CONTEMPORARY THEMES

Head-injury Protection and Return-to-work Problems*

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During 1965, of the 4,960 scalp injuries reported to the Factory Inspectorate 126 were fatal. The number of reported accidents caused by falling objects during this period was 21,563, of which 87 were fatal. These figures, as well as the following discussion, show that there is a need for proper understanding of those problems related to the prevention of head injuries and the resettlement of the persons injured.

Protecting the Head from Injury

In many industries safety engineers advise on the prevention of head injuries. For many sections of the community, however—for example, housewives, children, self-employed, etc.—the only readily available adviser is often the family doctor.

A historical review of the different types of helmets worn since records have been available will demonstrate the problems to be faced. Long ago the protective value of metal was appreciated by Assyrian infantrymen, whose conical helmets were heavily armoured in copper or iron. The Egyptians of that period, however, preferred leather to metal helmets because they were cooler to wear, though less effective in preventing injury.

The lack of protection given by helmets to the sides and back of the head, as well as to the face, caused the Romans to add appendages in order to protect these parts. This enclosure concept developed in the knight's suit of armour. It was very effective in protecting a knight while he was astride his horse, but he quickly became a casualty when unsaddled. His lack of mobility resulted in death, either by suffocation or through being unable to defend himself.

The English longbowmen who won the battles of Crecy and Agincourt cut their hair short to avoid it blowing into their eyes and disturbing their aim. This allowed a light simple iron-pot helmet to fit snugly. The unwieldy nature of rimmed metal helmets was referred to in *The Times* of 19 May 1954, when it was reported that soldiers demonstrating assault landings on Eastney beach, near Southsea, could be seen clutching their rifles with one hand and holding their helmets steady with the other.

Once man became involved in travelling at speed the danger of head injuries increased. Sir Hugh Cairns (1941) stressed the importance to motor-cyclists of wearing a crash-helmet. Unfortunately it entered general use only when the name "skid-lid" was employed to popularize it. The way it clings to the head and its almost frictionless outer surface are vital factors in its design. There are British Standard helmet specifications for racing- and motor-cyclists, racing-car drivers, and industrial users, as well as hats for horse and pony riders. Also the British Hat and Allied Feltmakers Research Association has developed a "motorway cap." Modern helmets consist of an outer shell held in position on the head by an inner harness. It was stated by Gabb (1963) that, with materials then available, if blows at 150 ft. lb. (20.7 kg. m.) were to be reduced to sur-

vival level the distance between these two components must be of the order of 1½ in. (4.4 cm.).

The outer shell should be made of materials resistant to chemicals, electricity, heat, and varying degrees of violence. Its shape should prevent rainwater draining on to the body, and its design should protect the neck and ear regions. If the material of the internal harness shrinks after exposure to water the helmet would have to be worn on the back of the head, thus exposing the frontal area. This was one of the reasons to which I attributed the fact that 60% of head injuries sustained by coal miners at work were in the frontal area (Fernandez, 1964). The harness must be easily adjustable for size, and its inner surface be smooth if friction dermatitis is to be avoided.

Combating head injuries by relying on the wearing of a helmet is a second line of defence. Dangerous projections—for instance inside a motor-car—can be rendered less harmful by padding.

Training to avoid danger is an important preventive measure—for example, awareness of misjudging distances when wearing bifocal glasses on going downstairs. The aim must always be to design buildings and equipment so that danger from head injury is eliminated. When this is impossible the dangers must be made obvious, either by lighting or by pinpointing them by contrasting colouring. Industry uses black-and-yellow stripes for this purpose.

Resettlement of Head-injury Patients

Most of those who have suffered head injury make a complete recovery and return to their pre-accident employment. Those suffering from convulsive disorders must not be allowed to work at heights or in proximity to moving machinery or fire, or to drive vehicles (Jackson, 1958). Convulsions usually develop within a year or so of the injury. Of those who develop convulsions within 10 years 50% will cease to have them within that time. In a high percentage of patients who have a few seizures these will eventually stop altogether; in those who have a high frequency rate they tend to persist (Caviness, 1966). Convulsive episodes are more apt to occur during the night, and it would seem that congenial occupations reduce their incidence during working hours (Jackson, 1958).

Neurological defects—for example, hemiplegia—make themselves apparent immediately after the injury, but improvement usually takes place gradually. Younger patients tend to improve more rapidly and completely than adults (Walker, 1966). It is amazing how some of these patients overcome their disability. Those who had good binocular vision before injury and then suffer serious impairment of vision in one eye must be warned that their depth-perception abilities may be impaired.

If soft-tissue injuries leave painful scalp scars the wearing of a helmet can be intolerable. This becomes an issue when the wearing of helmets is compulsory at work. Skull defects become a problem only when they affect a patient emotionally and cause a sense of insecurity or deformity.

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The most difficult persons to rehabilitate are those suffering from the post-traumatic mental syndrome. This term embraces a variety of symptoms—that is, headaches, dizziness, nervousness, anxiety, poor concentration, impaired cerebration, and emotional instability. Those with a low intelligence appear to be more prone to the syndrome. Initially, the symptoms may present in a mild or severe form and then regress, but may occasionally return in a few months' time in a more severe and chronic form (Walker, 1966). Therefore it is vital that the process of rehabilitating begins early. These patients must be handled in an atmosphere of encouragement and patience, with a proper understanding of the various related problems—for example, compensation claims. The quickest way to resolve these symptoms is for the patient to lead a normal life. Contact with normal people with normal problems, together with a job which is of interest, works wonders in his rehabilitation.

Alternative Employment

When, however, it is obvious that a patient with head injury will be unable to return to his pre-accident employment the Ministry of Labour resettlement schemes should be invoked. These revolve around the disablement resettlement officer. His knowledge of other industries in the locality is invaluable in finding alternative employment. If the injuries have caused a loss of the ability to work the eight-weeks course of the industrial rehabilitation units may help to reaccustom the patient to timekeeping associated with normal working conditions. When the patient is not able to return to his old job he will be assessed at the industrial rehabilitation unit for suitability for vocational training. This will greatly widen his employability. However, some patients cannot be employed on the open labour market and will need to work under sheltered workshop conditions. Again this arrangement will be made through the disablement resettlement officer.

Social resettlement and a return to work are the most important parts of treatment at this stage. Unfortunately the weakest link in industrial rehabilitation is that between industry itself and the health services. It is improved when representatives from health or welfare services of industry visit patients in hospital or at home. This allows an employer time to arrange for suitable alternative work to be made available when the patient is fit to restart. Too often, when a patient recommences employment, the rehabilitation process is controlled by the supervisor. I have seen many intended kindnesses done by supervisors and work-people to aid injured men regain their health at work misfire because medical guidance was lacking.

There is no doubt that after a long absenteeism the patient may find working a full shift distressing and overtiring.

Furthermore, the management may experience grave difficulties in assessing an employee's safety and working efficiency. Often reliance is placed solely on the judgement of the family doctor, who cannot be expected to be fully conversant with working conditions. Invariably the doctor's request for alternative employment, or the decision to allow a return to work, is based solely on the patient's judgement.

Part-time Work for Limited Period

It has always seemed illogical to me that, on paper, a person who has suffered a serious illness can be unfit for work on one day and then on the following day be fit for all duties without going through a transitional period of recovery. It is for this reason that I would make a plea to the Ministry of Labour or the Ministry of Social Security to allow a patient to return to part-time work on full financial benefits, yet still under medical care. Obviously, this arrangement would require the consent of the employer, and the part-time period would have to be limited.

This arrangement would save many working man-hours, as doctors would not have to err on the conservative side when deciding the appropriate time for return to work. It would allow a gradual build up to a normal working life to take place with the minimum of discomfort to the patient. The family doctor would be able to take an active part in supervising the transitional phase between inability to work and full employability.

In conclusion, a person will keep his self-respect only if he feels the work he does is necessary. When work is provided that is obviously unnecessary it is an insult to his intelligence. It ceases to be working for a living, and becomes a charity.

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