

CHAIRMAN:

My hope is that one of the far-reaching effects emerging from this discussion will be that something will be done in the future about the status and position of medical engineers. It is analogous to the earlier position in public health. The public health engineer is a civil engineer who has a training that is partly of a medical character. He is a new figure in this country although there have been some of these people in the United States and the Continent for some years, and their professional status has been developed as the result of coming together and dealing with common problems, just as we are doing at this Conference. I feel that the more Conferences we have in which people of different disciplines but with common problems meet and exchange views freely, the more likely we are to proceed with the development of new training schemes and the promotion of new skills.

It now remains for me to thank Mr. Bunyan and Mr. Bickerstaff very warmly for their papers and all those who have participated in the discussion.

III. Discussion on 'Prescription and Supply'

CHAIRMAN (Dr. Harvey Flack, M.D., Editor of *The Family Doctor*):

Ladies and Gentlemen, we are now due to move on to the discussion of 'Prescription and Supply'. We have now two clinicians and we are going to hear the views that they take on this. Dr. Guttmann has been in the Chair all morning, as you know, and now we are going to hear him speak as one of the most distinguished clinicians particularly in the field of spinal injury.

With me on my right I have Dr. Millard, who is a consultant and is in charge of the Rehabilitation Centre of the North East Metropolitan Area at Clacton. He has also a very special interest in this field.

My own interest I can express briefly. I am the Editor of *The Family Doctor* and it will have been seen that we have an interest in wheelchairs and the users of the wheelchairs. One of my most effective colleagues is a woman, a doctor, who conducts her life very successfully from a wheelchair and has done so for the last ten years. She has brought up a substantial family and done a great deal of medical journalism and is a most valuable colleague. She has had to accept a wheelchair life and, like some of our speakers, she has not accepted that this should reduce her activities in any way except on some small physical points.

We became very interested in wheelchairs when I talked to Dr. N. F. R. Clyde, who, a former patient of the Stoke Mandeville Spinal Centre, was very active in the Disabled Drivers' Association in the early days. We published a major article on his wheelchair life. That was many years ago, but we still get requests for reprints of it. I have also had a closer personal interest because of my own nephew who is now twenty. He had a severe spinal injury at the age of twelve. He is now well and doing well and is immensely agile in getting himself in and out of his wheelchair and into his motorised tricycle. He owes his agility and skill and training, and indeed his life, to Dr. Guttmann and his colleagues at Stoke Mandeville.

I will first call on Dr. Millard.

Dr. J. B. MILLARD (Director, Passmore Edward Rehabilitation Centre, Clacton):

Everybody has said what I was going to say and a lot of common sense has been spoken today, but there are one or two things I will comment on.

What does the patient want? And what wheelchair does the patient need? That may please Mr. Denly. This is the answer, we have got to think of the patient, and we as doctors always start with the patient. I am a physical medicine consultant particularly interested in assessing the patient's ability. We have to assess why the patient needs a

wheelchair and then start from there. The needs of an elderly lady produce a very different answer than what is needed by a younger person who is working. They both need a wheelchair but nobody likes the Model 13 because it is very, very heavy to push, and I do think when anyone is designing a wheelchair to push somebody in they should think about this. It is very difficult to go up and down kerbs with this chair and we must think about the pusher. I am pleased that some designers do think about the pusher. When Mr. Floyd thinks about the ergonomic principles he should think of this aspect. Dr. Guttmann deals with paraplegic patients. We are dealing more with the other types of patients. Paraplegics form only a small proportion, as shown in the figures issued by the Ministry of Health, and their needs differ greatly from other disabled patients.

I used to be at King's College Hospital with Dr. Cooksey. He was one of the driving forces with Dr. Jolly in the starting of the provision of wheelchairs. It was in 1956 I think that we started. Before that he had done a lot of work on wheelchairs and taught people how to think about wheelchairs, but unfortunately it was the Matron at King's who ordered the wheelchairs for the patients at the start, and they had to be pushed down to the physiotherapy department and pushed to the occupational therapy department, and they had little, tiny wheels. There again in hospital the patient does not have the encouragement he should have.

You will find many aspects of this in a rehabilitation unit where you can have the patients pushing themselves to the physiotherapy department and pushing themselves to the occupational therapy department and pushing themselves to the toilet. I would put in a plea that hospitals do buy decent wheelchairs. Long before they are discharged, patients can be taught how to use a wheelchair. I would plead that when thinking about ordering a wheelchair if you have a wheelchair clinic you should take care and assess the patient for what he needs.

We assessed the patient on the basis of the wheelchairs that were available. Sometimes there was a chair which was ideal for the patient, sometimes there was not. Only 10 per cent. of patients need very great detailed assessment. For instance, the rheumatoid patients or someone with disseminated sclerosis. You have to remember that they have weak arms as well. The rheumatoid arthritics form 28 per cent., as Dr. Jolly told us, who have wheelchairs. These arthritics are not old on the whole. One gentleman I talked to about these figures was trying to convince us that the age should be considered, not just the percentage.

An arthritic often has a shoulder or elbow affected and cannot grip any of the normal type of rims. A lot of work can be done in assessing the needs for people with rheumatoid arthritis when they have joints which are painful. They may have a leg or elbow which they cannot extend and they may have a painful shoulder. They cannot extend their arm when they are sitting and so they cannot get near the rear wheel, so if they are to wheel themselves they have to have a chair with the large wheel at the front. Then you are in difficulty because the rheumatoid patient needs to slide off the chair, and if you have a 22- or 24-inch driving wheel they cannot get over this. It is a question of the patient's reach, the angle of the elbow and the angle of the shoulder. The ergonomics—or whatever you call them—should be discussed, and in a small percentage of patients you have got to go into these details.

No one has talked about the one-arm drive wheelchair. There is one produced by Everest and Jennings, and there is the Model 1 Ministry of Health chair, the little hard chair, not a padded one. That was criticised because it had only one rear wheel and if you are not careful it is easy to tip it over if you get it at an angle, and this frightens the patient in the wheelchair, and so it is not acceptable.

Incidentally, somebody mentioned the term 'invalid chair'. I do not know what invalids are. They are disabled people to me. Do not use the word 'invalid'.

I think the Model 1 is the only other one-hand drive wheelchair. I do not think there are a lot of people who need a one-wheel drive wheelchair to get about, but it is necessary for some people. The Everest and Jennings chair is not very good. The one I have has

a loose coupling, and even when I sit in it I find it very difficult to drive the two rims and go straight, and a patient who has a hemiplegia and disorientation finds it very difficult. Some research ought to be done on one-arm drive wheelchairs. What we need is a wheelchair in which the hemiplegic can use his good arm to move. At the moment we are only making do with what wheelchairs are available.

It must also be remembered that the colour of the wheelchair is important. Mr. Denly has a shiny chromium one. We never have an Everest and Jennings chair on view when we are selecting a suitable chair for patients, because, if they see it, they make up their minds that that is the chair they want and no matter if you assess them and find another more suitable, they will not try any other. They will do anything to be awkward from our point of view to get the Everest and Jennings chair. And maybe a little bit of chrome on the Tan-Sad might make a great deal of difference to the patient in guiding his preference for some particular type of chair. We should take this into consideration because it is terribly important.

There are other problems, such as the problem of the chair slipping. It must have a good brake that locks both wheels. We find, for instance, that one brake may lock but the other one is a bit loose. On some there is a separate adjustment on both sides. It is most important that the wheelchair should not slip when the patient is getting in or out, because it frightens him, and even with the ordinary sliding from the wheelchair to a bed it puts a sideways thrust on the wheelchair and the castors rotate and the chair can move several inches. It cannot be locked sideways and it moves when the patient is trying to move himself and he gets frightened. These are things that we learn from the patients who are using the wheelchair, and I think that a close study should be made about this sort of thing.

On the question of prescription most doctors do not know how to prescribe a wheelchair. They have not thought about it and they are not as interested in this particular aspect as a number of us are. I realise that most of us who are doing physical medicine are interested in this particular problem.

Having prescribed the wheelchair, what about the delay? This is a problem I can understand. It is a problem because the Ministry cannot, of course, hold lots of wheelchairs ready in case an order comes in. But the delay in getting a wheelchair often holds up rehabilitation. We are very conscious of this because we sometimes have to wait several weeks. Model 8F serves the majority of patients. There are criticisms, but it is not a bad chair, certainly better than the 1956 chair. A lot of work needs to be done on this question of the supply of wheelchairs. I suggest that the special centres should be issued with three or four to issue from stock which could then be replaced. This would enable patients to begin using the wheelchair and moving about without waiting for a wheelchair. It would not cost very much if it were only done for special centres.

Dr. Jolly talked about the consultant ordering wheelchairs, and I think it should not be done by the almoner anywhere. The almoner is concerned with social work and is not an appliance officer. It should be done by the consultant surely, because the consultant should be helping this particular patient. I have heard recently that Local Authorities issue these wheelchairs to patients sometimes and we are rather upset about this. In one case it was not the doctor who had recommended it, but a male nurse, and the local Authority must have spent some of their money to buy the wheelchair.

Also I think that it is very wrong when you see an elderly person who has forked out their last penny to buy a wheelchair, because they did not know who to go to. This is something which we have recently been rather worried about. I know that the National Health Service patient does not always know what to do.

There is one other point I should like to make. Ten per cent. of the admissions to the rehabilitation unit in Clacton arrive using wheelchairs. They are wheelchair users who cannot walk, and we find that about half of them do not need to use wheelchairs any more once they are rehabilitated. I think therefore we need to be sufficiently sure that a wheelchair is really needed and it should not be given until one is sure that the patient

cannot be rehabilitated. In hospital there is only a certain amount we can do, unfortunately, because we have not got all we need in the way of physiotherapy and occupational therapy. We are short of physiotherapists. Unfortunately they are not paid enough and they can be attracted out to other jobs and be paid more. They can go to the Local Authority and become health visitors and welfare visitors. If we could get them to return to the hospitals, I am sure we should find a lot of patients could be rehabilitated and would not need wheelchairs.

Of the 28 per cent. of arthritics I should like to know how many really use the wheelchair all the time. A wheelchair may be issued to help a person go from home to work or to go out shopping and they are not using wheelchairs like they are used by the paraplegic.

Dr. MacKeith mentioned that a lot of work is being done on research into wheelchairs for spastics. At the same time there may be something quite parallel being done in another field. I feel we ought to get together more on these problems with the Ministry of Health and perhaps ask the appliance officer to come and visit the hospital and come to talk with the people working on the problem and try together to design a better wheelchair. I think a lot of good things came out this morning.

One must remember that patients sometimes develop disabilities for a reason. Rheumatoid arthritis may be the result of stress. It may be an escape mechanism of the patient, and you then find that a patient resents being given a gadget to enable him to do things for himself.

Mr. Denly is quite good at stimulating people. He is still aggressive after twenty years' rehabilitation and I always think that with a patient it is a very good sign when they start being rude to you. It means that they are beginning to think for themselves.

Now the question of the issue of wheelchairs. The physiotherapists and occupational therapists can do something in teaching patients to get in and out of bed and on to wheelchairs, and a lot of hospitals are doing this; it is not true to say it is not being done.

Mr. DUNCAN GUTHRIE, M.A. (Director, National Fund for Research into Poliomyelitis and other Crippling Diseases):

I want to go back for a minute to Dr. Agerholme's suggestion that we ought to have medical engineers, with which I could not agree more. In point of fact we in the Polio Research Fund have been trying to breed these kind of birds for seven years now. We do this by forming this committee made up of doctors and of engineers and we put them together and hope eventually that the result will be that they will breed medical engineers. Unfortunately they are all males at the moment, and so we have got a little bit stuck.

On this question of medical engineers and work for the disabled, it is by no means true to say that nobody is doing this kind of work, that would be a little bit unfair. There is, of course, the biological society a completely independent organisation which does in fact do this kind of work. The work should be expanded certainly, and we are very anxious to expand—if I might put it this way, expand upwards. We really are most anxious to get first top-rate expertise into this committee, which we hope will develop in a lot of ways.

The other thing, I think perhaps I am a bit of a late developer; I have been thinking about this and suddenly I remembered somebody said something about a couple of hours ago, and, unless I got this wrong, the implication of this remark was that because we in this country do not pay for wheelchairs, whereas in America they do, we should be satisfied with second best. If that was what was meant, I am horrified, absolutely horrified, and I think this meeting should place on record their view that the disabled of this country deserve the best wheelchairs that are available. (Applause.)

I should like now to reiterate what I said at the beginning. The Polio Research Fund is very willing to hear any suggestion of how we can develop, and I can promise you that we have our own system of vetting applications, and if any suggestion comes from this meeting I will guarantee that I will see that it is put forward, and that it will be very sympathetically considered by me anyhow.

CHAIRMAN:

Now I call upon Dr. Guttman.

Dr. L. GUTTMANN:

I have the arduous task of analysing and winding up this very interesting discussion we have had today on the problem of wheelchairs. What a complex problem it is! I think if anybody came here this morning thinking that this problem could be solved very simply if only the Ministry of Health would co-operate more, he will by now have realised that he has been utterly mistaken. We have heard a good deal of criticism, and, I must say, very, constructive criticism, of two sections of our society. One is the Ministry of Health, and the other is the Medical Profession. I think the criticism on the whole was quite justified.

Dealing first with the Ministry, the question is: Is the Ministry really doing its utmost to provide our disabled fellow-men with the most suitable and best chairs? Surely the answer is no. As Mr. Walker from the Ministry himself admitted, there is still a long way to go until we have achieved our goal. But we must be fair and not just blame the officers concerned. They are in a difficult position. They have a certain amount of money to deal with and they have indeed a difficult task to get the best out of it. Every civil servant will tell you that it is because of the Treasury that there is not enough money available. This is an argument which I have heard for nearly twenty years and I have not accepted it yet. Where there is a will there is a way to make more money available for the social re-integration of many disabled, but I must say that in the last few years the Ministry has become more flexible. It is more flexible because we now have in the Ministry more enlightened people who understand better the needs of the disabled, their disabled fellow-men, than was the case in the past.

Let us now consider the statistics of the Ministry which Dr. Jolly gave us this morning for the wheelchair users, and a very interesting statistic it is. There is no question that the arthritics represent a very considerable percentage—28 per cent.—but as one of the speakers asked: Are they all arthritics? Now what about the people who are paralysed? Dr. Jolly quite rightly says that traumatic paraplegics represent only 7 per cent. Are the traumatic tetraplegics who frequently need special chairs included in this figure? Moreover there are many more afflictions of the spinal cord resulting in paraplegia or tetraplegia, such as polio, transverse myelitis, spinal artery thrombosis, degenerative processes including certain types of multiple sclerosis, congenital malformations, such as spina bifida; furthermore, spinal tumours, epidural abscess, etc., which no doubt you will find in the Ministry's statistics as organic nervous diseases, neuro-muscular disease, polio-myelitis and congenital causes.

So do not misunderstand Dr. Jolly's statistics. The percentage of paralysed people as a result of spinal cord afflictions is a pretty high one and I consider it at least a quarter of all the disabled at present, but I can assure you that in ten, certainly in twenty years' time this problem of the spinal paralysed will be one of the major problems of disablement in this country and in every other civilised country, because the survival rate of this group is increasing tremendously. Moreover, the number of paralysed people who can now be gainfully employed and become useful citizens and indeed taxpayers, is also increasing from year to year. That is why the Ministry and society as a whole should take this point into very serious consideration and realise that only the best wheelchair is good enough for this kind of disabled people, whether spinal paraplegics or suffering from other disabilities, to enable them to become socially accepted and useful members of society.

The other group of paralysed are those who cannot go out to work, but whose lives could be made more comfortable and even useful, at home or in hostels, if they had the facilities. I am very glad indeed that Mr. Birger Roos from Sweden has taken up the idea of the electronic device, which was discovered by Mr. Maling and developed at Stoke Mandeville, to control a wheelchair. Of course, I myself can still see certain difficulties to drive a wheelchair with the mouth. Although our mouth is a very important organ and

can deal with a lot of activities, I think that a good deal of training will be necessary to drive a wheelchair straight and backwards and left and right, by sucking and blowing with the mouth.

That brings me to a point which Mr. Denly mentioned: the teaching of the disabled person in the use of the wheelchair. I agree in principle with him that a lot more could be done. He certainly exaggerated a little when he said that nothing is being done. Here I could not possibly agree. Not only in Stoke Mandeville, but in other rehabilitation units, orthopaedic or neurological units, people are taught. Those who have been to Stoke Mandeville will agree that this hospital with its long corridors and slopes is an ideal training ground, and full use is made to train the patients to negotiate their wheelchairs. Moreover, getting out of bed into the wheelchair and vice versa, getting in and out of the car into the wheelchair, getting out of the chair on the elbow crutches and returning to the chair, and the proper use of the chair in sporting events, such as basket ball and slalom are, of course, included in our rehabilitation programme. However, there is no question whatsoever that Mr. Denly was right in bringing up his criticism, and I agree that there should be more systematic training in the use of wheelchairs for various types of disabilities.

I agree entirely with my colleagues who have criticised members of the Medical Profession in regard to the prescribing of wheelchairs, and I suggest that one of the reasons why we are still dissatisfied with the wheelchairs is because so few consultants take the trouble to assess their patients for the most suitable wheelchair. By the way, it is their duty to do so because they are responsible in the first place for the aftercare of their patients and it is not the responsibility of the younger staff, let alone the physiotherapists, almoner, welfare officers, or indeed matrons. If the consultants in all hospitals would take the trouble—and here the Ministry of Health could give a clear directive as they are doing in other respects to consultants—I think there would be a great improvement and better results, especially if Teaching Hospitals would include teaching in assessment and proper use of wheelchairs in their teaching programmes.

Now with regard to the question of the ageing population. Here again we have a group of our fellow-men which will increase more and more in the near future, and, therefore, the problem of wheelchairs is also growing, because we have to individualise their prescription, *e.g.* self-propelled or attendant-propelled.

That brings me to the question of difficulties in standardising wheelchairs. A wheelchair for a number of groups of disabled people has to be individually prescribed and even individually manufactured. Mr. Denly has asked why the Everest and Jennings chair is not prescribed or given by the Ministry to all people. The answer is that it is up to the consultant to send a prescription to the Ministry of the type he thinks most suitable. As far as I am concerned I am very satisfied in this respect with the co-operation of the Ministry. After we had a full discussion with senior officials of the Ministry of Health at Stoke Mandeville a few years ago, about the shortcomings in weight, dimension, castors and other technical details of the various chairs available, there has hardly been one Everest and Jennings wheelchair, prescribed by the medical staff, which has been refused by the Ministry. Well, it is up to the physicians and surgeons to take a more active interest in this problem. I have no doubt in my mind that at present on the world market the Everest and Jennings type of wheelchair is on the whole the most suitable. It is not correct to say, as Mr. Denly did, that it is not available under the National Health Service.

Now to the question of armrests: I cannot agree with Mr. Denly at all that all the wheelchairs, or the majority of wheelchairs, should be fitted with fixed armrests. He overlooks completely that a great number of people just could not get out of their chairs; as far as those paralysed with higher lesions of any cause are concerned, they certainly could not use the same technique to get out of the chair by lifting themselves over the edge of the armrest as he has demonstrated so nicely with his strong arm and trunk muscles. Time does not allow me to enlarge on this, but Dr. Walsh, Dr. MacKeith and

Dr. Agerholm have already given important reasons about the necessity of the provision of detachable armrests.

Mr. Denly mentioned a very important point, whether the wheelchairs could be narrowed. I have myself done research on this and designed a chair which could easily be narrowed hydraulically so that a person could go through the narrowest door, including a cabin door in a ship. Unfortunately, the firm which undertook the work on it proved unsatisfactory in manufacturing the whole chair, and the whole thing was a flop. I think the Ministry should consider whether some research could be done on this very point of narrowing wheelchairs.

Another point I should like to mention which has been brought up is the difficulty for many people in wheelchairs to get underneath a table or a bench. That is quite true. I am glad to say that research has been carried out, at my suggestion, by the Ministry of Labour, and they produced a chair which can be lowered and raised up so that people can use any bench and any table of any height. This device was included in the old Travaux chair, but I think it could also be included in one of the modern chairs for disabled workers in factories and also for housewives.

I come now to the question of cerebral palsy. Dr. MacKeith quite rightly mentioned the various forms and how difficult it is to prescribe a standard chair for cerebral palsied children. I entirely agree with him, having worked on this very problem myself over quite a number of years as a neurosurgeon. However, the name 'spastics' which is commonly used for these children is a misnomer as a great percentage of this group of disabled people have nothing to do with spasticity whatsoever: I refer to those cases of cerebral palsy with afflictions of the extra-pyramidal centres where ataxy, hypotony or choreo-athetotic movements are in the foreground of the clinical picture. For this group of people we have to have special chairs with adequate support of both the trunk and the head, and that is another point of research.

We expect from the modern wheelchair apart from light weight, stability, good performance and security, a good appearance which is so important from a psychological point of view. I can well understand why patients at King's College Hospital when they see that elegant Everest and Jennings chair do not like the others. This is very understandable. The disabled person often instinctively prefers a wheelchair which has the least apparent appearance of an 'invalid' chair. I believe that at present the Everest and Jennings chromium plated type of chair is really the best in this respect.

This brings me to the point of the price of this chair. I know there have been discussions between the Ministry and various firms concerning the costs of chairs but I have been told that the Everest and Jennings chair, at least that without detachable armrests, can compete with any other chair on the market. I do not know whether this is absolutely true, but it is even more appreciated that the Ministry now does not reject the even more expensive chair with detachable armrests if the consultant considers it as the most suitable for his patient.

There is often a considerable delay in the delivery of wheelchairs, and there are several main reasons for this:

- (a) Late prescription by the physician or surgeon.
- (b) Delay by hospital administration in forwarding the prescription to the Ministry.
- (c) Delay in the Ministerial Offices in placing the order with the manufacturers.
- (d) Delay in despatching the wheelchair from the factory.

All people concerned should realise that the severely disabled person needs his chair as early as possible during in-patient treatment, and with efficient co-operation of all concerned the present unsatisfactory situation could be vastly improved.

There is another problem which we have to consider more and more. The paralysed and other disabled persons, such as double amputees, are taking part in sport and men

and women are becoming interested in international games. The suggestion has not only been made but put into effect to include wheelchair races and wheelchair slaloms in these games. There is now an interesting problem for research—namely to design the most suitable wheelchair for sport. There is no question that these chairs should be particularly light and stable and the ordinary wheelchair, including the Everest and Jennings type, could be greatly improved in this respect.

There is another important point in this connection: Last year we had the first Paraplegic Commonwealth Games which preceded the official Commonwealth Games in Perth. For this purpose sixty British paraplegics went by chartered aeroplane to Perth in Western Australia taking their chairs with them. The Everest and Jennings chairs proved very suitable because they could be dismantled, which greatly facilitated storage in the aeroplane.

Lastly on the point about co-operation, I could not agree more with all that has been said. In this problem of wheelchairs, which is a complex and very difficult problem from various points of view, team work is as necessary as in other spheres of medical activity and welfare for the disabled. I entirely agree that there should be meetings with medical engineers. I do not like the term 'orthopaedic engineer' which is a misnomer for there is the danger that we shall soon have paediatric engineers, physical medicine, neurological and plastic engineers.

I also entirely agree with Mr. Dunham, who took a wider view of all this. It is all very well having good wheelchairs if society does not co-operate and take more consideration in building proper houses. I do not mean only houses for the disabled themselves, I mean ordinary houses and public buildings such as cinemas, theatres, offices, schools, universities, etc., which should be built in a way that the disabled man or woman in a wheelchair can go everywhere easily. Here we have to start really from scratch and we cannot possibly close this discussion without making a clear point about this important problem.

Finally, I think we have to come to a kind of resolution as a result of this meeting. I am very pleased indeed that Mr. Guthrie spoke before me. I would like to sum up by suggesting that this meeting, recognising the great work of the Polio Research Fund, recommends that the Fund should set up a special project for research and development of wheelchairs.

CHAIRMAN:

Now I think we have just time for perhaps two or three comments or questions.

Mr. TIDDIAM:

I should like to correct a small misapprehension in that my firm has for a number of years manufactured the transit chair, the Model 8F, or the equivalent in chromium-plated finish.

Dr. STEWART (Swindon):

I am interested in the enormous problem which we find in mental deficiency hospitals where we have a tremendous number of unfortunate children living in bungalows, called chair bungalows, and it is our job to try to train them to get on their feet. A large number of patients is involved and ultimately we hope to be able to prepare them for some kind of existence outside in society, for which they would most certainly need highly specialised wheelchairs.

CHAIRMAN:

Would you answer that, Dr. Guttman?

Dr. L. GUTTMANN:

I know only too well that there are children and also grown-ups in mental hospitals who need wheelchairs, but so far as I know there are no statistics on this very point.

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Mrs. WEDGEWOOD:

May I ask the first speaker if perhaps he might have a second thought about his policy of refusing wheelchairs to patients because they get too dependent on gadgets. To keep yourself maintained when you have limited function is quite a day's job, and if you are to do it without a supplementary gadget it is barely possible and makes it likely that you cannot do a fuller job or take part in public activities as I do. I needed the wheelchair to enable me to carry on without getting completely exhausted, and when I went on the County Council I could not possibly have walked all these six miles of corridors and attended meetings without the wheelchair. It is the wheelchair that enables me to do more. If I had come under this doctor would he have told me, 'You must keep walking because a wheelchair is not essential?' If so, it would have limited my life completely.

Dr. J. B. MILLARD:

The answer is, no, we would have assessed you as a person. With every patient we take all these matters into consideration. I should also say that there should not be six miles of corridors for you to walk. There are some good English chairs and I think if they were allowed to design a chair with unlimited resources they could make an English chair twice as good as the American ones. I do not believe in the inferiority of home products. This does not answer your question. I think you are right that it is a question of circumstances. The question is why does the patient want the wheelchair? This is how we have got to assess the problem. We must assess the patient, and we must be careful not to issue a wheelchair when the patient would benefit by moving on his limbs. We have to balance everything and assess the patient and assess the need. You have to plan the whole thing in relation to the patient's ability considering his disability. I am very glad that you can move to council meetings.

Dr. L. GUTTMANN:

I hope I have not been misunderstood about what I had to say about the advantages of the Everest and Jennings chair. It is true that this chair comes originally from the United States, but it is now manufactured in Great Britain and I consider it really an excellent chair. It also has disadvantages: for instance, the ball-bearings may be defective or the chair is not properly balanced and does not run in a straight direction, deviating to the left or to the right. In that case the chair is immediately sent back and the Ministry is informed.

I forgot to make one point about chairs, and that is the chair for the disabled housewife. Here again I think the Ministry should be more flexible and give the housewife perhaps two chairs, one working chair as the Ministry has given for instance to disabled working people in factories today in a most generous way. The housewife also needs a working chair, that is a chair which could be lifted up and lowered. That I think would be a very great help to some of the disabled housewives. I feel I ought to make this suggestion to the representatives of the Ministry, so that perhaps they might consider it at one of their next meetings.

Dr. D. W. JOLLY:

There are one or two things I should like to raise on points raised by Dr. Millard and Dr. Guttman. One is on the question of the selection of wheelchairs for hospitals. I think this is a very important point indeed, and what Dr. Millard said is true, I think chairs are too often selected by Matron and the Secretary together without consulting medical opinion at all. It would be just as well for a hospital to buy a cross-section of chairs. These chairs have to be used by patients in the out-patients department and for patients going to the X-ray department, the laboratories and so on, and it would be as well to have in every hospital a cross-section of the chairs that may be used by disabled people. We could then have the best of both worlds and have the American system and the

British system working together in the same hospital. Dr. Croton still uses the AOF₃ form at Stanmore. We felt that we could not expect this form to be used generally by all consultants. There are several forms in use which give detailed information, but the Ministry, and any Ministry, always hesitates to complicate forms any more than they need be.

On the point raised by Dr. Guttmann, I have no intention of entering in the controversy about Everest and Jennings chairs, but I would like to say that we fully agree with Mr. Denly that we have a special responsibility for the younger patients. But statistically the proportion of elderly patients is of increasing importance in our total supply, although this should not be taken to mean that we do not fully accept the responsibility for the younger and more active patients.

I should like to apologise for the statistics which Dr. Guttmann rightly pulled to pieces. Within the length of a paper of this kind, closer analyses of the groups of cases under each disease was not possible.

Mr. EVANS (Sales Director, Wessex Industries):

We are newcomers to manufacturing chairs and one question I should like to put to you is: Can we have a definition of a wheelchair? The Ministry says that they will provide a wheelchair 'in the interest of the patient's health' and I should like to know if the electric invalid-chairs are excluded from this. Dr. Guttmann tells us that there is and will be an increase in paralytic cases, and this is where we find the invalid-chair which is electrically driven has many advantages.

Up to now the chairs which we have produced were all sold privately. Only four have been recommended by doctors, and we had one unfortunate experience of someone applying for a chair and then being told that it had been rejected by his doctor. I had a case at a boys' school, where one boy had one of our chairs because his father could afford it, but none of the others had got one. This I think is the problem; there were two or three of the boys who could have used an electric chair, but they could not have one because their parents could not afford it, and the man who can afford it is not prepared to buy it because it does not suit his car.

We feel that the market is certainly there for this type of chair. We were discussing the matter with the American attaché last week and he advised that in the American market we must limit it to the States because otherwise we shall be flooded with orders.

Dr. J. B. MILLARD:

I would not know what Dr. Guttmann thinks, but I have not entered into any discussion of motorised vehicles or these electrically driven chairs because I do not know enough about it. I have only dealt with wheelchairs which the patient propels himself. I do not know the numbers who could benefit from having these electrically driven chairs; but I think he has a case and I think the number will be increasing, although the proportion will be small.

Dr. L. GUTTMANN:

There definitely is a need for the electrically propelled chair for a certain group of severely disabled people, for instance, quadriplegics who have not use of their hands and certain groups of cerebral palsy patients and arthritics. Survivors of injuries to these higher regions of the spinal cord represent a group who would benefit greatly from an electric chair. This is, however, at present a very small group of people, but there is no doubt that even this group will increase in number in future. With the advances made by medical science we can now keep even such people alive, when only a few years ago they would have died. The same applied also to paraplegics with injuries to the lower parts of the cord twenty years ago and today 80 per cent. of them are now employed, most of them full-time, because they have got 'the tools to finish the job', i.e. suitable wheelchairs.

CHAIRMAN:

Now, as a Conference with no authority and no standing and no financial power, could I put to you more formally the proposition that Dr. Guttmann advanced: that we should, as a group, ask the National Polio Research Fund to consider setting up and making funds available for special projects on improvement of design and development of wheelchairs? Is that the general wish? (Applause.)

Mr. O. A. DENLY:

Could I couple with that 'and use of wheelchairs'?

CHAIRMAN:

'And use of wheelchairs.' Secondly is it also your view that today has been such a valuable occasion because it has brought together people of different disciplines, and we have had the weight of experience and authority from all sorts of angles and all sorts of users, from the Ministry, from suppliers and from our engineering friends, and that it might well be useful if the National Polio Research Fund would consider whether it might be possible to keep in being a study group, meeting perhaps twice a year, representing these users and interests. It would not be in a conference as big as this, but as a study group exchanging experience twice a year. Does that sound a reasonable proposal? (Applause.) Thank you very much.

It now remains for me to thank on your behalf Dr. Millard for his stimulating contribution and Dr. Guttmann for his masterly analysis of these complex problems and for his very patient chairmanship this morning. I declare these proceedings closed. (Applause.)

Dr. L. GUTTMANN:

Before we disperse, may I just on your behalf thank once more most warmly the Polio Research Fund and its Director, Mr. Duncan Guthrie, for convening and organising this meeting today which I think is a very great step forward in our work.