THE DEVELOPMENT AND MANUFACTURE OF AIDS FOR DISABLED PEOPLE

Report of a Day Conference
held jointly by
King's Fund Centre
and the
Institute for Consumer Ergonomics

on
25 October 1978

King's Fund Centre

March 1979

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R. J. Feeney
S. Cooper

INSTITUTE FOR CONSUMER ERGONOMICS

The Institute for Consumer Ergonomics carries out ergonomics concerned with the evaluation and design of goods, services, and environments used by the public.

The Institute was established in 1970 by the University and the Consumers' Association. Since its establishment it has undertaken a wide variety of research contracts for Government agencies, including the Home Office, the Department of the Environment, and the Department of Health and Social Security. Many charities have also sponsored research.

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INTRODUCTION

The suggestion for this conference was put to the Director of the King's Fund Centre and arose from investigatory work carried out by the Institute for Consumer Ergonomics on the system of developing and manufacturing aids and equipment for handicapped people in this country.

In carrying out this work it became increasingly apparent that problems existed which might be more amenable to solution if they could be aired in an open meeting where all of the various agencies involved were present. Even before the conference took place it was considered that one of the major problems was the lack of information flow between the various bodies involved in development and manufacture. Not only did the conference demonstrate that this was a problem it also came up with many suggestions as to how the flow of information might be improved. From this point of view the conference was very worthwhile and judging by the number of those who attended and the interest that was shown, this may indeed be the forerunner of several similar exercises, although of perhaps a more specialised nature where more representatives of a smaller number of groups could meet.

CHAIRMAN'S INTRODUCTION: Rachel Waterhouse, Chairman of Council, Institute for Consumer Ergonomics

There can be no argument amongst those present about the aims to be achieved from this conference:- the provision of adequate, suitable and effective aids to reduce the effects of various forms of disability, and to help the disabled person to live more independently than he or she could otherwise do.

In order to achieve this end those involved in this conference are already fully occupied in making some contribution by sponsoring or carrying out research; locating, assessing and helping disabled people; evaluating aids on an ad hoc basis; providing facilities for potential users to make a personal choice of suitable aids; making 'one-off' aids tailored for individual users; manufacturing aids which, with or without adaptations, can have an economically viable production run; prescribing aids and monitoring their use.

Although so much is being done in this field, there are still problems to be solved and gaps to be filled. It is primarily to identify and discuss these problems that the King's Fund Centre has arranged this conference in conjunction with the Institute for Consumer Ergonomics.

Information is one problem, finance inevitably another, as is the supply of trained personnel and the individuality of each disabled person. In discussing these and other problems from the varying standpoints represented at this conference, it may be useful to consider what actions might usefully be taken to alieviate immediate and long-term problems. It may be useful to investigate ways to eliminate overlap, to spread information further, to fill some of the gaps; to ensure efficient use of the resources already available, so that real value for money may be achieved from Social Service provision; medical care; medical and ergonomic research; industrial investment and design and development of new products.

THE STANDPOINT OF THE D.H.S.S.: G. M. Bebb, Chairman, Research Liaison Group for the Physically Handicapped, Department of Health and Social Security

The conference covers a range of services for handicapped people which it is not easy to keep within bounds; however aids such as wheelchairs and all surgical appliances supplied through hospitals or ALAC's will not be included in this discussion.

The Research Liaison Group for the Physically Handicapped covers these aids that are colloquially known as aids to daily living. These are generally recognised as the sort that social services authorities provide under the Chronically Sick and Disabled Persons Act. But some of the same aids may also be used as nursing aids, such as the commode, which will help a family get an undisturbed nights rest and counts therefore as an aid to daily living, may be transformed into a nursing aid when it is requested by a nurse visiting the home as part of her nursing duties. In the former case, responsibilities over supply rest with social services departments and in the latter with community health services. These differences are reflected in the Department's organisational structure. Nursing aids come under a separate division which takes the lead on the social services side; but this division does have general responsibility for aids information which embraces all comers.

Aids information, why is it so important? The aids scene is a continually changing one: to keep abreast on what goes on is very difficult, and all working in the aids field must be grateful to the Disabled Living Foundation for the work they are doing in keeping an ongoing record of the essential facts. Through an independent body, the DHSS provides most of the funding for this service.

More information is inevitably required. Likely purchasers can collect manufacturers' catalogues, examine aids from among a range in an aids centre, hospital O.T. department or even in a shop but many purchases will have to be made on a mail order basis. At this stage they are looking for an illustrated catalogue of a selected range, but with a detailed description of the items included and some indication of their capabilities. This is broadly what Equipment for the Disabled sets out to provide, a service again financed by the DHSS. Compiled at Mary Marlborough Lodge, at first under the auspices of the National Fund for Research into Crippling Diseases, Equipment for the Disabled is now published on behalf of the Department by the Oxford Regional Health Authority. Equipment for the Disabled enlarges upon the DLF service, and the two must be seen together. Items included in Equipment for the Disabled are selected but, with some exceptions, they have all been subject to professional assessment. Updating cannot for this reason be as frequent as the DLF newsheets. These then are the two bibles of the aids' world. However, some professional staff who are involved in assessing peoples' needs for aids and in purchasing them, do not have these publications to hand and there are horror stories that copies gather dust on someuninformed administrator's desk. The research committee associated with the Physically Handicapped Research Liaison Group intends to commission a research project that will investigate use of these services. In practice it is not an easy task to find out about the readership of professional journals and information bulletins, so as a first step a pilot project is under way, but we hope that this will lead to a definitive study. As well as providing information that will suggest ways in which the two services can be improved, it is hoped that the study will help to ensure that copies reach those people for whom they are intended. One question that is often asked is why the DHSS does not provide these services direct. It is believed, however, that advantage lies in the publications bearing a mark of independence, but others may feel differently.

There is no other routine, national information service comparable to the DLF and Equipment for the Disabled. But are they enough on their own? It is held by some that the Department should go much further in promoting a fuller and more ordered information base for those who purchase aids. It is argued, that this is necessary because our clients are disabled and elderly people who may need more help than the generality of the population. The example of other countries, which exercise considerable control over what goods are provided, is often quoted. The Department has given a lot of thought to what its role should be here. Another role of the Department which is less clear and often questioned, is how it stands viz-a-viz product liability. The obligations to ensure safety in goods which the Department itself provides are fully accepted but where it is not itself, the purchaser and provider, the Department's responsibility is less certain. As a general rule, matters relating to the quality of goods exchanged between purchaser and seller is for settlement between the two parties and hence where the health authority or the social services authority or the social services authority purchase aids they must themselves take on this function. Certain provisions exist, particularly those of the British Standards Institution, which set a standard of safety for ranges of products which apply regardless whether the items is for the general public or specially for the disabled. Other Government Departments also have a hand - notably Prices and Consumer Protection, and the Officer of Fair Trading.

This may not be enough but what should be the Department's precise role is still unclear to us. What has been done in recent years. Firstly, a few years ago two engineers were appointed to the Scientific and Technical Branch of our Supply Division to undertake duties bearing on general aids. These two officers are available to give general advice and guidance to all comers on technical matters. They also take action when the Department's procedure for responding to defective equipment is involved and, if necessary, Hazard Warning Letters are quickly despatched to both health and social services authorities. They conduct some technical testing of aids at their

Headquarters at Hinchley Wood; this is only a modest departmental contribution and we would like to see their service expanded but at the moment it is not possible simply because of resource constraints.

The Department also arranges for some evaluative work to be conducted elsewhere. This includes not simply technical testing but evaluation in use. Such studies may be conducted at research level and are financed from Research and Development funding. Some of this work comes within the range of activity and sponsorship of the Research Liaison Group for the Physically Handicapped; but hardware studies tend to come more within the compass of our Supply Division's research programme. This fact illustrates only too well one of the problems that aids present, the need to take into account procurement and manufacturing factors, but at the same time the need to see aids provision fitting into a pattern of total care for the individual according to his or her own special needs, that total care spreading across into housing and transport. Research evaluation which is limited to technical aspects of a range of products is useful, as the recent report on stair lifts has demonstrated. We know that many social services authorities held back on stair lift installations until the results of the tests we conducted were available. But the generality of aids need to be tried out in use by disabled people under the supervision of professional staff experienced in assessment and follow up, before one can be assured that the results will be really useful to those for whom they are intended.

Therefore, we have sponsored some research which is consumer oriented. For example, at the Institute for Consumer Ergonomics an evaluation programme on bathing and toilet aids extending over some 4 years is nearing completion. This has for the first time combined technical with ergonomic testing and has been conducted in a clinical setting. A further study of comparable depth is also nearing completion under the direction of Professor Cairns Aitken at Princess Margaret Rose Hospital, Edinburgh; this is on hoists which, though directly related

to hospitals, will provide valuable information for home use. However, in this type of work, in order to meet research standards, studies take time to set up and progress cannot be hurried. Meanwhile, market does not remain static and by the time of study completion, products may have changed and understandably the value of the study diminished.

This difficulty points to the need to evolve a system to provide for less exacting evaluation at which we describe as the assessment level, Departmental funds have now been set aside to provide for a modest programme under this heading. Projects are being modified in the rehabilitation departments of hospitals; originally the programme was limited to the Demonstration Centres but this has recently been changed, and bids from any rehabilitation department will now be accepted. The programme is limited to the range of general aids and excludes those that come under the heading of orthotics. Projects are conducted under medical supervision but the work is mostly carriedout by therapists who may be specially appointed. A selection of products in the range in question is then tried out in use and the experience of users with them is monitored. This programme has been slow to start; hospitals work under pressure. O.T.'s are in short supply and not many have much experience in research, so that the task can seem daunting. On the other hand, O.T.'s do have a lot of experience in assessing patients who require aids, and their involvement in this assessment work is of prime importance.

Social Services departments are equally not able, because of their resource problems, to give as much help as both we and they would like from the user side. We have to accept too that some field workers feel the concept to be misconceived and that the results obtained will have very little real value. It is too early to judge the success of the programme as we have as yet only received one final report. So we must wait and see. But as one social worker on the Panel which advises the Department on the Programme said, social services departments are spending considerable sums on purchasing aids and that the job is done in many places by lay

personnel without any professional guidance, since some social service departments cannot recruit O.T.'s, simple and straightforward guidance is badly wanted. Some changes may have to be made to the pattern we are working to, but the case for information at a more detailed level than Equipment for the Disabled can give, though not as exacting as the findings of a formal research study, does seem to me to be required.

What is vital is that information from assessment and research studies should be available to the people who need it and can use it. The usual outlets for research findings may in part serve, especially with the development of computer based information services. Also researchers often seek a fairly wide audience when publicising their work and, as well as making full use of specialist professional journals, write for those catering for more general health and social services market. In addition the Department expected that summaries could be fed into Equipment for the Disabled. This seems sensible since the information would be integrated into an existing and widely used reference point. But it is not realistic to expect material to be ready at precisely the same time that the relevant Equipment for the Disabled volume is printed as part of the routine updating cycle. So where results from evaluative studies contain information that we consider would be useful to potential purchasers, it has now been decided that it should be disseminated through the Department's usual channels of Health Notices and LASS Letters. This was done when the report of the engineering tests on selected stair lifts was despatched to social services authorities, - it was also widely distributed through the voluntary sector, and a further circular is being prepared, covering the items in the study at the Institute for Consumer Ergonomics referred to earlier. If still valid the information will of course be included in the next Equipment for the Disabled volume.

One other group who needs to be kept informed are manufacturers and suppliers and we accept the need to do this. Sometimes studies show that products are not entirely satisfactory and we believe that industry is generally grateful to be shown where improvements can be made and will take the task on board. Indeed in some cases the need for modification has sometimes already been spotted and put in hand before the evaluation exercise is finished. Timing here, as is the case with evaluation generally, is thus an important factor but we hope nonetheless that what we are doing by way of evaluative testing is useful and helpful to industry.

The aids field is very wide and, within the limited resources available, and bearing in mind the shortage of staff qualified to conduct the complex tasks of evaluation, it is quite impossible to provide a fully comprehensive programme with each aid being tested to a uniform pattern. The evaluation work at the various centres I have mentioned is a step in the right direction, and the Department hopes to build on from this foundation towards a common format.

Information on evaluation of market products is not the only thing the Department is involved in. One of the Department's important functions is to provide for the development of products which can facilitate better patient care, and this is done through the machinery of the Supply RIG Machinery. Its budget for research in aids and equipment is of the order of £2.4M annually and a variety of projects in co-operation with manufacturing firms will be in hand at any one time. Some of the new development work is conducted in an academic environment at a university or polytechnic research unit, but in all cases close clinical links are required. I am glad to say there is generally good co-operation between the research teams and their opposite numbers in industry to help get new ideas launched.

I suppose the most outstanding example of product development with which the Department have been concerned in the general aids range

is the HASSA chemical toilet. Starting out at the Royal College of Art, the HASSA is now a product of Nesbitt Evans, again with help from the NRDC as well as from the Department's research funds. It is available to both health and social services authorities on a favourable call-off contract basis. At the same time we are approaching the final stages of a survey the Department is itself conducting into consumer reactions in community health and social services department. The example of co-operation among so many different bodies demonstrated in the story of the HASSA is perhaps a pointer to the future.

Product development is no easy task. The Department is aware that a good many ideas get no further than the drawing-board or one or two prototypes. The aids field abounds with reinventions of the wheel. The Department's two 'aids' engineers go to a great deal of trouble to help promising inventions along. More needs to be done but we have no easy answer as the gap to be bridged between invention and production is considerable. Also we have to bear in mind that for some specialised aids the market may well be very small. Indeed some aids may always need to be tailored to the needs of one or a few individuals. These needs can often best be met by voluntary sources such as Rehabilitation Engineering Movement Advisory Panels as they are not a manufacturing proposition. And where they are, the costs in launching a new product may be so high as to daunt any industrialist seeing a substantial re-tooling ahead.

Studies of market products may well show that none are suitable for more than a very small number of disabled people or even that not one can earn a mark of approval. This may not be the fault of manufacturers; they obviously produce what they think will suit, but the needs of disabled people are so specialised that it may not be possible for them to lay on the necessary preliminary survey work and at the same time produce a product at a marketable price. Material collected in the course of research studies may show how

a better model could be designed and specification drawn up; here is a chance for an enterprising manufacturer.

All of this suggests that industry might well expect some help from public funds before they step in. They can apply for some financial help from the Department of Industry, which operates various schemes for providing new products and for creating employment in identified areas. But this is an area where perhaps NRDC can be of more assistance. A difficulty from our side of it is that the Department is only exceptionally involved in contracts in the range of aids of the sort provided to people in their own homes, so we cannot easily give any firm indication of likely take-up, which obviously is an important factor.

What has been said must inevitably give the impression that the Department is very much feeling its way on aids development and this is indeed so, but I am sure that a meeting of those representing industry, the social services, the research standpoint as well as NRDC will be beneficial.

THE FIELDWORKERS IN THE SOCIAL SERVICES: Audrey Dent, Occupational Therapy Supervisor, Derbyshire Social Services Department

Paragraph one of the Chronically Sick and Disabled Persons Act 1970 states that local authorities must go out and seek disabled people amongst their population. As a result of this the register of disabled people has doubled since 1974 and has reached 2% of the population in Derbyshire. This has meant that services must increase to meet the new demand; an expansion not only in financial terms but also in the numbers of qualified staff.

Referrals to Social Services has been increasing, and are now at ninety per month in Derbyshire. Referrals can be made by the hospital, a nurse, a G.P., a home help, a neighbour, a friend or a person may refer themself. Although the practice differs between area offices it is usual for one of the professional team to visit the disabled person in order to assess the need.

Who are these people who assess, order and issue aids? This varies with different areas, but they may be Social Workers, O.T.'s or non-qualified Social Work assistants or even technicians. Such people are making subjective judgements about the need of the individual according to their training and experience. It is important to have at least one specialist in every area team who can help with training as there is a possible liability where non-professionals are issuing aids.

What are the factors affecting assessment? Firstly, the training and experience of the assessor. Secondly, the degree of rapport with the client and thirdly the attitude of the disabled person. the latter being crucial to a good assessment, and to the successful use of the aid. An aid will only work if a person is sufficiently motivated, and all aids require some degree of initiative on the part of the user. Finally, architectural features, such as the presence of steps or stairs influence the assessment.

How are the disabled people assessed in their home? In Derbyshire this is done with the aid of a checklist of simple acts of daily living. However, this takes time, and the client must be given the opportunity to carry out small tasks, like making a cup of tea, in order for the assessor to see how they function. More thorough assessments are carried out in O.T. departments in hospitals.

Other information which can help in an assessment can be gained from information sheets produced by the Disabled Living Foundation and the publication Equipment for the Disabled. DIAL (Disabled Information and Advice Line) is a telephone information service for disabled people in Derbyshire run by disabled themselves and is frequently used by assessors, as is REMAP - a group of engineers and medical people who take on the production of "one-off" jobs.

How does the assessor decide which aid to issue when there are several models on the market? The choice is governed by a number of factors:

1 The urgency of the need. If needed urgently the aid which is in stock is most likely to be chosen.

2 The choice of aid must be acceptable to the client; safe, easy to use, and of a good design.

3 Variability of the fitting, as this means that the aid can be re-used for a future client.

4 The aid must be easy to fit, as often there is no technician available on the team.

5 The reliability of the delivery and service, and good contact with the manufacturer.

Problems are encountered with the Health Service over who is responsible for issuing what. There are no clear definitions. A joint store, similar to that operated in Leicestershire by the Red Cross Medical Aids Centre, can have many benefits. It allows bulk ordering; expert technicians can deliver and fit aids, and a well administered system of delivery, collection and cleansing of aids can be employed. The centre can be used for demonstration and training for Health and Social Service personnel, as well as for disabled people; and it is valuable as a meeting ground for those working in the field.

In conclusion, then, there is a need for a "handicapped" specialist within any professional team, with a knowledge of the benefits, services and facilities available to disabled people. Such a specialist can act as focal point in each area. This would create a network through which information could be filtered through the specialist to disabled people who in turn could feed back information to the professionals, from the disabled themselves.

THE ADMINISTRATION OF THE SOCIAL SERVICES: W. France, Director of Social Services, London Borough of Sutton

The provision of the welfare services and social work services to handicapped people rests on the 1948 National Assistance Act and the Chronically Sick and Disabled Persons Act of 1970 and other legislation requiring local Authorities to offer what can only be described as a "Blanket Service" to all disabled people to cover all their needs. Of course since 1948 Local Authorities have learned much. This work, new at that time, has become accepted as a permanent feature of the Social Work scene, but there are some difficulties in providing the "Blanket Service" referred to:- Who are the handicapped? How do we identify them? What are their disabilities? Who provides their aids and equipment? Who carries out adaptations to their premises and their homes? and who puts their needs before the general public and the Exchequer?

Local Authorities are required also, by a mass of other legislation covering all other client groups and needs, to relate the needs of the physically disabled and the mentally handicapped, to the needs of the community at large, and in doing so they are often bedevilled by questions such as:

a) How does one decide as between the provision of roads and the provision of schools?

b) How does one decide as between the provision of parks and gardens and Home Helps and Social Workers?

c) How does one decide as between services for old people, children and disabled?

The resources are not adequate to meet all the needs of all those client groups all the time and choices have to be made, difficult choices and none so difficult as those in the area of work dealing with the handicapped.

Furthermore, it is increasingly difficult to highlight the specific needs of services in such a wide spectrum of need, against what can only be described as the following basic inadequacies:-

a) the lack of a steady flow of Social Workers with appropriate professional training and, in this instance, possibly technical training.

b) the lack of a sufficient number of Occupational Therapists offering a standing service to disabled people for assessment of their needs, and the translating of this assessment, through proper technical agencies, into the aids and equipment that disabled people need, and

c) of achieving a medical assessment of needs of the client at a time when it is vitally needed, quickly, and in a form readily acceptable and translatable to technicians in order to provide a particular piece of equipment or the particular aid to daily living. Possibly more importantly, the difficulty of meeting the clients' needs from the confusion of agencies which supply aids; the plethora of literature, differentiating between the good and the bad, the expensive and the not so expensive and, bluntly, the overriding question of "Is it appropriate anyway?" must be considered.

Increasingly difficult is the case of the "one off" scheme, that is where the patient or the client needs a particular piece of equipment or an aid to daily living that is fashioned to his own unique requirements after the most careful medical assessment. Sometimes there is the necessity of maintaining contact with the client after the installation of the equipment or the aid, to ensure that the best use is being made of the equipment, to make sure that the family understands it, the client understands it and, that it is proving to be appropriate to the client's needs. All this must be considered against the "bother of individual financial assessment" and the general financial restraint prevailing at the present

time. On the subject of individual financial assessment for the provision of aids and equipment, it seems absurd that it is possible for a member of the public, as a patient in the hospital under the National Health Service, to receive the very best of medical attention, including surgery as appropriate, free of all charge, and yet this same patient, on returning home, and in need of a stair rail or a banister rail, can be required to pay a contribution towards the financial cost to the Local Authority.

More and more Local Authorities do issue aids and equipment free of all charge, and this has to be contrasted with other extremes where the most detailed and minute financial assessments take place.

The considerations in the general sense of administration, create difficulties quite apart from the Social Work situation in most Local Authorities when the Local Authority is divided into operational areas, each under its own operation director. It is unlikely that each area is serviced at the same level of efficiency - one area team's Occupational Therapists may well be better than another, and one Social Work Team have a staff rate better than another, making it possible to give more detail to patients, more supportive visits and more time to achieve assessment of needs. In all this, it is possible that in each area the level of service to handicapped people differs - you can get a better deal from one area team than another and probably, almost certainly, from one Local Authority to another.

Turning to the detail of aids and equipment, it seems that there are several important areas which require attention; namely, purchasing, quality, value for money, business terms, minimum standard requirements, services from manufacturer, and information services.

Purchasing

Invaluable in any organisation, the Senior Officer responsible for the delivery of service holds stock lists and catalogues from well-known manufacturers. Orders for aids and equipment are placed as appropriate to the disability and the known efficiency of the aids, based on experience and Social Worker's reports (including invariably, the client's reports of a piece of equipment or an aid and the "feed-back" from the client group), together with comparative costs at base. Therefore, it would seem that purchasing is a "hit and miss" affair. It is usual for the lack of speed at which Local Authorities move in the delivery of the service to be criticised, but that is another matter.

Quality

It is our experience in the Local Authorities that this can only be determined by experience and use. The main considerations being that the aid or the equipment is durable, that it can be easily cleaned and that its finish is made acceptable to the client, I am thinking for instance, the newer type of commodes against the older type, woods versus plastic and stainless steel; daily cleaning as opposed to three-day cleaning and so on.

Value

Regarding value, the client's point of view is most important. If the aid works and meets the client's needs then it is valuable - almost regardless of cost. If it is the right aid in the right place at the right time and the client benefits from it then the cost is of less importance than otherwise might be the case. However, there is a need to be realistic about value, especially in times of financial restraint and budgetary control, and it is the task of the Senior Officer, as budgetary holder, to live within the budget and durability, appearance, finish remain absolutely important under this heading.

Business terms

Bulk buying can attract dividends it seems from most manufacturers and this can be a boon, while it can also be disaster. One Local Authority accepted a wonderful offer to buy twelve hoists of a particular type and construction - they having one client who needed one some two years ago. They have eleven left, as apparently they are now quite unsuitable to most of the patients who need to be helped with bathing. But it is important to buy the regular standbys in sufficient quantity to meet day by day demand.

Minimum standard requirements

The safety of the equipment is of prime importance, especially where there are trailing electrical wires, moving parts, cog wheels and other gadgets. It should be simple and acceptable to every member of the household, after all they have to live with it as well as the patient.

Service from the manufacturer

Our experience here is that some firms will send representatives to demonstrate their products, and where possible send samples. On the whole, enquiries are promptly dealt with, although difficulties have been encountered when small parts of a particular piece of equipment are required which are out of stock and out of production. However, relationships with the manufacturers still appear to be quite good.

Information service

Naidex type exhibitions and conferences have proved most useful to Occupational Therapists when seeking various products, and of course, the Disabled Living Foundation produces very valuable leaflets on aids and equipment, together with particulars which are most helpful.

What is to be done about this situation? Perhaps the following suggestions could be considered:

a) Let is be a regular practice that multi-disciplinary teams within the Local Authority, comprising of appropriately qualified staff, that is, nurses, doctors and social workers, make the appropriate assessment of clients' needs quickly, prescribe precisely what equipment and aids to daily living shall be supplied and, together with back-up services, continue to monitor the equipment to ensure feed-back as to its effectiveness.

b) The use of locally based information systems of both the Area Health Authority and Local Authority to exchange experience and know-how, nurses and social workers with details of equipment and aids, and the effectiveness thereof?

c) The establishment of specialist courses of training for professionally qualified social workers who wish to specialise in working with physically handicapped in the detail of aids and equipment with opportunities of gaining technical skills.

d) Arrangements with local agencies who have expertise, for example local industries, technical colleges, to lend their experience and technical knowledge to the provision and manufacture of the "one off" piece of equipment.

THE DISABLED LIVING FOUNDATION: Sarah Lomas, Information Officer, Disabled Living Foundation

The Disabled Living Foundation is concerned with practical problems which arise because of disability and this leads directly to an interest in aids and equipment as possible solutions. The development of a central bank of information - the Information Service - set up in 1965 was the result of a year's investigation, sponsored by the King's Fund, into the need for central information in this field and led, in 1970, to the establishment of the Aids Centre. The need for not only information but to actually be able to see and try out aids was clearly demonstrated. In the Centre a wide selection of aids and equipment can be seen and tried out.

The Disabled Living Foundation acts as a clearing house where information is held and given out. The information sheets that are produced have been the response to a demand. A catalogue of all the aids on the market in the U.K. is produced and references to other useful resources available are made. These information sheets try to co-ordinate with the information produced in Equipment for the Disabled.

The establishment of this joint resource of information and an exhibition of aids immediately led to an exchange of information and ideas between a wide group of people who used the D.L.F. centre, including disabled people themselves, professional people involved in various ways with handicapped people, manufacturers, and designers of aids. Visitors come to see and try aids, to bring new ideas, to discuss problems and new solutions, and to seek guidance when choosing aids. This exchange of ideas and information has assisted in the development of new aids, and has helped to avoid duplication by showing in detail what is already available. Feed-back and comment has been passed on to those involved, including comments on present aids, ideas and designs for new aids. Designers looking for ideas

have been able to see gaps in the provision and availability of aids, and to discuss areas where problems arise. Much discussion and consideration of aids has arisen because of the existence of the Aids Centre, and hopefully similar discussion and exchange of ideas will follow the development of other Aids Centres throughout the country.

From that experience, staff at the centre have become aware of many of the problems in the development of aids and of the D.L.F. Resource Centre.

These include:

1 The wide range of people involved in design, many of whom do not appear to have a direct line of contact with each other. Such groups as the D.H.S.S., N.R.D.C., M.R.C., and various colleges and universities; specialist institutes such as the Institute for Consumer Ergonomics and the Bath Institute of Medical Engineering; staff in hospitals or Social Services; private individuals, such as disabled people or interested engineers or designers- voluntary groups such as REMAP, the Spastics Society, ASBAH, the Red Cross and Sheltered workshops; and of course, the manufacturers. There is a basic lack of co-ordination between all these groups; developments need monitoring. The D.L.F. is setting up a new system of collecting details of new developments.

2 The second, and again basic, problem is the complicated system whereby aids are made available to disabled people. Various types of purchasing is involved: DHSS direct purchase and supply, as for wheelchairs or artificial limbs; DHSS contracts, which may be used by health authorities when purchasing say walking aids; hospital purchasing outside these contracts; local authority purchasing, involving all types of aids to daily living; and the private market. This complex system for the

purchase and supply of aids makes market research very difficult.

3 The third difficulty is that encountered by new manufacturers in gauging the market, particularly when the company is small and has no previous experience in the field.

The increase in recent years in the number of marketing companies who carry a wide range of aids has helped to overcome this problem in some cases. They have experience of the market and they often have a well established sales network and are often able to put money into the development of a new idea. We have, however, found that some people with new ideas are loath to get involved with the larger companies who they view as "exploiting disability" and this attitude is unfortunate.

The question of profit from aids is often raised, particularly when a designer has made an aid for a friend and now wants to sell. Either he feels no-one should make a profit, or he feels that he should make the profit himself. The difficulty appears to be that if he goes it alone he may well fail and make a loss, marketing possibly needs the knowledge of the market and development resources of the larger marketing groups to be successful. This does not mean a small manufacturer cannot sell, but pricing must be realistic.

Aids, like other commodities, need money for development and efficient marketing and a reasonable profit must be made to allow for this. Excessive profit is, of course undesirable in this field where money all round is limited. However, the alternative of aids which are too cheap also cause problems. People designing and making aids often wish to give time and effort free for the sake of disabled people, this is commendable; but it must be remembered that if the aid is of wide use, a lot of time may have been given free to make this aid available, and too often we have seen a good idea go off the market because the person who

developed it could not keep on giving time for nothing. Various things happen:

1) The aid is no longer available

2) Competition has sometimes been stopped as no-one could compete with the cheap price - so no development of the idea has taken place

3) The aid becomes available again, but at a realistic price, which might be twice the original, and people, understandably, complain.

If efficient marketing is involved, sometimes the price can be kept down - as larger quantities are produced, and money can still be available for development.

It would not be wise to discourage people wishing to give time and energy to making aids available, as much of the development has come from private initiative but it would be useful if people consider two types of aid:

1) A commonly used aid, which has a wide market

2) A very specific aid of great value to individual disabled people, but which will never have a very wide market.

The first can be handled by commercial companies. The latter is often turned down as not viable by larger companies, and here we are dependent on the good will of small companies, sheltered workshops, and individuals to make these available. Thus, there is a role for both types of company and development. On the whole, the standard of aids is improving, but it is important always to ensure that any aid must be, as far as possible, both suitable and strong enough for the purpose for which it

was designed, and also as unobtrusive and as attractive as possible. The improvement in quality and appearance of equipment is most important.

The testing of aids is a difficult subject, but some testing and standards are certainly desirable, in particular where safety and suitability for the purposes for which the aids was intended are concerned. The danger is that too much testing could lead to unnecessary standardisation, which might narrow the range of aids available. A wide range is vital to meet the very particular needs of many disabled people, and we must beware of restricting the field by testing related to standardisation. Nonetheless, testing of such items as hoists, lifts and other mechanical equipment is of great benefit, some collected experience giving guidance in choice of such items as bath and toilet aids, of which there are large numbers available, could be helpful. Also it would be helpful to have a place where aids can be sent for testing when new models come on the market or where problems arise. However, often the importance of giving handicapped people and their professional advisers good information and allowing them to see and try a range of aids before purchase is as helpful as detailed testing, because the particular nature of problems related to disability make it essential to try an aid before choosing. Thus, the development of more Aids Centres, and assessment centres of various types seems vital in giving those who use aids the information necessary to allow them to choose wisely. In addition, the facility to be able to take an aid home to try it out under home conditions would be most useful. If more people were really able to choose, then the aids which were not suitable would be sold less.

THE ROLE OF THE NATIONAL RESEARCH DEVELOPMENT CORPORATION IN DEVELOPMENT AND MANUFACTURE OF AIDS FOR DISABLED PEOPLE:
Karl Crossfield, Economist, NRDC

The Corporation was established under the Development of Inventions Act 1948. It has two principal objectives:

(a) The first object is to encourage and manufacture and use by industry of new products and processes invented in government laboratories, universities and elsewhere. The inventions are submitted to NRDC on a routine basis by many government departments and Research Councils. Other inventions are offered by universities and diverse sources encouraged by extensive liaison activities of the Corporation. One inducement to submit inventions to NRDC is a revenue sharing agreement which provides 50 per cent share of net income to the inventor.

The submitted inventions are assessed within the Corporation and where relevant by outside experts; if the invention looks promising NRDC approach individual firms with a view to licensing. NRDC also publishes a twice yearly Bulletin which lists the inventions available for licensing.

Where useful the Corporation will finance the further development of these inventions at the original research institutions or elsewhere to improve the chances of their industrial utilisation.

(b) The second objective is to encourage industry to build up and expand its own innovating activities by providing finance, usually 50 per cent of the cost of development and in some cases manufacture, of a new product or process. To qualify for NRDC support the individual projects have to be commercially viable, so that NRDC recovers its money plus a risk premium if the project is successful.

The Corporation's income derives from royalty payments from licensed inventions, levies from project investments and other project recoveries. In addition the Corporation has the right to borrow up to £50m from government to finance its various

activities.

Since 1949, the Corporation has dealt with more than 38,500 proposals and has accepted 7000 of these for a licensing effort or for further development. Over 1800 license agreements have been signed. Its current portfolio includes 330 income earning inventions. Recently investments in research and development averaged £5-6m per annum. The Corporation is now highly profitable. Its income, principally royalties and levies, during the last two years exceed £20m per annum yielding about £10m per annum net surplus before tax.

The question arises how do we assess and select inventions for further support. The relevant Acts of Parliament state that the Corporation should break even taking one year with another which means we have to take account of commercial criteria. In practice NRDC will support innovations, which if successful, would enable the Corporation to recover its investment plus a risk premium. Conversely the Corporation will only accept inventions which it believes have a reasonable prospect of eventually being used by industry. It will not provide support if, on enquiry, it finds that industry would not accept the particular invention for manufacture even if this invention is further developed. The views of NRDC on the merit or otherwise of an invention reflect those of industry because the Corporation has no in-house manufacturing facilities and relies on industry for manufacture.

The assessment of joint venture proposals takes account of the ability of the company to manufacture and sell successfully as well as of the technical merit of the new product.

The NRDC is involved in support for equipment for the disabled. Its activities can be divided into (a) licensing of inventions originating from various sources, including universities, hospitals, medical practitioners, social workers, government departments and others, (b) financing their further development to assist licensing and (c) joint development projects with firms.

Orthopaedic implants inventions are characteristic of NRDC licensing business. The Corporation has had excellent relations in the past with the British Orthopaedic Association and its individual members. Around 1970, total prosthetic replacement in the hip joint became an accepted method of treating diseased or impaired hips. Surgical technology expanded rapidly and the British Orthopaedic Association formulated a policy to encourage inventors to apply for patents and thus enable organisations supporting the development of these inventions to recover their investment. The British Orthopaedic Association suggested that its members should approach NRDC for advice, and surgeons and medical schools have submitted a number of specific proposals. Some of these have been licensed to industry and substantial royalties are being earned and are shared with the inventors.

As an illustration of inventions where development has been supported to assist subsequent licensing one might mention "Tactile display of Voice Intensity". The Royal National Institute for the Deaf approached the Corporation with a promising idea to solve one particular problem of the deaf; namely that many profoundly deaf people have difficulty in controlling the volume of their voice. This inconveniences their listeners and may lead to a lack of confidence in conversation. Electronic devices are available which will measure voice intensity but a visual display is not convenient to a deaf person during conversation. A tactile display from a small vibrator seemed a better solution.

In one form the vibrator unit would be set off when the sound picked up by a small microphone exceeded a pre-set level. Conversely, a person who tended to speak quietly could set the level to give a reassuring vibration at an adequate voice volume. The system is now under development at the RNID financed by NRDC and the results of initial evaluation are encouraging.

The joint development activities of the Corporation might be illustrated by "Talking Books for the Blind". A large company

interested in aids for the blind approached the Corporation with a proposal to develop a high speed copier to facilitate copying of tape on to tape cassettes, a critical factor in reducing costs. The Corporation agreed to support this development programme. The high speed copier is now an established product although the design is being improved by further development. A comprehensive recording facility including two studios has been set up near London. The Corporation has invested several hundred thousand pounds in this particular project.

NRDC may also assist in some cases by putting an inventor directly in touch with suitable manufacturers. Inventors approach the Corporation with ideas which we think might be commercially successful but are not patentable and do not require further technical development. In these situations NRDC cannot act directly but may try to help by establishing contact between the inventor and a firm who might be prepared to manufacture or by suggesting to the inventor the names of firms he might approach.

We do of course turn down a number of proposals - usually after consultation with relevant experts and/or if available evidence suggests that industry will not take up the invention even if it is further developed.

In terms of overall NRDC effort, support of the development of equipment for the disabled, is quite small, but is significant in relation to equipment developments. In the 1960's NRDC set up a small planning department which looked at areas where the Corporation might usefully expand. Equipment for elderly appeared interesting because the number of old people was increasing, pension payments were increasing and market prospects appeared to be improving. Accordingly it looked in some detail at the development, manufacturing and marketing problems of new products for the elderly disabled. After numerous discussions with the relevant organisations dealing with the needs of the elderly, we found a lack of successful development of equipment needed for nursing care and for improving the quality of life of the elderly disabled. The situation seemed to be relatively more satisfactory in equipment developments for medical care. The lack of successful development

of home care and nursing care equipment appeared to relate to specific difficulties in marketing and in development.

Marketing difficulties appeared to be:

(a) Many elderly people lacked financial resources and would be unable to finance privately the purchase of equipment.

(b) Communications between potential purchasers and suppliers were inhibited as the elderly disabled tend to withdraw from community activities. Therefore, the elderly disabled frequently did not know where to buy even those items which were commercially available.

(c) Local authorities and welfare bodies of course purchase on behalf of the elderly and disabled. Firms felt, however, that purchases by local authorities were uncertain, unpredictable and subject to sharp fluctuations in line with changes in government policy. The situation, in view of firms, differed from equipment purchased by medical staff for treatment of patients because such staff have more authority in influencing the level of their purchases. Accordingly, sales of equipment to improve nursing care or home care would grow only slowly, would require substantial sales effort and might be subject to sharp fluctuations. Sales of products would be particularly difficult until users gain confidence in their quality and reliability.

The specific problems in development and manufacture appeard to be:

(d) The needs of users varied greatly because the severity of their disability varied and the home situation varied. Extensive investigation would be needed to help define the optimum design of a piece of equipment to meet the largest possible range of needs.

(e) Equipment had to be robust and reliable to provide adequate safety and comfort in diverse situations. Extensive tests covering a wide range of users were required to confirm that the equipment was generally suitable.

(f) Expensive tooling might be needed which might prove prohibitively expensive to firms who insisted on an early recovery of their capital when judging investments.

In view of these difficulties, NRDC came to the conclusion that without external assistance, firms were unlikely to act effectively in developing a range of equipment which could significantly improve the care and comfort of the elderly disabled. Our own survey pinpointed some equipment items which would be especially useful; in view of the social importance of developing the equipment, NRDC decided to 'have a go'. A more detailed report of one of the projects, mobile toilets, served to illustrate how NRDC set about overcoming these difficulties.

Having decided that improved mobile toilets were needed, NRDC looked around for organisations who knew the requirement of the disabled and whose co-operation might be helpful ultimately in encouraging use of the equipment. DHSS, the Rehabilities Trust and the King's Fund, agreed to join. Co-operation together achieved the following advantages:

1 While NRDC mainly paid for the initial programme, DHSS and, to a lesser extent, the two Trusts made available substantial funds which did not have to be recovered from sales of the product.

2 The experience of DHSS and the Trust proved invaluable in guiding the research and development effort so that the design ultimately agreed assisted the largest number of patients.

3 Based on our joint resources, we were able to fund an extensive and thorough research and development programme by an experienced research team. The Water Research

Laboratory of the Government Chemist agreed to help in relevant aspects of the programme.

4 With the aid of DHSS expertise and resources, thorough and extensive tests of the equipment were carried out to establish reliability and user acceptance.

5 NRDC made available funds for tooling for manufacture as we found that firms would not otherwise invest in view of the limited recovery prospects, during the first few years of sales.

6 DHSS agreed to write a 'call-off contract' which potential purchasers consider a recommendation that the product is a good buy and thus encourages purchase.

7 DHSS ordered over 200 of these toilets to help to find out where the equipment will be most useful. This order encouraged initial manufacture.

These various aids enabled NRDC to find a firm experienced and enthusiastic in selling this type of equipment and the HASSA toilet is now available on a commercial basis at a relatively low price.

As a further illustration that equipment development for the disabled may well require entrepreneurial and management contributions by public sector organisations as well as finance, the Palantype project could serve as an example.

Deaf people are usually unable to participate at meetings. Converting the spoken word to written language simultaneously shown on a screen would be of major help. Unfortunately typing speed averages about 60 words per minute as compared to speech of about 150-200 words per minute. Shorthand machines such as Palantype are available which enable a typist to type shorthand up to 200 words per minute but lengthy training is required to read this typed shorthand. Dr. Newell

of the University of Southampton has developed equipment which directly converts the typed input into phonetically written output shown on a television screen. This output can be read after some training. Mr. Jack Ashley MP who was willing to make the necessary effort is now able to use this equipment in the House of Commons.

The commercial difficulties in trying to encourage more extensive use of the equipment are:

(a) Further developments are needed to improve the quality, i.e. the legibility of the output.

(b) The equipment is expensive, £6-10,000 per unit. Few deaf people would be able to afford purchase and DHSS would foreseeably not purchase on behalf of users because the equipment is not required for medical purposes.

(c) Palantype operators have been trained in the early 1950's, but training courses had ceased by the late 1950's. Operators command high fees for their services and deaf people are unlikely to be able to afford the cost. In any event too few Palantype operators are available to assist the deaf on any significant scale.

(d) Marketing, servicing and maintenance would be prohibitively expensive if only few units were sold. In view of these high costs and the risk of lack of continuity in production, it is difficult to see who would be willing to purchase the first few units, i.e. act as a pioneer purchaser.

NRDC considered how these difficulties might be overcome. Firstly, relying on past experience with other projects, we approached the Employment Services Agency and found that they might be willing to purchase equipment on behalf of deaf people if it could be shown that

the equipment was necessary to maintain their employment. Accordingly we could identify one significant market where sufficient funds would be available for purchase, namely executives who needed the equipment to continue in employment. These executives might well be willing to act also as pioneer purchasers.

Secondly, we discussed the possibility of setting up training courses for Palantype operators and were able to agree with the Palantype Institute and the City Centre for the Deaf to set up courses to train with secretaries of deaf executives. Thus executives using their own secretaries as Palantype operators would not need to meet the high cost of employing outside specialists.

Thirdly, we invited the Royal National Institute for the Deaf, DHSS, the Employment Services Agency, the Palantype Institute, the City Centre for the Deaf, the National Physical Laboratory (who have done previous work in this area) to join NRDC in guiding the project. Participation by these bodies on the steering committee will help not only in directing the research effort but also ultimately in marketing the product.

NRDC therefore has made sufficient progress in overcoming the interrelated difficulties of lack of adequate purchasing power, lack of inexpensive Palantype operators and doubts who might be pioneer purchasers to justify NRDC fundings for the further development of two prototypes. One of these will be placed for part of the time with the City Centre for the Deaf to assist in training secretaries to operate Palantype equipment, the other will be placed with a deaf executive to establish operational experience.

Other projects, where NRDC have taken substantial initiative, as distinct from responding to a request for development finance or licensing, include Emergency Call Aids, a telephone exchange for blind operators and a new type of wheelchair.

In conclusion, the mainstream activities for the Corporation cover licensing of inventions submitted to NRDC from various sources, finance of research and development to assist licensing and finance of joint developments with firms. Many inventions and proposals for development are submitted to NRDC by research workers and inventors. NRDC always welcome further proposals and submissions. In assessing these we rely on advice from outside experts including DHSS and the Disabled Living Foundation. If the proposal has a substantial "Public interest" aspect NRDC tends to lower its assessment interest and try to be more than usually helpful. Occasionally and specifically in the area of aids for the disabled we become aware of a need and may mount a management and entrepreneurial effort to develop equipment to meet this need. In these cases we usually co-operate closely with DHSS and Charitable Trusts whose contributions in terms of advice, finance, test facilities and marketing are essential to success.

THE BRITISH SURGICAL TRADES ASSOCIATION: I. Doherty, Chairman, Rehabilitation Aids Section, British Surgical Trades Association

The B.S.T.A. represents manufacturers and distributors in the health care industry. The role that this industry has to play in the development and manufacture of aids for disabled people can be discussed under three headings:

1 The industry

Perhaps the most remarkable feature of the industry is its diversity. It comprises of a wide variety of businesses, ranging from medium size down to very small, covering a diversity of needs; manufacturers of wheelchairs, geriatric chairs, crutches; walking aids; lifts; hoists; knives, forks, spoons, call devices, clothing etc. There must be many more than the 200 ranging from the larger firms, with several hundred employees and turnover measured in millions, to small firms supplying specialist services who may comprise 2 or 3 people with a turnover measured in thousands.

It covers a wide range of skills, uses a wide range of materials and varies from members of conglomerates to privately owned family businesses. What they have in common is that they are committed to the welfare of the disabled.

2 The role of the industry in society

The role of the health care industry in society is to utilise national resources in the most efficient way in order to achieve the maximum benefits for the disabled. 'In an Ideal World', an occupational therapist, or research worker may recognise a special need, and will either themselves, or in conjunction with a local workshop, produce a device that will satisfy this need. This device may cost say £50 if it is costed properly, although usually people give their time free to this type of work. It may well be from this that several other people will express an interest, and the extent of that interest indicate that here is a need which is

fairly widespread. A manufacturer will be approached, and he will firstly try to establish the essence of the design, what in fact is the special contribution that it makes, and very often a new design incorporating several new features, some of which are costly and relatively unimportant. He will then try to establish the extent of the need among the disabled, and this will give him some idea of the quantities which may be sold each year. He will then investigate various materials and production techniques in order that the price is kept as low as possible, and thus the number of people benefitting can be maximised; and if he conducts himself wisely his firm will make a profit. He will plough back as much of this as possible into new plant and machinery and into developing new products.

As a result of his activities the manufacturers may have brought the price of the product down from £50 to £10, engaged in market research which will have almost certainly led to design improvements, and by his thrift will have saved money to put towards the development of new products for the future.

No other organisation in the health care field is equipped to carry out these functions for society. Now 'In the Real World', there are various constraints.

3 How it works in practice

(a) Firstly, designs do not necessarily originate from outside industry. Although industry relies very heavily indeed on the work done by N.R.D.C. and by Loughborough University, and other organisations whose job it is to care directly for the disabled, there are two other important triggers for new design.

Firstly, there is the improvement which can be obtained by applying new technology, (microcircuits), new materials (plastics) and new plant and machinery. Secondly, there is the change which is dictated by changes in cost structures,

which can involve changing from metal to plastic, or vice versa, as these relative costs change, or simplification of design, in a time of increasing labour costs. Industry alone is geared to innovate this type of change.

(b) For the industry to engage in any design or development whatsoever it needs to make a profit - rather an unfashionable word these days - and so the products must be sold at a commercial price. In some fields this creates the problem of ethics, particularly in the drugs industry, but fortunately any study of our own members' accounts will indicate that this problem does not arise with the aids industry. Perhaps this is because being mostly small companies we tend to be in close contact with the disabled, whom we serve.

(c) If the industry is to spend this money wisely, it must be free to respond to new ideas. The more it is bound by restrictive standards for the products, the less it can innovate. This country is amongst the leaders in its methods and attitudes in the care of the disabled, and industry owes a great debt to those in the Social Services, and to organisations such as the Disabled Living Foundation, and the DHSS for promoting and encouraging this work in the field. It has enabled the industry to introduce new products and ideas which have been adopted throughout the world. Without this help the aids' industry would be very small and relying on imports. Most of the manufacturers are considerable exporters, and this has kept prices far lower than would have been the case had we been supplying the home market alone. But the manufacturers must be left free to innovate and to respond to outside pressures, particularly from Europe, the United States, if they are to maintain this position.

(d) On the other hand it is right that the industry should be subjected to certain standards. But what standards? The standards of today are the heresies of yesterday. The rules must be treated with caution.

(e) The correct standards can be invaluable to industry. They give us accepted disciplines critical dimensions, standards for cross infection etc. so that we obviate the costly and the time consuming job of indulging in basic research on each and every new product. But if the work being done by Loughborough and the DHSS is to assist in the long run, they must ensure that the standards are as broad as possible, and constantly changing to meet new conditions.

If standards are too comprehensive and too defined, the industry will not be able to play its proper role, the product will be less good than it should be, after a time it will loose its export markets, costs will rise, and then importers will come into this field with their own products, which they have been free to develop, resulting in none of us will have a say in new developments.

(f) But here again there is a problem, because broad standards tend to set a minimum in any area, in strength, stability, dimensions, weight, hygiene etc. But many very good designs are a mixture of very good and very bad, and if you eliminate the bad points you may also eliminate the good. So designs then become mediocre. The answer here again would seem to be that standards must in general be advisory over almost all areas and not mandatory.

(g) One problem in evaluating a product, and its place in the market, is that very often the user is not actually having to pay for the aid directly. How can the cost effectiveness of the various stages of sophistication which are possible be evaluated or the worth of one product against another? Private buyers tend to favour the more expensive,

and possibly better products, but to do this on the limited budgets available to most local Authorities would restrict the numbers purchased. How does one decide between say 5,000 basic bath seats, or 2,500 de luxe versions or, going a stage further, against one kidney machine? Administrators in the Health Service and Social Service workers, are being asked to assess market needs which would deter even a trained marketing and sales expert. And if they are wrong it will not only mean that the disabled will get equipment they do not want, it will also mean manufacturers are producing the wrong products, and eventually the industry will collapse.

(h) On the other hand, it is the Government sector which is to a large extent the customer, and as they pay the piper, it is only right that we should follow as closely as possible the tune which they call. It is public money they are spending, so prices must be kept to a minimum; but if industry does not make a profit there will be no development and innovation, and this is the communities seed for the future.

Here again are conflicting priorities. In practice, the DHSS and the local Authorities, resolve these problems, for the most part, with intelligence, understanding, and sometimes even a certain degree of elegance. But it involves compromises which all sides would do well to recognise. As I am sure we all realise, health care in this country is not free - it has been earned. And all those who are fortunate enough to be in a position to help the disabled, must do their utmost to resolve these conflicting aims, because ultimately we are all working for the same cause.

In conclusion an illustration of some of the paradoxes, with which the industry is faced, will serve to show the difficulties encountered in this field.

1 Is it not true that the more profits industry makes the better will the health care industry be served? For this is not money manufacturers are making - it is money they are saving to plough back into the economy.

2 Does the Institute for Consumer Ergonomics for example, help keep the care of the disabled by monitoring industry, and forcing them into certain paths, or are they both pulling together?

3 Are the local Authorities our customers or are the disabled? Why are the aids issued to the disabled sometimes different from those people choose themselves? Who does the industry satisfy?

4 If industry was not here would there be any aids for the disabled?

5 And lastly, could industry function properly without the co-operation they receive from the organisation represented here?

AN EXAMINATION OF THE USE OF AN EVALUATION INSTITUTE IN RELATION TO THE DEVELOPMENT AND MANUFACTURE OF AIDS FOR DISABLED PEOPLE: Sheila Cooper, Editorial Research Officer, Institute for Consumer Ergonomics

What is the Institute for Consumer Ergonomics' competence to contribute to such a discussion? While the Institute has little design experience, it does have much experience in testing and that is, in that area between research on the one hand and design and development on the other.

The Institute's most recent experience in testing has been the programme of evaluation of Home Aids for Disabled People that is currently being undertaken on behalf of the DHSS. This has been a 3½ year programme looking at toilet and bathing aids, and involving 8 types of aids and over 200 individual aids. This has been, perhaps, the first such comprehensive and detailed investigation of its type carried out in this country.

This programme of testing has given the Institute experience in a number of related areas involving -

1 contact with disabled people through surveys;

2 secondly, contact with Social Services Departments (Administration and field-workers), both formally and informally, and by means of surveys;

3 thridly, detailed investigation of the qualities of aids and user acceptance through testing;

4 fourthly, contact with manufacturers through surveys and through discussions of the results of testing;

5 and lastly, the dissemination of the results of the research to those responsible for purchasing and prescribing aids.

In addition, in other research projects of a more minor nature, carried out at the Institute in the past, we have been involved in specification work and design advice.

Whilst recognising that aids are only one part of the total service for disabled persons, what, then has the Institute as an evaluation body, learned from these exercises?

1 Firstly, the importance and usefulness of in-depth follow up and evaluation exercises, both as a source of information on what is good or bad about aids; and as a basis for the development of better aids.

2 And secondly, the difficulty of communicating this information, in order to improve the system of choosing aids, and to initiate new developments.

An evaluation programme ideally consists of three stages.

1 Information collecting.

2 Testing of aids - ergonomic and technical.

3 Information dissemination.

Ergonomic testing is carried out in a hospital laboratory involving the use of disabled people to assess the aids in a realistic but controlled fashion. Technical testing is carried out under laboratory conditions to simulate long-term use of the aids.

In this case, what are the advantages of in-depth evaluation and what additional benefits does it accrue over and above the data given on the quality of aids?

1 Firstly, there is the development of information about the various criteria upon which to judge aids. Before embarking upon evaluation exercises, it is important to have adequate criteria against which to test aids. Such information can also be very useful for subsequent design exercises. In the Evaluation of Home Aids Programme, criteria were developed in two ways. Firstly, by means of surveys which included disabled people who used aids, and Social Services Departments who provided them, giving information on the extent to which aids are provided and used. Secondly, criteria are developed by laboratory studies, examining specific aspects of use, which can give information on the specific way in which aids are used and the forces to which they are subjected.

2 Secondly, a major part of the evaluation is to survey the current market. Whilst this can provide valuable information as to the range and type of aids available, such exercises need to be carried out very thoroughly, and demand a system of continual up-dating, if the information produced is to be of any lasting value.

3 Thirdly, the testing of aids not only demonstrates which products have merit, and which are unsafe, but also identifies desirable and undesirable features, which should be taken into account when new designs are developed.

4 Finally, a testing programme provides information to enable a wiser choice to be made, a choice that will bear in mind the particular situation of the client and his particular disability. This is extremely valuable, since information about particular brands of aids and their respective qualities rapidly becomes out of date with new models appearing and old ones coming off the market; whereas information that will enable a wise choice to be made - that is, information that provides guidelines in choosing, will not become obsolete within a couple of years.

An example of a piece of research carried out by the Institute for Consumer Ergonomics some years ago, will illustrate some of these points. A booklet published in 1975 which arose from an evaluation of Alarm Systems for the Elderly produced the following results:

1 A large number of Alarm Systems which were shown by the evaluation to be unsafe or technically insufficient, were removed from the market.

2 A British Standard for Alarm Systems was developed.

3 Three development projects were initiated to produce new and better systems.

Of the 25 Alarm systems evaluated, 11 were found to be electrically unsafe, and of the remainder, 12 were of such poor technical quality, that they could not be relied upon to work. Only two Alarm Systems could be recommended from a technical point of view. This information caused a number of these aids, that were found to be unreliable, to be forced off the market, as Social Services Departments no longer bought those systems that the test identified as being inadequate.

The British Standard for Alarm Systems is now published, and it is fair to say that the development of this has relied much upon the Loughborough experience.

Of the 3 development projects that arose from the evaluation exercise, the Institute is still closely associated with one, through NRDC, and is continuing to provide an evaluation service for this.

Although this work was conducted three years ago, the Institute still has a demand for information on Alarm Systems. Unfortunately, the results of evaluation studies quickly become out of date, and updating exercises need to be periodically conducted, in order to keep the information of current value. However, the co-operation of manufacturers in giving information on new models, and a system of identifying models, are essential requirements. This we have particularly found in relation to the Evaluation of Home Aids Project,

where the market is already changing before our evaluations have been completed, and manufacturers are altering models, albeit in small ways, without changing the model name or number, which can cause considerable confusion.

The publication arising from the Evaluation of Alarm Systems did however, provide guidelines for choosing, commissioning, servicing and the follow-up required for alarm systems. This was probably the most valuable information arising from the project, enabling information on selecting systems to be used whatever may have happened on the market.

A project which has so far reached less successful conclusion involving testing, but where the Institute itself has attempted to capitalise on its findings, was concerned with an aid for getting in and out of the bath. Basically this development attempted to provide an integral design of a bath board, bath seat and rail which could be fitted to most types of bath.

After testing a large number of aids in conjunction with the Research Institute for Consumer Affairs and extensive research into the problems of bathing, a specification was developed and a functional aid produced and thoroughly evaluated. However, attempts to develop this aid to a production stage were not successful, even though there was a demonstrable market need.

Several lessons can be learnt from this particular project;

1 Firstly, the need of financial resources to allow the development and design work to take place.

2 Secondly, the availability of a design researcher.

3 Third, the need for firm agreements with manufacturers to allow the production and marketing of the aid to take place.

4 The need to quantify, as far as possible, the extent of the market for such an aid.

5 And lastly, the lesson that perhaps those who evaluate are not necessarily the best to take the initiative with regard to the design of new aids.

The ultimate goal of evaluation is to improve the quality of products on the market. I am sure that this is also a goal of manufacturers, the DHSS, NRDC and many other organisations involved in this field. However, evaluation alone does not lead automatically to the development of better products as stated earlier, there are a lot of other factors involved. One of the major problems nevertheless is to use the information acquired from evaluation studies, from surveys, from inventors and designers, and of course from the specialists who work closely with disabled people themselves,in order to assist developers and manufacturers to determine what are the priorities for development, and to determine what are the essential requirements that must be incorporated into the design of an aid to be developed.

I am sure that a manufacturer will say that he does use this information; however, I am equally sure that he does take full advantage of what there is available. It is in this respect, that there is a resource-need, to provide information, for developers and manufacturers on the fruits of research and investigation in order that the maximum use is made of what exists, particularly when large amounts of resources need to be invested in research and development. It is perhaps a cause for concern that many new and novel ideas for aids are not taken up, that the results of research that demonstrates a need for new developments or improvements, are not implemented, and that investigation that clearly demonstrates problems in relation to aids and equipment is not acted upon.

One aspect of the problem, I am sure is that such information is not getting through to those who could capitalise on it. How can this be overcome? One example, of where an attempt has been made to solve this problem, which has met with some success, is the Swedish Institute for the Handicapped. In this organisation where evaluation is carried out on behalf of the government, the fruits of research and investigation are used as a basis for R & D

programmes on new aids Whilst the Institute itself does not fund R & D projects, what it does is to provide the first initiative, and if necessary, the primary funding to develop first prototypes, in conjunction with industrial designers. With further resources from industry and development corporations, both private and governmental, aids are developed, tested, manufactured and marketed, for which there is a proven need.

Whilst it may not be clear at this point whether such an umbrella organisation is needed in this country, there are perhaps strong arguments for the establishment of a Resource Centre, which can both collect and classify information which may be used for R & D programmes and help to indicate priorities in the field.

One effort already made in this direction has been the sponsoring by the King's Fund of a feasibility study, looking into the possibility of establishing a system of documenting current research in the field of aids and equipment for disabled people.

Such documentation could have a number of uses, but primarily it could form a resource that could be used by manufacturers, designers, Social Service Departments, development organisations and government departments. This documentation could identify areas not covered by present research, and improve the general flow of information between the various bodies involved.

The question from the researcher's point of view is then, are we making the maximum use of information arising from research and investigations, and from field experience, in order to develop improved, and where necessary, new aids? Is there an argument for providing a link between, on the one hand research, and on the other industry?

DISCUSSION: Introduction

All the contributions by different speakers in the discussion were tape recorded at the conference. These remarks, with only slight editorial changes are repeated in the following pages. The remarks have, however, been re-arranged in order that contributions to particular themes discussed are grouped together.

DISCUSSION: Introductory remarks by the Chairman, Rachel Waterhouse

Many issues have arisen here today that we probably ought to take further and that we may want to suggest to the King's Fund Centre they then be looked at in greater depth. We are not going to arrive at any world shattering conclusions within the confines of this hour discussion, but it may be useful to go through what the speakers have said today to just remind ourselves.

Mr. Bebb talked a great deal about collecting information and about disseminating information. He talked about the information available from the DLF and from Equipment for the Disabled , and about the necessity of having the results of information and research studies available for those who need it. He suggested that sometimes these sources of information gathered dust on the shelves, and which Mrs. Dent said that they certainly didn't gather dust on her shelves and were constantly in use.

Mrs. Dent talked a lot about the team, the specialist in the team who would assess the patient or client, who would prescribe the aid, and the problems about the structure of the team, giving the example of the joint centre which they had in Leicester for seeing and trying out aids. She also said that if they had an Aids Centre in Derby it would be very much used. So Mrs. Dent was really talking in a sense about information that is obtainable not only from the Disabled Living Foundation and from Equipment for the Disabled but also the sort of information obtained from trying out the equipment on the patient. This point was raised later on during the day by somebody who said that it would be very much more useful if you could lend out equipment on a trial basis and then take it back if that model was not satisfactory and lend out another one. This is certainly a way of getting information but it is quite an expensive way in terms of taking aids out, bringing them back and taking them out again.

Mr. France talked about the difficulties in the administration of the Social Services and in making choices. Both he and Mrs. Dent drew our attention to the actual question of not only evaluating the aids, but evaluating the teams who prescribe the aids; and indeed, somebody talked about evaluating the effectiveness of the assessing and prescribing team. It does seem to me that this point is something that does need to go alongside the evaluation of the aids and the dissemination of information about the aids, as well as the question of evaluating how people use information and what happens to the information when you send it out, which I believe Mr. Bebb mentioned. Perhaps this is an area which you may want to bring up again in this discussion period.

Mrs. Lomas gave us a very excellent resumé of what her Foundation is doing, and its activity in terms of both acquiring and spreading information. I think we concentrate a great deal on acquiring information, and spend relatively few resources on deciding actually how the information is used at the point when it is really needed, which is an issue you may want to come back to.

In the latter half of this Conference we have moved over to the whole problem of manufacturing aids. It is clearly not an area where you are going to find the largest companies, the market is not sufficiently large. Mr. Doherty said that his company was a middle sized firm and yet it was big in comparison with many of the others in the business. The purpose of the NRDC is to take off the shoulders of these middle size and smaller companies the research and development burden which they cannot afford, in terms of repayment on investment. We have got a very clear picture from these papers of the many difficulties in the aids field and more particularly when we have evaluated aids and have said 'well these are not good enough, we want something better than this', the difficulty of how we are actually going to get manufacturers to make better aids. I am not totally convinced that it is necessarily any more difficult to make a really good aid than to make a poor or medium quality aid, and perhaps one of the things we ought to be aiming at in a field where

there appear to be smaller sources, is to make sure that all those things which are made, are made to the highest standards. It is not only the market, but it is also the information that arises from evaluation, or research, that is valuable in this area.

Earlier the question of overlap was discussed, we have the contribution from Miss Hawkins of Avon Area Health Authority, who suggested things were carried out rather differently in Avon than they are in other local authorities. This really raises the whole question of the differences between the way one local authority tackles the problems of overlap and the way another local authority does. It is a feature, again, of the whole local authority system in every area in this country that because it is democratic and because it is local, and because you have these choices, as Mr. France so clearly set before us, one local authority will make one set of choices and another authority a second; but perhaps by exchanging information, one can hope to get the adoption of good and sensible practices in as many local authority areas as possible.

These have seemed to me the main areas arising from the papers that we have heard today which you may want to discuss now and perhaps suggest to the King's Fund that they should be looked at in more detail and might be worth following up as a result of this Conference. May I therefore ask you for contributions to discussion, or questions to the panel.

1 CO-OPERATION AND INFORMATION FLOW

J. B. Chant, Vessa Ltd:

I would just like to make a couple of points which I think may have been missed. Firstly, the effect of competition. One gentleman was talking about several firms making the same thing, which is usually an excellent thing. Normally after a year or two you will find there are only two or three firms making that aid and they will be the best, because the others will have been driven out of the market because they are too expensive or their products are not good enough. We, ourselves, use feed-back of information from our agents and dealers all over the world, to tell us what the customer wants, and we try to satisfy the customer on that basis. I do not know if any list or documentation would help us very much in that way, as manufacturers. We do get people approach us quite commonly, and it is one of my duties to investigate new inventions and ideas. When we negotiate a license with somebody, we usually buy a principle, and then we do the design ourselves. We know our production processes best and we have got a pretty fair idea of the customers' requirements, so I cannot think of any instance where we have bought something off the shelf and made it. I do not think that ever happens.

A. R. C. Rowe, The Rehabilitation & Medical Research Trust:

The title of this seminar is very plain, but what hasn't been made plain, except indirectly, is the duty of any firm who is going to manufacture anything. The duty of any firm is to give a proper return of capital to its shareholders. If you do not give a proper return of capital to the shareholders then people will shift their money from this firm to another firm, and the first people to do this will be the big institutions, followed by other sectors of the community such as the doctors and the nurses. If you do not make a profit you are going to collapse. It is not the duty of

any Company to manufacture for the benefit of the disabled without any other considerations. They simply will not survive, and some companies have learned this the hard way. It was mentioned that you can manufacture aids in a sheltered workshop very cheaply, this is not so. What you really mean is that you are not paying anybody very much. That is perfectly right and very proper. But what you are not including in the cost of that item is overheads, and this is not a profit, it is the electric light, the telephone, the switchboard, the depreciation of buildings, and so on. If this is costed into the sale price of the sheltered workshop article in fact it would probably be more expensive. Under no circumstances am I denigrating the work done in sheltered workshops, but we must try and get the facts absolutely straight.

The last point I want to make is that we need the art of communication. We need a common language through which we can communicate easily, without jargon, whereby hopefully, some of the words mean the same to a wide variety of disciplines.

S. Pocock, Clinical Research Centre, Harlow:

I would really like to address the representatives of Social Services and perhaps occupational therapists who may be here. I am basically a designer, and sometimes believe that I have ideas as to what ought to be designed and is needed. I am sure that all my colleagues in industry, also come up with bright ideas of products which they try and "float". I would like to ask our colleagues on the very practical side of things, the people who go and see our patients, do you find channels of communication adequate? I am sure that when you are in the field you see devices which do not quite do what you want and which you feel could be improved. Do you also find that you have the channel leading towards one centre in the United Kingdom where you can put through a little suggestion and someone will listen and co-ordinate it with similar suggestions

and notes of deficiency from elsewhere in the United Kingdom? I feel this is a terribly important thing when we are dealing with aids for the disabled, because the need is so widely distributed both geographically, administratively, and in terms of diversity of need. I feel that this channel is almost the prime requirement for successful development.

A. Dent:

I think it's need must be obvious. I talked about having specialists to form a network so that you have a point of reference quite low down in the chain, really in an area team which is where we get the referrals. Mr. France certainly talked about connections with local industry, etc. where perhaps we could use their resources, but actually that is covered to some extent by the REMAP panels. I think it does come back to this, yet again, that until you have got a recognised network within the Social Service Departments, this sort of flow of information is very difficult. If I thought that we had an idea, and if I hadn't been coming here today, I think I would have contacted Disabled Living Foundation about it, who, hopefully, would then pass me to the right platform. What we need are people who know where to go for what, whether it be aids or any other service for handicapped people. People in that network must know where to go for the information. We have quite a few people working with the handicapped on REMAP, and we would also use that. In addition, we have a Bioengineer at our Demonstration Centre in Derby who we also turn to on occasions for help.

S. Pocock:

I rather feel that you are geographically limiting it perhaps to an area, and my own concern is that these ideas or needs are perhaps getting 'bogged-down' just there, and are not coming together as a whole national needs, so that the size of the market is not being really assessed at a single point and consequently we are not justifying the development and the manufacturer of that aid, because it has only come as a little demand in one area, rather than nationally.

S. Lomas:

I wonder if I can answer this from two points of view. I would first like to answer from the point of view of what happened when I was working in the field, which admittedly was some years ago now, as an occupational therapist. We had enormous help from the representatives of manufacturers who came to the hospitals and local authorities, and we would take problems to them and discuss the aids with them. Much development had come from direct contact between people working in the field and between the representatives of manufacturers whom they meet.

Secondly, coming onto the role of the DLF. If people have not got direct contact and cannot get things made that they want made, then the manufacturer hearing the views of the O.T's who mention this to their representatives, act as a sort of collector and assimilator of ideas which may eventually come up with what is marketable. And, of course, in the DLF, exactly as has been said, we would be very pleased if people came to us with their problems. We get quite a number of people coming saying we cannot get this or that, something is not made right. Because we are a place that many people come to from different areas, we do get an all-over view from our own experience, and we do try and pass this on, either direct to manufacturers, if we are pretty certain of one who will take up an idea and develop it, or if we think that it is a small idea, with not a big market, we will take it ourselves to sheltered workshops that we know are interested, or to a REMAP panel if it is very much a one-off aid, or if it is something that needs a lot of research we go to the NRDC. So that the DLF does have its own place; but I wouldn't like to think that people did not go directly to the manufacturers in this field.

J. Mitchell, Department of Health Studies, Sheffield City Polytechnic:

Formerly I was the Agatha Christie Research Fellow at the Institute for Consumer Ergonomics and it occurs to me that I could make some comments in a manner which rather resembles the style of my predecessor in this respect; because as Agatha did, I now find the

dramatis personae have assembled in one room together, and perhaps a task which I might usefully set myself towards, might be identifying the villain in the piece. Which of us is responsible for the situation which so many of us have complained of?

On the one hand you have the Care Services who are attempting to meet their clients' needs with a very slender budget, who are often starved of information about the aids and equipment which are available. We have manufacturers who are anxious to preserve some freedom of movement in terms of regulations and also with inadequate market information on which to base their developments. We have the Department of Health who present their case on the basis that they are attempting to do a job which is also very tightly circumscribed in terms of what they can do and what they cannot do. We have also had the case presented by a research organisation who, once again, has very clear limits as to how far it may go, and how far it may not go. On the available evidence, I should now identify which one of these characters should feel the axe at the back of his neck. But, in fact, I am in the position of having to suggest that the axe should fall universally upon each neck, because while it may be that none of these organisations is failing in their specific duty, at the same time, none of the organisations are acting as yet in concert; and when we talk about development of aids, we are not talking about the task which can be confined to just one sector of activity, such as we have seen this afternoon, we are actually talking about a co-operative, interactive process, and at present, clearly, no methods exist at present for allowing such a process to occur. Nor is there any one organisation who might stage-manage such a process. I think it might be quite possible to identify the various stages and procedures which might be required were such a co-operative venture to be established, but I think maybe at this present moment it is not the right time to go into these.

Non-identified speaker:

I think there is much in what Mr. Mitchell has said but I do not think I can allow the remarks to go past on the basis that all is bad, simply because it is not formalised. It may be true that there is not a formalised system of communication or of information but it is very true that there is a very active informalised system. Most large organisations have information networks, I have one about child care, mental health, old people, physically disabled, mentally handicapped, etc., but not necessarily on a formal basis, because if you do put people in a straight jacket they tend to stay there but if perhaps you liberate them, they tend to sink. If you have an informalised system it embraces, much on the lines that Mrs. Lomas and Mrs. Dent talked about, individual workers in the field who have their own channels to manufacturers directly, to social service directors, to the DHSS, to designers. Thus in an informal way, at any rate, we are going some of the way you would like to go.

J. Mitchell:

Well, certainly, I am not intending to criticise individual organisations, and I recognise that many of the organisations which you identify are operating, if not at the ideal, very close to the ideal available. The point I would make is that the amount any one organisation can do by itself is strictly limited, and may be the time has come now for us to recognise that fact.

Non-identified speaker:

I don't wish to belabour the point but if you put the manufacturer into a straight jacket, if you say to him, I want a certain commode he will probably say, thank you very much, we don't make it, what I will do, I will make you this commode and I could sell thousands. This will put him in business, and it will put is in a position where we can buy enough to give commodes to all disabled people. There has got to be a meeting of minds on this. I don't think you can say, in a formalised way, this should happen; it is not right and life is not like that.

I Doherty:

I would like to take a tiny leaf out of my colleague's book and quote Dr. Johnson, who said "Maybe it is not done well, the wonder is it is done at all". Changes have taken place over the last five years; in every single way, the size of the market, the types of products, the degree of specialisation, the methods of organising. And I would not say now is the time to formalise, I think at the moment everybody is going 'helter-skelter' for objectives, and there are a few broken eggs. I think if we formalise now we are going to reduce the objectives that we are striving towards.

J. Mitchell:

If I could just briefly come back, because I can see a trend coming in which I hadn't actually intended. I am not suggesting that we should formalise the arrangement at all. What I am saying is that the various departments should get together, because they are in the same business, and also to a certain extent there is a common need for information, particularly about current needs. But I will not go beyond that to specify exactly what type of organisation, formal or informal, I would recommend for bringing various pieces together.

K. Copeland, Secretary of the Biological Engineering Society:

There has been a lot of discussion about setting up information systems and so forth. I would like, in a moment, to give you just an example. I think that most of the information systems in this specialised field of handicapped people, is often a person to person one. We do, in the BES, have the rehabilitation engineering group, formerly the Handicap Advisory Group, which was instigated by Russell Grant. The idea of this was that our members, who are multi-disciplinary in character, should act in an advisory way for unusual and non-standard problems. We did not intend to poke our noses into the systems that already existed, but we did say that we could help in unusual and non-routine problems. An example I can use to illustrate this is the enquiry I have from a lady concerning a brain-damaged child with respiratory problems, who had not been

able to get help anywhere else. I was able to refer her to our members who were not anything to do with handicapped or rehabilitation. This problem clearly needed expertise other than the people who were working with the handicapped, and I am pleased to say that these were people who were working in neo-natal work and they were able to solve this problem. If you don't know the answer, I think this question stems down to being able to know somebody who may know the answer, which is far more valuable than a whole host of library information systems that people take years and months to set up. It is a matter, really of the old boy or old girl network, which I think works much better.

T. Metters, Biological Engineering Society:

May I just mention this interesting information system called VIEWDATA, PRESTEL. Our organisation has commissioned a thousand frames on an experimental data base and we shall be interested in having any suggestions as to how these frames may be used for information experiments during the course of the test service.

D. Michelson, Research Fellow, Loughborough University:

It seems to me that a lot of the debate now is crystallising around the question of formal versus informal information systems, and I don't think anybody would question the value of informal contacts. This can be extremely useful in providing information to develop, particularly the 'one-offs' or the small quantity aids or solutions to problems. These may be products which could have a wide market, which if collected, could help the manufacturers a great deal in deciding where to put their investments in R & D for future products. I am wondering whether looking at this possibility is one of the things that the King's Fund might usefully put some of its resources into. You were asking us earlier for suggestions along these lines, and I think that there is clearly some division of opinion about the value of formal versus informal information systems. There is clearly a need for good information about potential markets and may be this is something that could be looked at in greater detail as a research project.

I wouldn't want to be as specific as the suggestion of a national automated databank because I think there are dangers inherent in making something very formalised, in asking field workers to spend a lot of time recording information which firstly they may not be particularly well trained to do, and secondly will not have the time to do. There may be other ways of getting at this information. There might be a two-stage process, for example, in which one could do a research project to see whether it is possible to get information from a relatively small number of field workers to identify the kind of questions that one could then ask, less frequently, of larger numbers of field workers. This is just an idea but I am suggesting that this needs to be looked at, the mechanism by which one can get at the wealth of experience which certainly does reside in the field workers, in order to help us decide if these are capable of being supported by a wide market.

R. Waterhouse:

It does seem to me that we have a certain division of opinion here which may be coming back to the point that was previously made, of lack of knowledge of each other's areas of work. The manufacturers are saying very loudly and clearly that they have very good systems of acquiring information about what their ultimate consumers want; and the research workers are tending to say they find that the products are not really what they think they might be and they ought to be able to feed back ideas to manufacturers to make manufacturers produce better goods. The field workers are providing a picture of where they feel they have not got adequate information about these aids. I think it might possibly be worth pursuing this a little further in terms of bringing some of the groups together, perhaps in a smaller meeting, on an ad hoc and one-off basis at the King's Fund Centre, to discuss this whole area of the relationship of the manufacturer and the research worker, and the information disseminators; to see if, in fact, there is an area on which some sort of informal co-operation might be useful.

G. Dale, St. Bartholomew's Research Unit for the Handicapped:

One thing that worries me a bit about so many of these meetings is that they deal with what we should be doing and what we should not be doing in getting information, that they tend to lose sight of the fact that we are actually trying to help handicapped people, and the title of the Seminar is Aids for the Disabled, and the development of. If there is genuinely, as has been suggested, a lack of such devices, we have got here a group of people. We have got manufacturers, we have got designers, we have got therapists. It would be wonderful, to me, if perhaps we could publish in some of the journals a request for information on problems; if these were then disseminated, and we finished up with a list of problems, you collected the same audience here and then discussed these problems. It would be a way of actually getting people communicating and you would see where there are failures in communication.

R. Waterhouse:

There is one voice that isn't here today, by and large, and that is the actual user of the aids.

2 DESIGN

J. Chick, District Occupational Therapist, Aylesbury and Milton Keynes Health District:

With reference to Mr. Grossfield's paper, we have been speaking about aids here and I have a certain feeling that we, in some respects are closing the stable door after the horse has gone, for two reasons. Firstly, aids come out to meet requirements on the market, and new construction materials become available, and the aid that was originally produced then has to be reconsidered. Secondly in referring to all aids, if they are going to improve the quality of life and independence of patients and clients, we are really talking about the total consumer market, and therefore relating certain items to specific requirements. I am concerned for that reason that the general design of equipment on the open market, while in fact being considered to be of good standard of design, frequently fails to meet the needs of anything other than right-handed Anglo-Saxon males, and that we really do need to look at different criteria. I rather wonder how far we couldn't look at the possibility of new criteria for design awards in the market generally, which would take account of varying levels of ability of the public in general. In addition, how far, through NRDC, people are in fact encouraged to look at new standards and criteria for design rather than assuming the old ones.

K. Grossfield:

The Corporation does not try to set up standards. We deal with inventions which are submitted to us, so our routine is not carried out in the way you suggest. However, in relation to a specific need which we would like to meet, we certainly try and encourage the research team to develop the best available equipment which is most suitable to the largest number of users. This is a kind of remit we provide to the research team and we can only hope that they meet

these requirements. The remit is set up, usually by a Steering Committee, which includes other public bodies such as the Department of Health and Social Security, and charitable trusts looking after the welfare of these particular disabilities and who are knowledgeable of the particular need.

J. Chick:

I may have been incorrect in asking this question. I am not suggesting for one moment that we do not need specifically designed aids for the disabled. That is clearly nonsense. But it is also true that frequently we are trying to develop inventions to help people cope in their own homes, to overcome the obstacles which are built into the environment due to the insufficiency of its design, and we could certainly improve the situation vastly at much less cost, if, in fact, the needs of all were considered.

R. Waterhouse:

One might say that the Institute for Consumer Ergonomics in Loughborough is called the Institute for Consumer Ergonomics because it was set up jointly by Consumer's Association and Loughborough University, to do precisely what you are saying, which is to evaluate all products for the home. It just so happens that we are discussing here one part of the Institute's work, in the disabled area under the direction of Bob Feeney. However, the work of the Institute as a whole covers the area that you are thinking of, which is that all design ought to be so geared that it meets the needs of the maximum number of people who are likely to use it, including the less well-sighted or the slightly arthritic, or whatever.

3 AID EVALUATION

J. B. Chant:

A point arises with regard to testing; tests are very good; and they have got their place, but it is very important that they should be earily duplicated. A manufacturer should have the opportunity of challenging the validity of tests on his products. It is very hard to do if they are very specialised tests involving a great number of people. I do not know how one gets round that, but I feel it is a very valid point.

M. Dunne, Research Institute for Consumer Affairs and Consumers' Association:

This, of course, is one of the advantages of having a British Standard to work to. Then the manufacturers, and anybody else who cares to test products will have already established the best method. I think that Mr. Chant is perfectly correct in saying that in evaluation, whatever you are evaluating, motor cars or bath seats, one should first of all devise a repeatable test and one should also inform the manufacturer of the result of each individual test carried out. There are many hundreds of reports in which this seems to have worked out satisfactorily, by and large, with the manufacturers. We, the Consumer's Association, tell them the results of the tests on their products and they are at liberty to comment and very often repeat the test if they are queried.

If I could say another word concerning what was said earlier. Some years ago, I was doing evaluatory tests on ordinary household equipment for the desabled, it certainly came out that what is good for the disabled is good for the able-bodied as well, in almost every instance. I think I have identified something like 57 features of refrigerators made easier to use by the disabled and 55 of them made easier to use by the able-bodied too.

V. Bhandari, Institute for Consumer Ergonomics:

We talked about information dissemination but as yet nobody has talked about the implementation of test results or the results that have been found from research. I can understand the suspicion of some manufacturers thinking that they could spend thousands, if not millions of pounds, to try and improve their aids. However, with the majority of aids that are on the market I think very few changes are needed, other than of a minor nature, to make them acceptable to a majority of subjects. I think the manufacturers should not get the wrong idea that researchers are trying to put them into straight jackets, in fact, we are here to help the disabled subjects and we are all working towards one common aim.

I. Doherty:

I hope I haven't given the impression that as a result of any tests on our products, manufacturers do not rush pretty quickly to assess whether this criticism is correct, and then put it right fairly quickly. I don't know of any manufacturer in our field who, when there has been criticism of a product, has gone on selling it, if he accepts the results of the tests. I also think that people are in broad agreement when it comes to basic testing. I would suggest that there is a group of people who manufacture, using certain data available to them; there is another group of people, in a geographically different situation, testing things with different information, so when it gets down to details, it is possible that the two may disagree, and this is why it has been mentioned that manufacturers must be in a position to test for themselves the validity. If we accept a test from Loughborough at its face value, then spend a large sum of money, and Loughborough are wrong, they have not actually offered to bail us out. The manufacturer has to spend the money, we must be able to make sure for ourselves. If the irate customer comes back, what would you feel like, if you said look, you've altered this product, and now it is awful, and we said, well, go and complain to Loughborough; if you are not getting your money back, go and get it from Loughborough, people would think that was not very good.

R. Waterhouse:

May I just say that the implication of what you are saying is that you don't actually test your own products.

I. Doherty:

Yes, but a product is tested by a manufacturer. A car manufacturer will put a car through a lot of tests, then it will come onto the market, and in the light of experience, you will find that however you test a product, when you actually manufacture it, and it goes to a vast number of people, the number of modifications that you have to bring out are fairly substantial. And I think that it can then be tested by an independent survey. If you look at Which? for example, the results of the tests which they carry out do not by and large, follow what the consumers actually buy. Either we are to assume that consumers, by and large, prefer things which are substandard or they cannot evaluate them themselves. Or secondly, that two people are approaching something with completely different criteria and finding different answers. Now I don't know the answer to this and I don't want to be dogmatic about it, but I am just saying that I think we have got to be very careful about saying because Loughborough are independent, their tests must be right, and, because manufacturers make a profit, if they say that Loughborough are incorrect they must be wrong. I do not think this is the situation, but what I do know is that there is no manufacturer, to my knowledge, having had a criticism of his product from somewhere like Loughborough, would fail to investigate it himself, to see whether it was valid. And if he thought it was valid, then he would put it right pretty quick, and all the ones he had in stock and in the field, he would get put right, if there was any danger.

G. M. Bebb:

The corollary of this, seems to be that the Department should not commission evaluation work at all. Is that right?

I. Doherty:

No, I am not saying that. The corollary seems to be that standards should be agreed between industry and the people doing the testing, wherever possible. That would be helpful, because industry has much information which people like Loughborough have not, and I would suggest the wider your base of information, the better, especially if you are going to make a decision.

The second thing is that if the tester is going to say that these are the standards you should adopt, and if the manufacturer is found to be wrong as a result of following these, they should stand by that financially.

My final point is that tests should be fairly broad and should use basic criteria. I think Mrs. Lomas made the point that if, as a result of commode chairs, for example, instead of saying this is a good commode chair to buy, you say whatever commode chair you buy, these are the criteria we suggest you adopt, I don't think you will find any manufacturer disagreeing with that.

G. W. Bebb:

It has come through to me clearly in this discussion about information that people really look to the Department at least to consider doing more than they are at the moment, and the Agatha Christie analogy seems to point to the fact that as in Animal Farm, everyone may be equal, but, perhaps we are a bit equally more bad than the rest. I think that what we have got to do is to go away and think about the sort of things that have been said by Mr. Doherty and others today and see what lessons we can draw forth from all this. I do not think I want to get involved in an argument about whether we ought to be proceeding down the evaluation road, or not. We in the Department think that we should, but obviously it is a complex subject. But, in general, I do think that there would be value in another get-together of this kind to pursue the whole question of dissemination of information, because it seems to me to be a very difficult and complicated subject.

LIST OF DELEGATES

Miss J. M. Abbott	Divisional Head Occupational Therapist Leicestershire Social Services
Miss S. M. Adams	Area Nurse Hampshire AHA
Mr. B. Auty	Technical Manager Bath Institute of Medical Engineering Ltd
Mr. J. Beavis	Southern Regional Organiser REMAP
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Dr. F. Bell	Senior Research Fellow Rehabilitation Studies Unit Princess Margaret Rose Orthopaedic Hospital Edinburgh
Mrs. V. S. Berry	Senior Nursing Officer - Capital Planning East Anglian RHA
Mr. V. Bhandari	Senior Research Officer Institute for Consumer Ergonomics
Dr. C. E. Camm	Specialist in Community Medicine Oxford RHA
Mr. W. G. Cannon	Director King's Fund Centre
Mr. D. Carmichael	Senior Technician Medical Aid Dept, British Red Cross
Mr. J. Chick	District Occupational Therapist Aylesbury & Milton Keynes HD
Mr. V. J. Cochrane	Managing Director Edward Doherty & Sons Ltd.
Mr. P. F. Cole	Research & Development Manager LKB Biochrom Ltd.
Mr. D. N. Condie	Senior Bioengineer Dundee Limb Fitting Centre
Miss S. Cooper	Editorial Research Officer Institute for Consumer Ergonomics

Mr. K. Copeland	Secretary Bioengineering Society Faculty of Medical Sciences, University College London
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Mr. S. R. Gallop	Chairman Disablement in the City

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