consent is no longer sustainable. There may be scope for seeking more donors among patients who now die after ventilation has been stopped. More willingness to make use of donors who had become asystolic is likely to be practical only when the transplant team is located near the intensive care unit.

The potential for increasing the supply of donors by ventilating more of the hopelessly brain damaged patients is considerable. Major constraints are the willingness of doctors and nurses to ventilate patients solely to enable them to become donors and the adequacy of resources in donor intensive care units. Resources should also be reviewed in transplant units to ensure that as many of the offered organs as possible are used. Ongoing audit could show how hospitals ranked in their donation rates and how various transplant units rated in results of transplantation and in responding to offers by successfully retrieving organs.

1 Anonymous. Organ donors in UK. Getting the numbers right [Editorial]. *Lancet* 1990;**335**:80-2.
2 Jennett B, Gleave J, Wilson P. Brain death in three neurosurgical units. *BMJ* 1981;**282**:533-9.
3 Jennett B, Hessett C. Brain death in Britain as reflected in renal donors. *BMJ* 1981;**283**:359-68.
4 Gore SM, Hinds CJ, Rutherford AJ. Organ donation from intensive care units in England. *BMJ* 1989;**299**:1193-7.
5 Jennett B, Gentleman D. Brain stem death and organ donation. *BMJ* 1989;**299**:1398-9.
6 Gore SM, Holland AJ, Hinds CJ. Organs for transplantation. *BMJ* 1990; **300**:464.
7 Feest TG, Riad HN, Collins CH, *et al*. Protocol for increasing organ donation after cerebrovascular deaths in a district general hospital. *Lancet* 1990;**335**: 1133-5.
8 Wallwork J. Organs for transplantation. Improvements needed in supply and use. *BMJ* 1989;**299**:1291-2.
9 Odom NJ. Organation donation. I. Management of the multiorgan donor. *BMJ* 1990;**300**:1571-3.
10 Bodenham A, Berridge JC, Park GR. Brain stem death and organ donation. *BMJ* 1989;**299**:1009-10.
11 Chapman DH. Organs for transplantation. *BMJ* 1989;**299**:1463-4.
12 Lowry KG, Lavery GG. Brain stem death and organ donation. *BMJ* 1989;**299**:1218.
13 Odom NJ. Organ donation. II. Logistical disincentives to organ donation. *BMJ* 1990;**300**:1573-5.
14 Gore SM, Rutherford AJ, Hinds CJ. Organ donation from intensive care units. *BMJ* 1989;**299**:1399.
15 Conference of Medical Royal Colleges and their Faculties in the UK. Diagnosis of brain death. *BMJ* 1976;ii:1187-8.
16 Conference of Medical Royal Colleges and their Faculties in the UK. Diagnosis of death. *BMJ* 1979;i:322.
17 Payne JN, Bowns IR, Lyon C. Organs for transplantation. *BMJ* 1989;**299**: 1463.
18 Jennett B, Frankowski R. The epidemiology of head injury. In: Vinken PH, Bruyn GW, eds. *Handbook of clinical neurology*. Vol 13 (57). Amsterdam: Elsevier, 1990:1-16.

(Accepted 7 September 1990)

Everyday Aids and Appliances

Aids for disabled drivers

Christian Murray-Leslie

Disabled people may require driving aids to enable them to drive for the first time, to adjust to increasing disability (as with progressive disorders such as rheumatoid arthritis and multiple sclerosis), or to return to driving after a single disabling illness (such as a stroke, amputation, or injury to the spinal cord).

Assessment and advice—The disabled person should first obtain medical advice from their general practitioner or medical specialist. When applying for a driving licence for the first time the applicant will be asked questions on disabling conditions. If a person already has a driving licence and has subsequently developed a disability that might affect driving safety he or she is obliged by law to notify the medical branch of the Driver and Vehicle Licensing Centre at Swansea as soon as possible. If there is no bar to driving but there is uncertainty about the feasibility or safety of driving advice may be sought from any one of the 10 United Kingdom driving assessment centres (see appendix). The centres provide impartial and non-commercial advice based on the assessment of driving capabilities and need for aids. Assessments on a static test module are usually followed by a test drive in a suitably adapted vehicle on a private road.

Choice of vehicle—When choosing a motor vehicle a disabled person and his or her advisers need to consider several points: (*a*) How will I and my passenger (who may also be disabled) get in and out of the car? (*b*) Are there problems of wheelchair access and stowage? (*c*) Would I like to drive from a wheelchair? (*d*) Is an automatic transmission necessary or desirable? and (*e*) Is power assisted steering necessary or desirable?

Access—Cars with two rather than four side doors generally provide a much wider aperture and therefore better access for both the driver and front seat passenger. Some manufacturers supply a disabled driver's model of a standard two door saloon, which includes extended seat runners to allow greater retraction of the front seat. Extended seat runners can be fitted to most cars from upwards of £40 depending upon the vehicle model. Advice on getting in and out of cars, including wheelchair transfers, hoisting, and stowage, is given in an excellent booklet published by the Department of Transport.

Driving from a wheelchair is achieved in two ways. Firstly, the disabled person in his or her wheelchair is hoisted into the empty seat well of the car, or, secondly, a specially adapted vehicle is used and the wheelchair and its occupant enters by a ramp at the rear or side of the vehicle, the seating having been removed. Secure anchorage of the wheelchair and the wearing of a seat belt securely attached to the vehicle frame to the test standards of the Department of Transport is essential.

Automatic or manual transmission—Some disabled drivers, for example those with hemiplegia or those without any use in their legs, such as paraplegics, will require vehicles with automatic transmission, and others, for example those with painful arthritic joints, may also benefit. Fortunately, many smaller vehicles now have automatic gearboxes. Currently 45 models of car under 1·6 l engine size are available with automatic transmission.

Power assisted steering may be essential to people with neurological impairment of their arms and of considerable help to those with painful conditions of the arms and spine.

Swivel seats (fig 1)—Access to vehicles can be improved by converting the existing car seat so that it is capable of rotating in and out of the car or by removing the existing seat and installing a special swivel seat. The price of these seats and the cost of fitting ranges from about £175 to £335. The seat should be capable of being locked in the rotated out position and have a headrest. Ideally it should be capable of sliding backwards and forwards in addition to rotating and have a good seat back, which can be reclined. "Leather look"

Derby Disabled Driving Centre, Kingsway Hospital, Derby DE3 3LZ

Christian Murray-Leslie, FRCP, *consultant in rehabilitation medicine*

Series edited by: Professor Graham Mulley.

Br Med J 1990;**301**:1206-9

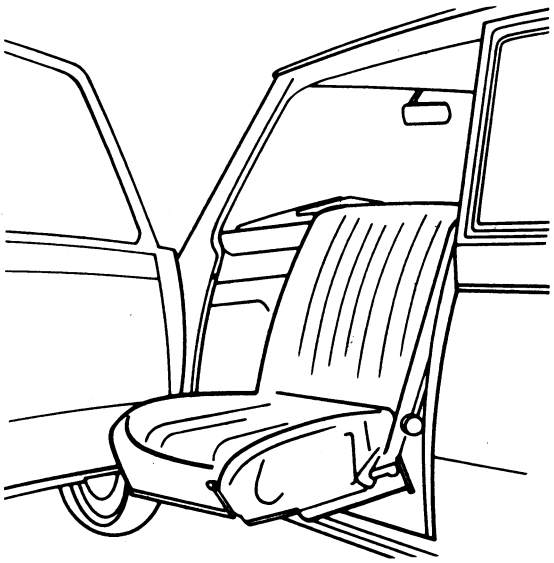

FIG 1—*Swivel seat. Reproduced from "Ins and Outs of Car Choice" by kind permission of Department of Transport*

FIG 2—*Clip on seat belt extension handle. Reproduced from "Ins and Outs of Car Choice" by kind permission of Department of Transport*

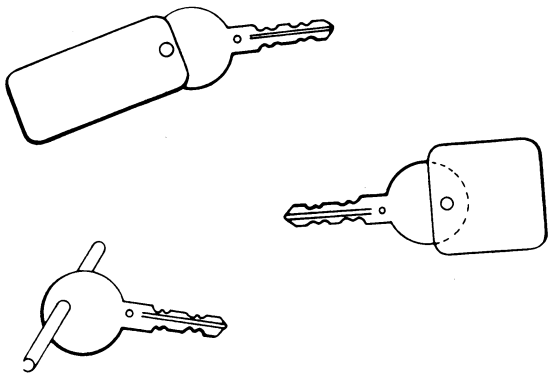

FIG 3—*Car key handle modifications to assist gripping. Reproduced from "Ins and Outs of Car Choice" by kind permission of Department of Transport*

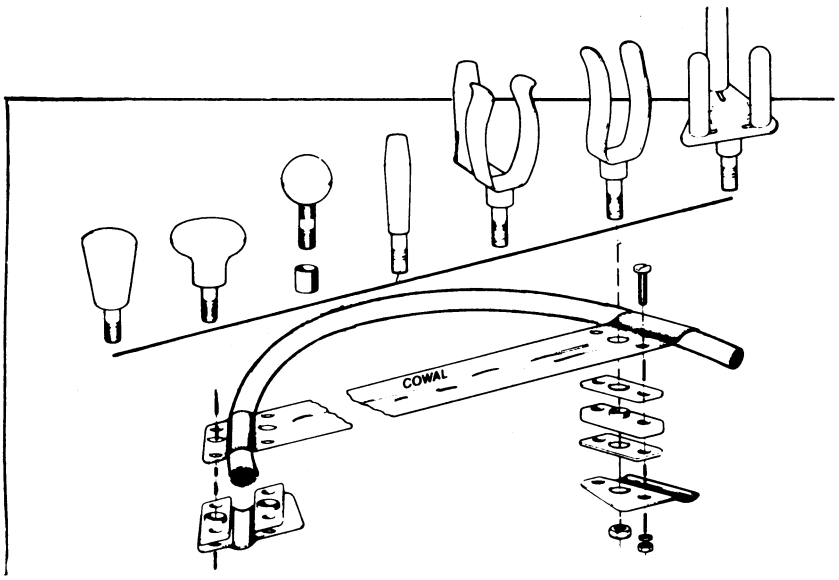

FIG 4—*Variety of steering knobs and spinners with cross wheel brace*

seats that have less friction will help transfers in and out of a wheelchair.

Seat cushions—Many disabled people will drive sitting on a cushion for comfort, to prevent pressure sores, or because they are short in stature. If cushions are used with the usual lap and diagonally fitted seat belts they should be firmly constructed and anchored to the back of the seat. If the cushions are soft or filled with air they should be enclosed in a firm cover and firmly anchored to the back of the seat to prevent abdominal injuries from seat belts.

Seat belts—Disabled drivers and disabled passengers should generally wear seat belts and certificates of permanent exemption from use are seldom justified. Some people, however, do have problems with seat belts. Some prefer the static rather than the inertia belts. If an inertia belt is used one with a lower recoil force may be more comfortable to wear and easier to fasten. Comfort clips to reduce tension in an inertia system by including slack in the belt can reduce their safety and must be fitted carefully. Lowering the upper anchorage point of the belt may reduce pressure on the side of the neck. Disabled people commonly experience difficulty in reaching seat belts, and this can be cheaply and safely achieved by using a simple clip on extension handle (fig 2). The difficulty disabled people experience in fastening and unfastening seat belts can be remedied by using a different system, such as a static or inertia belt with less recoil, or a buckle.

Cars keys (fig 3)—People with weak or arthritic hands may have difficulty manipulating the key either in the car door or in the ignition switch. Most occupational therapy departments or rehabilitation workshops can make simple modifications to the base of the key to help grip.

Additional car mirrors—Some drivers with severely restricted neck movement (such as in advanced ankylosing spondylitis or severe cervical spondylosis) may not be able to see to the rear with standard car mirrors. They must report their disability to the licensing authority. Panoramic mirrors, which can be clipped on to the interior driving mirror, give an increased field of vision to the rear of the vehicle. Difficulties with reverse parking in those with restricted neck mobility can be helped by using an angled lens fitted to the rear window in conjunction with a standard interior rear view mirror.

Steering knob (fig 4)—Those who need to steer with one hand will require a knob to be attached to the steering wheel, which will allow adequate grip from full wheel lock to full wheel lock. People using a steering knob will include paraplegics who require the other hand to operate the brake and accelerator and those with hemiplegia who can use one foot for the brake and accelerator but who have only one functional hand with which to steer. People with weak or absent grip in both hands will require a specialised tetraplegic steering spinner, which are available in different shapes and sizes. Conventionally, steering knobs are positioned at the 10 o'clock and 2 o'clock position for left and right handed use respectively. Some drivers, however, find other positions more comfortable. The effective use of a steering knob can be supplemented by using a vehicle with light steering or by ultralight power assisted steering.

Hand controls—A hand operated accelerator and brake are necessary when a driver does not have the use of both legs. These controls are generally used with an automatic gearbox, the driver steering with the other hand (usually the left) by using a wheel mounted steering knob. Design of hand controls varies, but the system usually works on an extended lever system attached to the conventional accelerator and brake pedals and mounted by the steering column (fig 5). Acceleration is achieved by pulling the handle towards

the driver and braking by pushing the lever away. The systems are inexpensive (on average about £150), and there are several specialist conversion firms who will undertake the work (see appendix). When driving a vehicle fitted with hand controls the driver may take the other hand off the steering wheel when the vehicle is stationary to engage or disengage the handbrake.

Left accelerator conversions (fig 6)—For people who have had their right leg amputated any higher than the ankle and patients who have suffered a right hemiparesis a left sided accelerator will be needed with the brake pedal in its usual position.

Hand brake aids (fig 7) lengthen the hand brake to help the person with a short reach and make the handle of the brake easier to grip and the inhibitor button easier to release. These adaptations are useful to any person with weak painful hands. Again these aids are fairly cheap and can be obtained and fitted by car conversion specialists.

Costs—Providing aids will entail some extra expense, often fairly small and less than £200, but a change of vehicle would be more expensive. Much more expensive, sophisticated systems include remote joystick steering or specialised vehicles or adaptations to enable the person to drive from a wheelchair. Mobility allowance and its associated concessions, such as exemption from vehicle excise duty (car tax) and the conversion of mobility allowance to vehicle purchase or hire by instalments through the motability scheme, may do much to defray costs (see appendix). Unfortunately, mobility allowance is not available to those who have disabilities of the arms alone and who may require driving aids and, though paid until the age of 80, must be applied for before the 65th birthday.

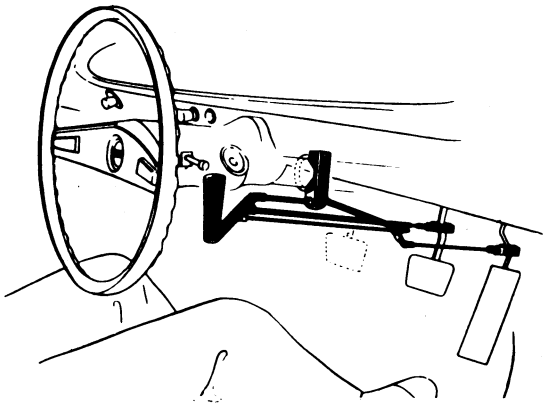

FIG 5—*Accelerator and brake operated by right hand*

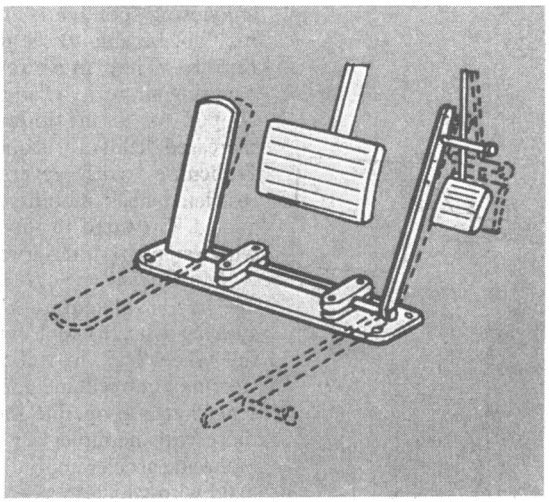

FIG 6—*Flip up-flip down left accelerator conversion*

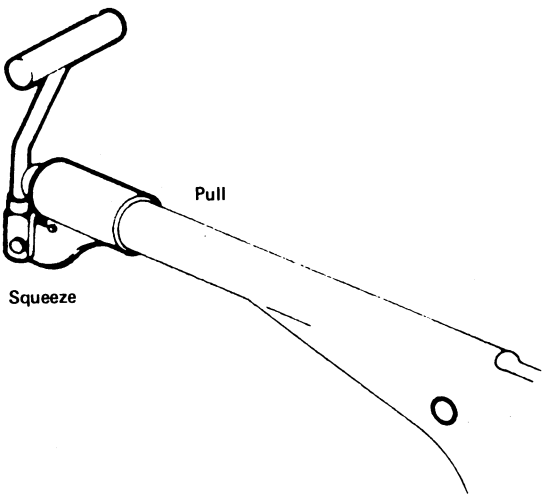

FIG 7—*Hand brake release aid*

Appendix

DRIVING ASSESSMENT CENTRES

Banstead Mobility Centre, Park Road, Banstead, Surrey SM7 3EE (07373 51674/56222)*

Derby Disabled Driving Centre, Kingsway Hospital, Kingsway, Derby DE3 3LZ (0332 371929)*

Mobility Advice and Vehicle Information Service, Department of Transport, TRRL, Crowthorne, Berkshire RG11 6AU (0344 770456. Information service only 01 212 5257)

Mobility Centre, Hunter's Moor Hospital, Newcastle upon Tyne NE2 4NR (091 2610895)

Mobility Information Service, Unit 2A, Atcham Estate, Upton Magna, Shrewsbury SY6 6UG (0743 75889)

Northern Ireland Council on Disability, 2 Annadale Avenue, Belfast BT7 3JR (0232 640011)

Rookwood Driving Assessment Centre, Rookwood Hospital, Llandaff, Cardiff CF5 2YN (0222 566281)

Stoke Mandeville Hospital, Occupational Therapy Workshop, Mandeville Road, Aylesbury, Buckinghamshire HP21 8AL (0296 84111)

Tehidy Friends Mobility Centre, Tehidy, Camborne, Cornwall TR14 0SA (0209 710708)*

The Mobility Centre, Hunter's Moor Hospital, Hunter's Road, Newcastle upon Tyne NE2 4NR (091 210454)

Vehicles for the Disabled Centre, Astley Ainslie Hospital, 133 Grange Loan, Edinburgh EH9 2HL (031 667 3398)*

Wales Disabled Drivers' Assessment Centre, 18 Plas Newydd, Whitchurch, Cardiff (0222 615276)

*Centres that also provide medical assessments

CAR MODIFICATION FIRMS

London area

Automobile and Industrial Developments Ltd, Queensdale Works, Queensthorpe Road, Sydenham, London SE26 4JP (01 778 7055)

Feeny and Johnson (Components) Ltd, Alperton Lane, Wembley, Middlesex HA0 1JJ (01 998 4458)

D G Hodge and Son Ltd, Feathers Lane, Wraysbury, Staines, Middlesex (078481 3580)

Reselco Engineering Ltd, Kew Bridge Pumping Station, Green Dragon Lane, Brentford, Middlesex TW8 0EF (01 847 4509)

South

Wards Mobility Services Ltd, Ware Works, Bells Yew Lane, Tunbridge Wells, Kent TN3 9BD (089275 686)

Poynting Conversions, Faraday Road, Churchfields Industrial Estate, Salisbury, Wiltshire SP2 7NR (0722 33 6048)

Cowal (Mobility Aids) Ltd, 32 Newpond Road, Holmer Green, Near High Wycombe, Buckinghamshire HP15 6SU (0494 714400)

Brig-Ayd Controls, Warrengate, Tewin, Welwyn, Hertfordshire AL6 0JD (043871 4206)

Brian Page, Specialist Auto Mechanics, 18 Pooley Green Road, Egham, Surrey TW20 8AF (0784 35850)

Steering Developments Ltd, Unit 3, Eastman Way, Hemel Hempstead, Hertfordshire HP2 7HF (0442 212918)

Interbility Ltd, 5 Badminton Close, Bragbury End, Stevenage, Hertfordshire SG2 8SR (0438 813365)

South west

Adaptacar, Cooks Cross, South Molton, North Devon EX36 4AW (07695 2785)

Philip Willey, Box 19, Portishead, Bristol BS20 8AS (0272 845061)

Midlands

Ashley Mobility, Hay Road, Hay Mills, Birmingham B25 8HY (021 772 5364)

Derby Disabled Driving Centre, Kingsway Hospital, Kingsway, Derby DE3 3LZ (0332 371929)

Midland Cylinder Rebores Ltd, Torrington Avenue, Coventry, West Midlands CV4 9BL (0203 462424)

Ross Auto Engineering Ltd, 2/3 Westfield Road, Wallasey, Cheshire L44 7HX (051 653 6000)

North

Alfred Bekker, The Green, Langtoft, Near Driffield, North Humberside YO25 0TF (0377 87276)

Eurostag (Leeds) Ltd, Wellbridge Industrial Estate, Wellington Bridge, Leeds 12 (0532 444765)

Motor Services (Manchester) Ltd, Royal Works, Canal Side, Edge Lane, Stretford, Near Manchester M32 8HS (061 865 6922)

SWS Motor Bodies, Unit 9, Hartford House, Newport Road, Weston Street, Bolton, Lancashire (0204 395660)

KC Mobility Services, Unit 4A, Victoria Mills, Bradford Road, Batley, West Yorkshire WF17 8LN (0924 442386)

MOBILITY ALLOWANCE

A non-taxable, non-contributory benefit paid monthly to severely disabled people aged over 5

To be eligible an applicant must: (*a*) be unable to walk or virtually unable to walk; (*b*) apply before 65th birthday; and (*c*) be able to make use of the allowance (for example, not be in a coma)

It may be spent on any form of mobility assistance

It enables a person to hold a driving licence from the age of 16

It entitles a person to possess an orange badge for privileged parking

It gives exemption from vehicle excise licence duty (road tax)

It enables a person to use the motability scheme

MOTABILITY SCHEME

Motability is a voluntary organisation set up by government initiative to help disabled people use their mobility allowance in instalment payments to obtain a car or electric wheel chair. Hire purchase and hiring agreements are made with Motability Finance Ltd, a special company that negotiates favourable financial terms with motor manufacturers, banks, etc. When an agreement is entered into the entire mobility allowance must be paid over for the duration of the agreement (four and a half years for vehicle purchase, three years for vehicle hire). A list of cars available for purchase and hire and the cost is available from Motability. When a vehicle is hired the cost of servicing and repairs are included in the rental, but when a vehicle is being purchased the user must pay for the repairs and maintenance.

Further details are available from Motability, Gate House, West Gate, The High, Harlow, Essex CM20 1HR (0279 635666).

Further information and recommended reading

The ins and outs of car choice. London: Department of Transport and Institute of Consumer Ergonomics, 1985.

Cochrane GM, Wiltshire ER, eds. *Outdoor transport.* 6th ed. Oxford: Mary Marlborough Lodge, 1987. (Equipment for Disabled series.)

Royal Commission on Accident Prevention In: Raffle A, ed. *Medical aspects of fitness to drive.* London: HMSO, 1985.

Darnborough A, Kinrade D. *Motoring and mobility for disabled people.* 4th ed. London: Royal Association for Rehabilitation and Disability, 1988.

Motability leaflet prepared by Motability, Gate House, West Gate, The High, Harlow, Essex CM20 1HR.

Mobility Allowance. (Leaflet NI.211.) DSS Mobility Allowance Unit, Norcross, Blackpool FY5 3TA (0253 856123).

Correction

How district health authorities organise cervical screening

An authors' error occurred in this paper by Dr Andrea Elkind and others (20 October, pp 915-8). In table III the number (percentage) of general practitioners usually to be informed of test results should read 173 (98) and not 98 (55) as published.

MATERIA NON MEDICA

A burden laid down

Pilgrimage—an old fashioned word not often used. My immediate image was of mediaeval Christians travelling to Rome or modern Muslims on the Hajj to Mecca. Both encompass "a journey to a sacred place" and mine was no different from that. I have just had the privilege of providing medical cover for a Royal British Legion war graves pilgrimage to second world war graves in north Tunisia.

The background is interesting. Until the Falklands campaign in 1982 it was not the United Kingdom's practice to bring home the bodies of men and women who had died in conflicts overseas. After that conflict, however, the government funded a pilgrimage for relatives to visit graves in the Falklands. This factor, coupled with the discussions after the fortieth anniversary commemorations held in Bayeux, Normandy, in 1984 resulted in the announcement of the government grant in aid scheme, which in simple terms provides a war widow with seven eighths of the cost of visiting her late husband's grave overseas (provided she has not done so before at public expense). Since then some 2000 widows have used the scheme, and it is thought that there are up to 38 000 who are still eligible to benefit.

The logistics of the pilgrimages are dealt with by the Royal British Legion (RBL) which acts as an agency for the government grant in aid scheme. It will organise pilgrimages to wherever there is a demand, and the scheme has visited cemeteries in the Far East and Africa as well as Europe.

Our pilgrimage consisted not only of war widows but also of siblings and children of those killed, together with veterans of the North Africa campaign. (Of course, only war widows are entitled to a subsidy.) We had a group of 48 with an administrative team of five, the RBL organiser, the RBL national executive committee representative (a retired lieutenant colonel who was a veteran of the campaign), the RBL standard bearer, a Queen Alexandra's Royal Army Nursing Corps sister, and myself.

And what of health? Before the pilgrimage the RBL arranged for general practitioners to complete health proformas. Of my pilgrims 21 claimed freedom from ailment, six had myocardial infarctions or angina, six were hypertensive, seven had joint pains, three were bronchitic, and eight had a variety of complaints. Fortunately, luck smiled on us and apart from the inevitable gastrointestinal upsets we had no major problems. I should add that not all pilgrimages are free of injury and illness.

The pilgrimage lasted a week, which meant that there was sufficient time to get to know the pilgrims and listen to their sometimes very sad tales—a splendid group of women they are. Now, a few weeks later, I am left with one overriding impression, which is the tremendous therapeutic value the pilgrimage had for all concerned. I give you three examples. The first was a widow whose husband was killed in 1943. She remarried, as did most of the widows, but her second husband was not happy with the idea of her visiting her first husband's grave—understandable, perhaps, but sad. Therefore she had to wait until widowed a second time before visiting her first husband's grave and achieving a "wish I have had for the past 47 years and never thought would come true." Similarly, there were children, now in their 50s, who cannot recall their father but wanted to visit his grave. Lastly, there was a quiet, shy lady. She had never remarried but had returned to her home city overseas and brought up her dead husband's children in difficult circumstances. Now they all have had the chance to complete their grieving.

After a rest day visits were organised to the eight Commonwealth War Graves Commission cemeteries in Tunisia. I accompanied the largest group to the main cemetery at Medjez-el-Bab. The sense of calm in the cemeteries is almost palpable, and the commission deserves praise for the beautiful gardens it tends so well. After this day many of the widows spoke not only of a fulfilment of a long held ambition but also of a sense of completeness as if a burden had been laid down.

Later in the week we had a service and wreath laying, which the British ambassador attended. That allowed the widows to place their personal grief in a more formal context, to the accompaniment of the RBL standard bearer and Tunisian army buglers.

"At the going down of the sun and in the morning / We will remember them." I trust so; certainly their widows do, and I hope you may be able to help those war widows who are your patients by putting them in touch with the pilgrimage department of the Royal British Legion. Then they too may be able to loose their burden of grief.—T P FINNEGAN, *commanding officer, 4 Armoured Field Ambulance, RAMC*