

have managed to avoid failures of this sort in electricity generating plant for the past few years.

TRAFFIC

Controlling Motorways

THE first of the winter's series of major accidents on the motorways, in freezing fog and black ice last week, found the British Ministry of Transport in a strangely uncommunicative mood. The accidents involved large numbers of vehicles—as many as 200 at one stage on the M1, according to one police officer. Mr Dudley Smith, Member of Parliament for Warwick and Leamington, declared that the Ministry of Transport was “complacent” about motorway safety, demanded a system of motorway warning signals and said he intended to raise the matter in Parliament.

To all this the ministry has made no audible response. Yet it has recently signed a contract with the General Electric Company which will equip 62 miles of motorway in the West Riding of Yorkshire (38 miles of it on the M1) with a warning system as advanced as any in the world. The system should be operational by the autumn of this year, and will be followed by similar systems on other motorways which should cover the whole of Britain by the mid-seventies. So far, however, it is a development which has gone almost unnoticed, although the first system, built by Plessey Ltd, has been operating on the Severn Bridge section of the M4 for six months. Within the next two months, the next system, built by GEC and Elliott Automation on the overhead sections of the M4 (and on as far as Heathrow airport), will come into operation.

The purpose of the signals is to give drivers advice about maximum speeds in bad weather, or to stop them altogether when there has been an accident. On the Severn Bridge road, the signals (which use an array of bulbs) will be able to show speeds of 10, 20, 30, 40 and 60 m.p.h., and two signals which indicate either that the lane is closed or that it is clear. On the Severn Bridge approach and on the elevated section of the M4, the signals will occur at intervals of a quarter of a mile, although in open country the interval is likely to be one mile. When conditions are normal, no signal will be shown; but in fog or bad weather, or after an accident, the signal will show the maximum speed which is advised. The signal will not have the force of law except when it registers stop; drivers ignoring this will risk a £20 fine.

So far, the systems designed have concentrated on the output of information to the motorist from a central control point. But they will be ineffective unless the

input side, from the road to the control, also shows a considerable improvement. One major advance would be a system capable of detecting when a car or a line of cars had stopped. Sensors built into the road in the form of a ring might be one method of doing this; the moment a car entered the ring would be detected by the central computer, as would the moment it left it. If the car stopped within the ring, it would immediately be detected by the computer, and information could be displayed on the signals to prevent other cars piling up behind it. A system like this would have a response time very much less than is possible under present plans. (When the system is installed on the elevated section of the M4, the central control will have to rely on motorists telephoning to say that they have broken down. By the time the signals are activated, there will have been ample time for a pile-up.)

Another drawback is that the signals are only advisory. There is a danger that drivers will simply ignore them, as they have ignored the temporary warning lights which have operated in emergency conditions on British motorways. If this happens, then it is likely that the signals will have to be given the force of law and some means devised for making sure people observe them. This emphasizes the need for detectors in the road which could measure the speed of vehicles, combined perhaps with television cameras in the overhead signals. In fact, although few people realize it, cameras of this sort already operate on the elevated section of the M4, and may provide a useful adjunct to the emergency telephones when the signals come into operation.

In spite of the fuss after last week's accidents, it is of course true that motorways have a better safety record than other roads. When accidents do occur, the density of the system ensures that they are big ones. In a sense, the nature of the motorways may be one cause of this; a system which sets out to remove all unexpected situations is likely to find its users unprepared when they do arise. This is why the warning signals are so important and why it is vital that they should remain credible. Like the boy who cried wolf, British transport authorities are all too inclined to scatter signs warning of danger where there is none, and motorists soon learn that the signs can be safely ignored.

INVENTION

Something for Everybody

THE collection of inventions that was on show in the New Horticultural Hall in Westminster last week involved the onlooker in frantic changes of mood, switching his attention one minute to practical mechanical devices and the next to the thrills of psychedelic lighting or the niceties of tea blending. Unfortunately the air of enthusiasm was not carried over to the presentation of some of the individual items, many of which were poorly looked after and inadequately advertised. The hundred or so inventors who were showing their own products no doubt contributed somewhat to the lack of professionalism; but the layout of the stands was not all that it might have been.

The inventions themselves could be divided into the mechanical, dominated by motor vehicle parts; the general utilitarian, such as household devices; and the

