AN International Symposium on Head Injuries was held in two parts, in Edinburgh and Madrid in April, 1970, under the joint chairmanship of Professor John Gillingham of the Royal Infirmary and Dr. Sixto Obrador of the Social Security Hospital of La Paz. A publication of the Proceedings is planned but in the interval a commentary seems warranted because of the importance of the subject. It would be impossible in a short review to summarize the many papers given or to acknowledge the authors; rather an attempt will be made here to produce a digest of the views.

It is evident that traffic accidents, considered at the Symposium as the primary etiological agent, have now assumed epidemic proportions. This is truer in the "overdeveloped" countries than in the developing ones, though even in many of the latter the urban problems are significant. It was recognized that alcohol is a grave precipitating factor, being involved in 50% of the deaths in some urban areas. Considerable concern was also expressed over the possible consequences of the worldwide increase in the use of drugs as an additional cause of slowing the driver's reaction time.

Australian studies indicate very clearly the importance of the driver's attitudes in the creation of accidents; one of seven individuals involved in fatal crashes on that continent has a criminal record in contrast to one in 20 in the general population. A plea was made for international standards of driver training and accreditation.

The need for improvement in road design and lighting and the provision of more effective protective devices such as the inflatable bag to reduce impact injuries were emphasized.

Considerable stress was placed on community planning in anticipation of emergency situations, and a film was shown entitled, "Before the Emergency," which is available through the Film Library of the American College of Surgeons. This film demonstrated facilities for roadside care provided by one small rural resort area in the State of Wisconsin, and emphasized that the time to plan is before rather than after tragedy.

Analysis of the mechanisms of head injury emphasized the millisecond nature of the actual impact. One entire session, with participation by ophthalmologists and otorhinolaryngologists, was devoted to the injuries of the face and jaw that may be associated with head injury. It was pointed out that the deafness resulting from disruption of the ossicular chain may be improved by reconstruction of the chain. Nor was the near 10% coincidence of cervical fractures and dislocations overlooked. The need for adequate cervical films in all head injuries was emphasized.

There was extended discussion of immediate roadside care and its role in the prevention of "the second accident," a euphemism used to label the mishandling provided by inept individuals, whether passersby or untrained ambulance crews. The possible value of inclusion of physicians as a part of the
ambulance team was discussed. From Oslo statistics showing that less than 25% of ambulance runs really require the service of a physician, it seemed evident that in these days of physician shortage such uses of restricted personnel could not be justified.

However, the experience of a group of British general practitioners who have organized themselves to provide emergency care on a radio call basis was impressive. Some 30 members formed the group, and the average time for one of them to reach an accident scene was 9 minutes, whereas the ambulance average, having to travel greater distances, was 17 minutes. It became increasingly clear throughout the discussion, particularly when the pathophysiology of head injury was considered, that these minutes can be of crucial importance. The general practitioners group showed the feasibility of providing at the site of the accident adequate airway by the passage of an endotracheal tube and of treating shock in infusion when indicated. In the past 2 years the rural practitioners rendered care in 600 accidents including 322 patients who were severely injured and could benefit from a physician’s immediate care. These figures obviously reflect a different set of roadside conditions from those in Oslo where the value of a physician’s service on the ambulance seemed less important. This is a volunteer organization, as yet unabsorbed into the British medical system. It is hard to believe that officialdom can long be blind to the obvious advantages of such foresight.

The conference participants, though concerned about the establishment and maintenance of an airway, are as a group much less enthusiastic about tracheostomy than in past years. One German group has reduced its use from a previous high of 240 instances in a single year to only three in the past year. It was stated that the newer types of endotracheal tube may be left in place for as long as 3 weeks.

There was general agreement that one of the pressing needs is adequate training of ambulance personnel. It was proposed that courses, reasonably standardized internationally, be provided, and in this connection the value of standardized interchangeable equipment was stressed. Many practical problems were recognized, for example, the difficulty in providing adequate ambulance bodies to be fitted to the chassis of automobiles built in different countries. As an example of inadequate planning there was cited the small ambulance with a low roof that does not provide adequate space for the attendant to carry out necessary maneuvers such as artificial respiration and cardiac massage.

In both Edinburgh and Madrid, before the conferees were shown the emergency room facilities available, very special emphasis was laid on that crucial interval between impact and the arrival of the patient in the emergency room. In a paper on the neuropathological changes studied in a large series of Edinburgh fatalities it was brought out that roughly 25% of the fatal complications could be related to the period before arrival in the emergency room. It became evident that the organization of head injury services in various parts of the world require different solutions. The high incidence of traffic accidents in Germany, for example, was in sharp contrast to the situation in India. It was generally agreed that in most countries roughly 90% of the head injuries are treated by general surgeons, and, therefore, it is essential that these men be exposed to the emergency handling of the problems and that they should be trained to provide definitive care of epidural hematomas. There was, however, little enthusiasm in the group for assigning to the general surgeon the responsibility for turning large flaps in search of possible acute subdural clots.

In some countries there have been developed “flying squads” which will go to the care of severely injured patients. In some instances, trained squads are members of the team, but usually on short ambulance calls the real need is for highly trained technicians rather than professional personnel. In general, short distances will be covered by ambulance and under certain circumstances by helicopter with the patient being brought to the proper facility. In more sparsely settled communities such as those of Australia, it may be necessary actually for a surgeon to be flown to the site of the first hospital to which an accident victim is taken.

The importance of two-way communication for on-site instruction of trained ambulance technicians and also for instruction of
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the driver concerning available facilities was emphasized. A special demonstration of a video-phone consultation was made between the emergency room at the Royal Infirmary and the meeting hall, a modification of the technique that has been developed between the main scene of the neurosurgical activities in Edinburgh at the Western General Hospital and the accident unit at the Royal Infirmary several miles distant. The usefulness of this sort of visual and auditory interchange between the casualty officer and the consultant was evident.

The inclusion in the Symposium of specialists from other disciplines was helpful in attaining a balance in the discussion. The need of cooperation among the various attending physicians was emphasized. The conclusion reached was that the surgeon in charge of the most urgent system difficulty should assume charge in instances of multiple injuries. There was general agreement that head injury units have a very real role in sharpening the focus on the nervous system, but that they should be a part of general neurosurgical units in order to foster further developments in the understanding of the pathophysiology which may well be relevant to advances in the treatment of many other neurosurgical problems. It should be noted, however, that at least some of the participants were concerned over segregation of neurosurgical cases. The argument was advanced that, in training hospitals, cases of central nervous system trauma should be scattered on the general surgical wards, since so often general surgeons are faced with responsibility for the care of patients with head injuries and therefore need to be exposed to a pertinent learning experience.

It would be fair to state that there has been no fundamental breakthrough in therapy. The value of specialized and dedicated nursing care was stressed. Enthusiasm for monitoring of multiple parameters was muted, and it was the consensus that monitoring is not a substitute for careful observation by nurses and physicians. No enthusiasm was expressed for either hypothermia or radical decompression, though the need of pressure control was recognized. It was conceded that ventricular drainage has a role to play when the various mechanical factors are properly understood.

It was in Edinburgh that the importance of rehabilitation was particularly emphasized, and a portion of the meetings was held at the Astley Ainslie Rehabilitation Unit to which patients from the Royal Infirmary are transferred when necessary following their acute care. There a broad rehabilitation program includes physical, psychological, social, and economic factors. The key role of the medical social worker in rehabilitation was recognized. In the Birmingham program of rehabilitation, a social activities club has been formed for which each patient may nominate two members. In this way a cooperative spirit is developed involving patients who share the same disabilities and their able-bodied friends and family.

The experience of the Ontario Industrial Commission was cited. The neurological clinic has dealt with 95 patients with major head injuries among a total load of 442 cases. Sixty of these patients were badly disabled, including 10 with decerebration. One half of the total number of patients with head injuries remained unemployed at the end of 5 years. In contrast, the Seville Rehabilitation Unit of 500 beds reported that of 522 patients with head injuries, 72% had returned to the old employment, some on a lighter form of work, and 22% proved unemployable. The two groups are by no means strictly comparable, and one can only speculate as to what the possible significance of the compensation element may be. From Lyon there was a report of 55 patients who had suffered long periods of coma, less than 3 weeks in 30, but more than a year in 10. Of this group, 55% had died, 12% of them were severely disabled, and 7% were crippled. Fifteen patients, or 29% of the total, reestablished their economic base. Of the 32 patients in coma for more than 2 months, two recovered, one was crippled, two were greatly disabled, and 22 died.

It is of interest that at no point did the Symposium face up to the very difficult medical, social, philosophical, and moral problems posed by the production, through our improved therapeutic methods, of vegetative states in individuals who in the past would have succumbed.

These then represent some of the general trends in the current handling of the head injured patient. A session on the pathophysiol-
ogy of head injury and a number of papers emphasizing immediate therapy and others dealing with post-traumatic epilepsy have been slighted in this report because critical analysis will necessitate seeing the relevant data, which will become available in the Proceedings. One is left with the impression that among the many topics of continuing importance four perhaps are outstanding: 1) prevention, 2) improvement of methods of handling acute injury, 3) the necessity of better understanding of pathophysiology, and 4) long-term care.

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