of less than 60 db. for the speech frequencies in both ears as shown by a pure-tone audiogram was regarded as moderately deaf, and more than 60 db. severely deaf.) Unfortunately no audiogram was available for quite a number of patients. Table 4 shows that in the full-time user group for whom an audiogram was available, a larger number were severely deaf, but in the part-time user and non-user groups the numbers of severely deaf were less than the numbers of moderately deaf.

TABLE IV.

Comparing Degree of Deafness with Use of Aid

	Moderately deaf	Severely deaf
Full-time users	22	45
Part-time users	107	72
Non-users	23	6

Table 5 compares the use of the aid with diagnosis, and here it is seen that there are more conductively than perceptively deaf in the full-time and part-time users.

The patients were also asked if they would wear their aid more if it were more attractive such as a head-worn model. One hundred and seventy-one of the part-time users and 25 of the non-users said they

TABLE V.

Diagnosis of Aid Users

	CSOM	Otosclerosis	Presbyacusis	Nerve deafness
Full-time users	42	15	20	8
Part-time users ..	81	37	60	34
Non-users	12	6	10	8
	Conductively deaf		Perceptively deaf	
	No.	% of total	No.	% of total
Full-time users	57	17	28	9
Part-time users ..	118	35	94	28
Non-users	18	5·5	18	5·5

(No diagnosis available for three patients.)

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would. Thirty-nine of the part-time users and eight of the non-users said they would not (nine patients did not know).

The patients were also asked if they had ever bought a commercial hearing aid, and if so how it compared with their Medresco aid. Table 6 summarizes their answers.

TABLE VI.

COMMERCIAL AID USE AND MEDRESCO USE COMPARED

	Full-time users	Part-time users	Non-users	Total
Have not bought commercial aid	66	179	27	272
Have bought commercial aid	19	35	10	64
Found it better than Medresco	9	17	6	32
Found it worse than Medresco	6	8	1	15
No difference	4	10	3	17

Volunteered comments on the Medresco aid and the supply and servicing of it are shown in Table 7.

TABLE VII.

PATIENT COMMENTS

Pleased, satisfied with aid	30
Troubled by "clothes rub"	37
Insert unsatisfactory	27
Cord troublesome	20
Distortion or background noise	20
Difficult or impossible to wear aid at work	23
Cumbersome	30
People shout when they see the aid	3
Servicing good	27
Hearing Aid Centre inconvenient to get to	10

It seems therefore that although the N.H.S. is issuing over 1,000 aids a week, all at the express recommendation of an otologist, the patients who have them probably do not use them to the best advantage, and some patients are unable to use them.

The N.H.S. Hearing Aid Centres are staffed by technicians who issue new aids, do minor repairs and servicing, and issue batteries. No special qualifications are required for appointment as a hearing aid technician in the N.H.S., although some hospital employing authorities demand certain pre-entry educational standards. In 1950 the Society of Audiology Technicians was founded, although it was not officially recognized for the training of technicians by the Ministry of Health until 1958. This body conducts examinations for Membership of the Society taken during a year's training approved by the Ministry of Health. (Part I after 3 months' theoretical study usually at one of the four main schools in London, Manchester, Glasgow and Liverpool; Part II after 9 months' practical

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work in a hospital Hearing Aid Centre.) Membership of the Society of Audiology Technicians has been recognized by the Board of Registration of Medical Auxilliaries since 1957. However, although many hearing aid technicians are Members of the Society, it is not a condition of appointment, so that those who have received a special training of high standard in the field of audiometry and hearing aid fitting are receiving the same financial rewards as those who are untrained. The latter are able to do no more than the basic fitting and issuing of an aid. The potential of the M.S.A.T. is much greater but will not be fully exploited until he is given better recognition and pay. It should be stressed that hearing aid technicians are handling patients and can give a good deal of training to the patient how best to use his aid. Unless better pay and recognition are forthcoming from the Ministry, persons of the right calibre will not be attracted into this work, and those that are fully trained, when they see how inadequately they are paid in comparison with other people in hospitals doing work of comparable standard, will leave the N.H.S. for other employers such as local authorities who pay much better rates. They are unlikely to be employed by commercial hearing aid firms because, although trained to know about deafness and hearing aids, they are not trained as salesmen.

The Society of Audiology Technicians has already drawn up an excellent scheme of proposals to improve the standard of audiology technicians, both in their training, what their duties should be when trained, and their financial rewards. This received the full support of the British Association of Otolaryngologists and the British Medical Association, and was submitted to the Ministry of Health in December, 1963. Nothing has yet come of it, although negotiations are proceeding.

Some patients have complained that getting to the Hearing Aid Centre for repairs and the issue of batteries may be extremely difficult, especially if they are aged or infirm. The battery problem is not so acute now that the transistor Medresco is in use, for an ordinary torch battery fits and can be obtained from any shop selling such batteries. It is therefore often cheaper for the patient to buy his own rather than pay the fare to the Centre which may be many miles away. Repairs can be carried out by post and Gregory has proposed that cheaper postage for this might be allowed, in the same way as is allowed to the blind for braille books, etc. There would also seem to be a place for domiciliary fitting and servicing as he suggests, but this would be very expensive and not justified until the other parts of the service are improved.

Recommendations

The Consumer Council would like the Ministry of Health to "provide a fully comprehensive service through the N.H.S." This might be done in a number of ways:

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Hearing Aids

1. The provision of aids under the same conditions of manufacture and issue as the Medresco at present, but a wider range of aids including AVC and super-amplification, so that the otologist can prescribe these refinements when he thinks it is medically necessary. Ear-level aids also should be provided as well as body worn ones, as these are sometimes indicated on grounds other than simply æsthetic. The close proximity of the microphone and receiver, however, prevent such an aid being able to amplify more than about 40 db. because the output sound is picked up by the microphone and re-amplified to produce oscillation or "howling". Such aids are not, therefore, suitable for the severely deaf.

The small batteries for head-level aids cost approximately 1s. 10d. each and last for 60–290 hours, depending on the type of aid. The battery which fits the Medresco (OL56) costs 4d. and lasts 152 hours (duration figures from "Which"). If these small batteries were supplied free under the N.H.S., the cost to the Treasury would be increased by more than five times. However, it would seem quite reasonable, even though they are more expensive, to ask the patient to buy his own, for, as previously pointed out, many patients already buy batteries for their Medresco aids. An exception should be made for pensioners and children, and special arrangements would have to be made for them.

In addition as the Consumer Council recommends "more experts should be trained". They will have to have a more extensive training both in hearing aid fitting and instruction to patients in the use of the aids, and to encourage people of the right calibre to take up this work they would have to be paid much higher rates than at present. This, as already mentioned, has been fully worked out by the Society of Audiology Technicians and submitted to the Ministry. The development and manufacture of such a range of hearing aids would be far more costly than the present Medresco, but it is likely that a higher proportion of aids would be used to greater advantage.

2. As in Denmark, the N.H.S. might put out public invitations to submit tenders for the production of a certain number of commercial aids. (The G.P.O. at present buys the more important parts for the Medresco aid by asking for tenders. These parts are then issued to firms who win contracts for assembly, and repairs are carried out along the same lines.) These commercial aids would then be issued free, as an alternative to the Medresco when medically indicated. Servicing of the aids would present problems. It might be done by the manufacturers to be charged to the N.H.S., or minor repairs might be done by the Hearing Aid Centres. In Denmark the patient pays for his own servicing.

From the figures of the Danish State Hearing Service already quoted the numbers of people who would not use their aids at all would probably be much the same, but those who are able to use them would probably gain greater benefit than at present.

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The great disadvantage of this system is that few manufacturers could exist under such conditions. They might win a large contract 1 year and correspondingly enlarge their business, and the next year lose the contract and be forced out of business.

3. As in Sweden, the N.H.S. might make a grant to patients recommended for a hearing aid by an otologist towards the purchase of a Government recommended commercial aid. If the aid costs more than the grant then the patient pays the difference from his own pocket. Again this would be for those for whom the Medresco is not suitable. The disadvantage of this system is that although in Sweden there are 23 recommended aids at present made by seven different manufacturers, there are over 400 aids available in this country. Testing all these would take a very long time and involve much reduplication. Once tested and a number of aids recommended, testing would have to be repeated (yearly in Sweden) and new manufacturers or those with some new and valuable advance in hearing aid design would find it difficult to break into the "circle of recommendation".

In both Denmark and Sweden the private sales of aids have almost ceased, and there are long waiting-lists for the government aids.

4. As already suggested by the hearing aid manufacturers, the N.H.S. might offer, as an alternative to the free Medresco, a grant towards the purchase of any commercial aid to those who have been recommended by the N.H.S. otologist for an aid. The value of the grant need not be large, (it might be about £10—in Sweden it varies from about £10–£30 depending on the type of aid recommended) and should not be the full price of the aid except for children and pensioners, the two groups who would probably benefit most from the use of commercial aids. The manufacturers' after-sales service would be available together with the guarantee, and repairs would probably best be paid for by the patient, except again for children and pensioners. Repeat of the grant for replacement of an aid should be allowed after 5 years. The manufacturers would be in competition with one another to provide cheaper aids and better service. With increasing volume of sales the prices would be reduced. Research and exports would be stimulated. The patient would have to return to the N.H.S. otologist for approval of the aid before the grant was finally sanctioned.

The Hearing Aid Industry in its reply to the Consumer Report says, "There are undesirable elements in all walks of life, and one would not expect to find a complete exception in the hearing aid industry." However, it is essential that such undesirable elements are excluded from any scheme designed to use the resources of the commercial firms for the benefit of the N.H.S. This could be effected by allowing only members of the Hearing Aid Manufacturers and Suppliers' Association and the Society of Hearing Aid Audiologists to participate in the scheme, and

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any complaints or infringements of the Code of Commercial Practice or the Rules of Hearing Aid Advertising of these bodies should be referred to an independent committee with powers of expulsion from these bodies and hence the scheme.

If a grant-in-aid scheme were to be introduced, backed by legislation to compel suppliers to become members of H.A.M.S.A. and S.H.A.A. and to obey their codes, the prices would drop, because the grant would not be large, and the firms would have to sell aids which were appropriate or not receive the N.H.S. otologist's sanction. I think a lot of today's sharp practices are due to the commercial firms being on the brink of bankruptcy. If their business was improved by a grant-in-aid scheme these practices would probably cease naturally.

All these four systems have disadvantages, but the fourth (which is the one put forward by the hearing aid industry itself and is supported by the Royal National Institute for the Deaf) seems to me to be the one most likely to work and benefit the hard-of-hearing public—especially the "small proportion" of the patients difficult to fit.

Auditory Training

The deaf may need to help them (1) all the resources of medicine and surgery, (2) the assistance of a hearing aid, and (3) auditory training to teach the best use of the aid and non-auditory methods of understanding speech, e.g. lipreading. (Especially is this last true in the case of children.) The N.H.S. has provided the first two, but largely fallen short on the last. The commercial salesman may give a great deal of help to his customer to enable him to use his aid to the maximum advantage, but he is not qualified to give auditory training, and indeed is expressly forbidden to do any more than the above by H.A.M.S.A.'s Code of Commercial Practice.

Nor is the N.H.S. hearing aid technician qualified to give auditory training. This should be in the hands of properly trained Teachers of the Deaf. It would by no means be needed for all hearing aid users. As Rosenberg (1962) says, "Auditory training may be described as a method of helping the hard of hearing patient to make good use of the hearing capacity he has left, both with and without a hearing aid. The majority of hearing aid users, such as those with conductive impairment or those with nerve deafness but good understanding of speech, need no such programme of training. For a rather large group, however, including all young children with hearing impairments, such training is imperative."

Summary

The problem of helping the hard-of-hearing by the use of hearing aids is reviewed, both in the private (commercial) sector and in the National

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Health Service. A survey of Medresco users has been carried out and compared to a similar survey of 10 years ago. It is suggested that the potential of hearing aids is not being fully exploited at present, and recommendations as to how possibly this could be achieved are made.

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