

Letters to the Editor

Sir—Ocular injury from external rear view mirrors.

Two cases of penetrating eye injury from door mounted rear view mirrors are described. The regulations governing these devices are discussed and specific areas for improvement are outlined.

Since the introduction of compulsory front seat belt wearing in the United Kingdom in 1982 there has been a marked decrease in the incidence of ocular and facial injuries following road traffic accidents.^{1,2} This is due to the prevention of trauma sustained from the head directly impacting the windscreen. However, the risk of injury caused by flying fragments of glass remains.

Case Reports

Case 1

An eighteen year old female was driving her car with the offside window fully open. Her door mounted rear view mirror was shattered by an oncoming car (Fig 1). She sustained a six millimeter corneal laceration of the right eye, close to the visual axis. Although full thickness at one point, the anterior chamber was formed and there was no damage to the deeper ocular tissues. The cornea was surgically repaired, and the eye has made an uneventful recovery with 6/9 corrected visual acuity.

Case 2

A twenty year old man was driving his car with the offside window fully open. An oncoming car hit the



Fig. 1 External rear view mirror following trauma.

door mounted rear view mirror which shattered. He sustained a six millimeter full thickness corneal laceration to the right eye with iris prolapse. The crystalline lens was not involved. Surgical repair was necessary. The eye made a good recovery with a corrected visual acuity of 6/6.

Discussion

Since 1978, all exterior rear view mirrors fitted to cars in the United Kingdom have had to be type approved to European Community Directive 71/127/EEC.³

The directive has been amended several times but has always included an impact test which limits the amount of glass that can be detached. The latest revision in 1985⁴ allows breakage of the reflecting mirror surface if one of the following conditions is fulfilled:

(1) the fragments of glass will adhere to the back of the mirror housing; partial separation of the glass from its backing is admissible provided this does not exceed 2.5 millimeters on either side of the cracks.

(2) the reflecting surface is made of safety glass.

Safety glass is defined as glass constructed or treated in such a way that if fractured it does not fly into fragments likely to cause severe cuts. The majority of external rear view mirrors are made of plain glass and fulfill the legal requirements by complying with condition (1).

These are the first reported cases of serious penetrating eye injury sustained from breakage of door mounted rear view mirrors. They may have been prevented if the mirror glass were more difficult to fracture or if the frag-

ments adhered more efficiently to their housing.

Although these two cases have retained good visual acuity, this type of injury can cause distressing ocular morbidity, and has the potential to cause loss of an eye.

Laminated windscreen glass has been shown to cause significantly fewer and less severe injuries than toughened windscreen glass in automobile collisions.⁵ The regulations governing the type of glass used in external rear view mirrors and their method of fixation should also be reviewed.

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- ³ *Official Journal of European Communities* 22-3-1971, **L68**: Annex 1, 4-8.
- ⁴ *Official Journal of European Communities* 29-3-1985, **L90**: Annex 2, 8-12.
- ⁵ Mackay GM, Siegel AW, Hight PV. Tempered versus HPR Laminated Windshields—A comparative Study of United Kingdom and United States Collisions. Paper 700911. In *Proceeds of the 14th Stapp Car Crash Conference*, New York. SAE 1970: 369-87.