she points out, that did not matter since she was already convinced that there is an overwhelming case for their replacement. Apparently a small car adapted for driving by a disabled person is now cheaper than a three-wheeler and likely to become progressively more so. Add to this the noisiness, lack of comfort, and unreliability of the three-wheelers, and the fact that they cannot take passengers, and it is clear that the converted motor car is a far better vehicle for most disabled drivers.

Unfortunately this presents a problem. Lady Sharp argues—and many would agree—that "there can be no justification for insisting that a disabled person otherwise eligible cannot have a car if he or she is unable or does not want to drive, and can nominate an appropriate person to be the driver." One advantage of a change to cars would, she claims, be that disabled people who really should not be driving would no longer feel under any compulsion to try. But once it was agreed that disabled people could be supplied with cars to be driven either by them or by someone else the demand would be vast—perhaps 200,000 cars—and restrictions on eligibility would be needed. Lady Sharp recommends a test based on both physical handicap and on social need, by which she means a need for a car to get to and from a full-time job, to get to a place of further education, or to look after a household or keep a family together. What could not be offered would be cars to give disabled persons simply social mobility—travel to and from church and tea with friends—so that the change could mean loss of the right to a vehicle for some who have them at present. Furthermore there are quite a number of disabled people for whom the three-wheeler is preferable on practical grounds. It gives more headroom; it can accommodate a wheelchair; its tiller steering is easier for some disabled to manage; and it is small, tucking out of the way when parked. Lady Sharp was told that if cars replace three-wheelers for many people then the three-wheelers will go out of production, and again some disabled would suffer.

At this point it becomes clear that the wheel has turned a full circle. The three-wheelers were first introduced as a development of the motorized Bath chair, itself a vehicle provided to overcome the disabled person's inability to walk—an extension of the artificial limb. As such it was clearly a personal aid. Progressive improvements to the powered chair made it in effect a small three-wheeled car. Only then was it compared with a car—and it compares very badly. However, as an all-weather self-propelled wheel-chair it does quite well.

The proposed switch from a powered wheel-chair to a family car changes the whole concept from a medical aid to a social service. Almost every family wants a car; and, as Lady Sharp points out, it is not only the physically disabled whose lives would be transformed by one. There are those who are virtually housebound by the need to look after a mentally handicapped child or an ageing relative. Should cars really be the first priority in Government spending on the disabled? A disablement income as of right,[2] which is already given to the disabled in several E.E.C. countries, might well be seen as more equitable. Clearly if cars are made available there will need to be a stringent controls on their issue, and this will lead to feelings of unfairness among those who do not get them, who will be in the majority.

Lady Sharp suggests that it would take four or five years to provide the 40,000 cars she estimates would be needed if the policy were changed, and that may explain Government reluctance to declare the three-wheelers unsafe, since such an announcement would logically mean that they should be taken off the road at once. Before any final decision is taken some clear thinking is needed on the purpose for which vehicles should be provided for the disabled and on their place in the hierarchy of priorities.

[1] Lady Sharp, *Mobility of Physically Disabled People*. London, H.M.S.O., 1974, price 42p.
[2] *Creating a National Disability Income*, Occasional paper no. 12. Godalming, Disablement Income Group, 1972.

Adverse Reactions to Beta-Adrenergic Blockade

Beta-adrenergic blocking drugs isolate the heart from the effects of sympathetic stimulation. They slow the heart rate, reduce the velocity of contraction, and delay atrioventricular conduction. Inhibition of beta-receptor stimulation in the bronchial tree and peripheral circulation enhances bronchoconstrictor and vasoconstrictor mechanisms, while inhibition of the sympathetic transmitters increases the influence of the parasympathetic system. The contraindications to the use of beta blockers result directly from their anti-beta-adrenergic action. In general they should not be prescribed in congestive heart failure after acute myocardial infarction, in states of impaired atrioventricular conduction, or to asthmatics. In conditions of vagotonia—as is common after myocardial infarction—unopposed vagal action may lead to profound falls in cardiac rate and output.

Since the introduction[1] of propranolol in 1964 beta-adrenergic blocking drugs have been widely used. Three drugs are generally available in Britain; propranolol and oxprenolol,[2] which are nonselective and short acting, and practolol,[3] which is longer acting, blocks predominantly excitatory receptors, and is therefore relatively cardioselective. Neither the membrane stabilizing effects demonstrable in the D-isomer of propranolol and in oxprenolol nor the mild agonist activity demonstrable before beta-inhibition in oxprenolol and practolol have any clinical relevance. All the therapeutic and toxic effects and most if not all of the side effects are attributable to the beta-blocking action. These drugs find their most important application in the treatment of angina. Their other principal uses include the treatment of high blood pressure, thyrotoxicosis, hypertrophic cardiomyopathy, and cardiac dysrhythmias.

In a report from the Boston Collaborative Drug Surveillance Program Greenblat and Koch-Weser[4] have reported on the adverse reactions to propranolol found in 268 medical patients in hospital with a wide variety of cardiovascular disorders. No deaths were attributed to the use of the drug. Eight patients suffered life threatening reactions, and in each case the adverse effects could be attributed to the pharmacological action of the drugs. Extreme bradycardia occurred in a 70-year-old with thyrotoxicosis on a dose of 120 mg per day and pulmonary oedema or extreme bradycardia developed in two patients after acute myocardial infarction. Three patients with heart disease, all elderly, developed pulmonary oedema or bradycardia, and two other patients with ischaemic heart disease developed hypotension and shock. Non-life threatening reactions occurred in 15 patients; again most were directly attributable to a beta-adrenergic blocking action detrimental to the patient. The Boston report concluded that the use of propranolol in patients in hospital is associated with appreciable risks, but that adverse reactions can be predicted in patients with severely compromized cardiac function.

The cardiac depressant effect of beta-blockers is widely quoted, but exactly what is meant by the term needs to be specified. The ailing heart has two compensatory mechanisms, both of which can be interfered with by beta-blockade. By the intrinsic Frank-Starling mechanism the increased diastolic stretch inevitable after an increase in venous return brings about an increased force of contraction and higher stroke volume. Secondly, there is a humoral action through which sympathetic stimulation increases the heart rate when the stroke volume is low and maintains contractile strength at maximum. The performance of the heart may decline after slowing of its rate, a fall in venous return, interference with atrioventricular conduction, or a decrease in the force of contraction, any one of which may be the means whereby the beta-blocker causes its adverse effect in a particular patient. Conversely these same actions can in other circumstances improve function, as in angina by reducing metabolic demand; in mitral stenosis by giving time for the left atrium to empty; and in dysrhythmia through slowing conduction time.

Other side effects of beta-blockers are less serious and usually dose related. There has been recent interest in their psychotropic effects[5] and particularly in an hallucinogenic action in a few patients. Drowsiness, lassitude, and depression may occur, particularly with prolonged high dose treatment. Special caution is needed in the elderly, in those with poor renal function, and in those with cardiac failure or recent acute myocardial infarction.[6 7] Reduction of the sympathetically stimulated contractile force of the muscle is the least important of all the beta-blocking effects, but patients with advanced myocardial failure should be fully digitalized—remembering that beta-blockers have a synergistic effect with digitalis in slowing the heart rate in atrial fibrillation. Unlike digoxin beta-blockers can be used to slow the heart in sinus rhythm. Diuretics can be used to counteract any sodium retaining effect of the beta-blocking drugs.

While it is important to stress the potential hazards of these drugs it is also important to stress their safety in patients with uncomplicated angina or hypertension. In angina the benefit is directly attributable to reduction in the work of the heart. Since, however, the onset of pain is preceded by depression of myocardial function from hypoxia, and disappearance of pain is associated with recovery of function, the prevention of angina by beta-blockers is not accompanied by a risk of provoking heart failure—except in patients who have already suffered serious ventricular damage.

There seems little to choose between the three drugs in the incidence of adverse reactions or between propranolol and oxprenolol in the treatment of angina or hypertension. Practolol has been shown to be less effective in the relief of angina[8]; partly because it is less successful in reducing the heart rate during exercise, but also because its lack of peripheral action results in a less marked fall in cardiac output, and thus of ventricular size and work, than occurs with propranolol and oxprenolol. For the same reason practolol is to be preferred in the treatment of dysrhythmias, particularly in patients with a compromised myocardium as in congestive cardiomyopathy or after acute myocardial infarction and it can be tried with caution in patients with obstructive airways disease who have angina.

[1] Black, J. W., Crowther, A. F., Shanks, R. G., Smith, L. H., and Dornhorst, A. C., *Lancet*, 1964, 1, 1080.
[2] Brunner, H., Hedwall, P. R., Maier, R., and Meier, M., *Postgraduate Medical Journal*, 1970, suppl., 46, 5.
[3] Barrett, A. M., *Postgraduate Medical Journal*, 1971, suppl., 47, 7.
[4] Greenblatt, D. J., and Koch-Weser, J., *American Heart Journal*, 1973, 86, 478.
[5] Greenblatt, D. J., and Shader, R. I., *Current Therapeutic Research*, 1972, 14, 615.
[6] Epstein, S. A., and Braunwald, E., *Annals of Internal Medicine*, 1967, 67, 1333.
[7] Fitzgerald, J. D., *Clinical Pharmacology and Therapeutics*, 1969, 10, 292.
[8] Prichard, B. N. C., Lionel, N. O. W., and Richardson, S. A., *Postgraduate Medical Journal*, 1971, suppl., 47, 59.

Age and the Face

The rate of decrease in elasticity of the facial skin varies greatly in individuals, some people appearing still quite young at an age when others look positively ancient. Climatic conditions influence the change, and those who have spent years under tropical suns tend to be noticeably lined and creased. Slimming and loss of weight through illness or anxiety will also produce an appearance of accelerated ageing. Not unnaturally, specialist surgical techniques have been developed to try to reverse the process, most times with gratifying results, but sometimes not.

In selection of his patients the wise surgeon avoids those who appear to be psychologically disturbed and those who attribute personal problems to their appearance, whereas he will accept for treatment patients who come to him and plainly state their dislike of their looks and those whose very work depends upon their physical features. General physical health and medical history are also important—patients with a bleeding tendency should be refused such operations.

The patient must be informed of the possible complications of any treatment and the time taken for a full recovery; too often people attend their doctors asking for cosmetic surgery, not knowing anything about the procedures, totally unaware of the risk of complications, and with no idea of the duration of hospital stay needed.

Surgeons tend to discourage patients from having treatment on the N.H.S. and those that are accepted almost always have their names at the end of the waiting list. Regrettably, they tend to stay near the bottom as the more urgent cancer, congenital deformities, and accidents of all kinds are naturally given preference. If the patient insists on early treatment and wants a guarantee that a specific surgeon will operate on her she not infrequently decides to have private treatment.

The operative techniques, though specialized, are fairly standard. The forehead is rarely tackled—only where the furrows are deep and severe. The approach is through an incision on the edge of the hair line, not in the hairline; the skin is difficult to lift off the muscle, and marginal areas of breakdown are not infrequent. A scar can always be seen, though in time it will become visible only to close examination. The so-called "minilift" is only of temporary benefit and is performed in the hair in the upper temporal region on each side. Deep frown marks are removed by direct excision, with undermining of the neighbouring skin to detach the corrugator and procerus muscle attachments. When the frown marks are double an approach is often made in the eyebrow on each side, with undermining of the muscle attachments and division of the nerves. This procedure is helpful, but a permanent paralysis (and therefore permanent cure) cannot be guaranteed, for reinnervation not infrequently occurs.

Upper eyelids can be reduced by excision of the redundant skin with a curved incision in the crease of the eyelid. The fatty herniation on the inner side is removed and the sac closed by suture. The lower lids can be reduced by an incision along the margin, then outwards and slightly downwards in one of the "crows feet," and the slack is taken out laterally.