

Eye injuries in relation to workmen's compensation / [by Freeland Fergus?].

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EYE INJURIES IN RELATION TO WORKMEN'S COMPENSATION.

THE problem of compensation for eye injuries is all but insoluble; at any rate, there are not at present sufficient data to give a solution, for statistics, so far as I am aware, have not been collected in sufficient quantity. Attempts have been made, both in this country and abroad, to derive mathematical formulae expressive of what may be called visual efficiency. The two communications on this subject which are of most easy access are, first, the very suggestive and able paper by Mr. Berry, of Edinburgh, in vol. xxv of the *Transactions of the Ophthalmological Society of the United Kingdom*; secondly, the excellent paper by Mr. Percival, of Newcastle-on-Tyne, read at the recent International Ophthalmic Congress. It will at once be admitted by all ophthalmic surgeons who are competent to form a just opinion that in the department of mathematics as applied to the practice of ophthalmology no higher authorities exist. Whatever they say on such a matter must be received as authoritative. I do not propose in this short paper to criticize in any way these contributions; all the more so, that with the full knowledge of the subject which these gentlemen possess, each of them states that no formula can be absolute; it, at best, can only express an approximation, or perhaps only indicate the directions in which a solution is to be obtained.

An author who was also an authority, the late Professor Peter Guthrie Tait, is reported to have said that it was quite impossible to formulate anything which involves human volition. We might go a step further, and say it is impossible to reduce to mathematical formulae anything involving human action based on individual human volition and intelligence. Thus, to take an example which seems to me somewhat apropos, I know of one blind man who can scarcely find his way to the house next door, and I know of another who plays an excellent hand at whist, and who on certain occasions has been known to get out on the leads of his house to shovel off the snow. Here it may be remarked parenthetically that because one blind

man is able to perform such feats it would be extremely wrong to say in a court of law, or otherwise act on the supposition that all blind persons are similarly capable.

But, to take a less extreme case, suppose a number of persons who have naturally or on correction of all errors of refraction only $\frac{6}{80}$ of Snellen's scale, and all sound in body and limb, are they all equally efficient as regards vision? Of course they are not, for, in addition to the visual acuteness, there comes in *inter alia* the all-important factor of intelligence. Both Mr. Berry and Mr. Percival at once admit the limitations of their results, and that the question of visual efficiency is, after all, almost individualistic.

As already stated, in the department of mathematical investigations as applied to ophthalmology, I hold that there are no higher authorities than Mr. Berry and Mr. Percival, and I welcome their important communications. It is, therefore, with some degree of diffidence that I have formed the opinion that each of them has left out elements which seem to me of the greatest importance. Each of the authors mentioned has a good deal to say, and very properly, as to efficiency in terms of the acuteness of vision. Rightly or wrongly, I have come to the conclusion that all forms of work may roughly be divided into two great groups. In the first, visual acuteness is of primary importance. To this class belong such occupations as those of a watchmaker, an author, a lawyer, a medical practitioner, and very many others. For a few of these, also, it is absolutely necessary that there be a good binocular sense. In another large class of employment visual acuteness in the strict sense of the term plays only a secondary part. For these occupations the efficiency largely depends on the light sense (minimum and difference) and on the sense of alignment. This group includes almost all those where the work is of a manual or labouring nature.

Here also the important consideration arises as to whether for a particular form of work a man requires, in addition to a good light sense and correct alignment, binocular vision. For a few kinds of employment he may, but for most he does not.

While not in the least depreciating the careful and original work which has been done by the gentlemen mentioned—on the contrary, while acknowledging its extreme importance—it has always seemed to me that the inquiry should go more on the lines of actuarial investigation. There should be the collection of voluminous statistics from which average results for different classes of occupations might in time be derived. Thus, Mr. Berry, in the communication referred to, says:

In any case, some statistics giving satisfactory evidence as to the extent of the limitations produced in different occupations by visual defects must be got to start with. But it is obvious that it would not be practical to ascertain the extent of limitation produced by all degrees of defect of vision.

Statistics would have to be obtained for each trade separately. Some years ago I investigated the efficiency for work of a number of men each possessed of only one eye, and communicated the results to the Toronto meeting of the British Medical Association. They showed that men with only one eye had been known by me to work at the following occupations, namely: dock labourer, iron turner, boilermaker, farrier, ship-caulker, engine-fitter, blacksmith. After investigation I have come to the conclusion that there is scarcely any work below ground which a man cannot undertake who has only one eye.

Thus, I have known men with one eye working as holers, brushers, underground managers, and, indeed, carrying on all sorts and conditions of work. In the paper just referred to two cases are recorded in which the vision of the remaining eye was only $\frac{1}{10}$ of Snellen's scale, and in which the workmen had been able to continue their work for years below ground. Such instances seem to me to bear out my contention that there are many forms of work for which visual acuteness in the proper acceptation of the term is not much required. The important functions of vision here are probably alignment and the light sense. Nor is this so surprising when we come to investigate what I have called the field of visual acuteness; it is found to occupy only a very small area round the point of fixation. For these reasons I am not content with the solutions that have been given, for to me the evidence is quite conclusive that a man who has got an ordinary light sense and who has also good alignment can perform almost any kind of manual work. It therefore seems to me that any attempt to express visual efficiency in terms of visual acuteness alone may lead to serious error.

A few remarks must be made as to the necessity of binocular vision or otherwise for this second group of cases.

To begin with, I have known instances where men possessed of only one eye have been known to drive stobs; where they have worked as riveters, as ship-caulkers, and as farriers. So long as the problem is one of alignment, and absolute as distinguished from relative distance, the thing seems quite simple.

An interesting experiment which I have often made on myself and on others is conducted as follows: A point on a flat surface is selected as the fixation point, and a small object, such as a sixpence, is placed in different positions on the same surface. While the person looks steadily at the fixation point he finds no difficulty, while holding one eye shut, in striking the small object with a hammer or other suitable weapon. The test object may be placed practically at any point of the field of vision. Thus I have placed it in such a position that the visual axis made, with a line joining the centre of the test object and the first nodal point of the eye, an angle of fifty or sixty degrees. In such an instance the important factors are obviously the alignment and the actual distance of the

object to be struck. Here there is no question of the relative distances of various objects. This experiment alone goes a long way to prove the truth of the view that for many forms of manual work visual acuteness is not much required; for when an object is placed at a considerable distance from the point of fixation, its image is formed at a part of the retina where the visual acuteness is extremely small.

There are factors other than convergence that help the individual in the estimation of distance. Accommodation is certainly one of these factors, and probably the size of the retinal image is another. If a person has for many years relied on that ready estimation of distance which is a function of convergence, then it may take a considerable time before he can estimate actual distances perfectly correctly. Any one, however, who cares to make the simple experiment above indicated will find that he experiences no difficulty in striking the object. Mr. Berry thinks that a man who has been in the habit of working with binocular vision and who is suddenly called upon to work with monocular must at first be under considerable disadvantage, and with that remark we are in accord. Still it must be said that for most manual occupations a man who has only one eye and who has in it fair vision, good alignment, and good light sense, is little inferior in earning capacity to the man with two.

So far it is plain sailing; a man with one useful eye, as defined above, is, after he has recovered from his injuries, for the most part competent for his former employment. There are, however, certain subsidiary questions which are not so easily settled. Two in particular seem to demand some special notice. First, suppose a man's occupation is one of the very few which demand binocular vision, there arises the question as to his having to change his employment for something quite different.

Secondly, there is in all cases in which a man is capable of returning to his original occupation his diminished chances of getting employment on account of the presence of the defect.

As already stated, the manual occupations which a man with only one eye cannot undertake are very few. But suppose that for any given employment it is proved that binocular vision is required, then compensation must be liberal, and the amount should increase with the age of the person. Only very exceptionally after 35 or 40 years of age can a man learn a new trade or profession. The want of adaptability to new conditions is very great in middle life. Philanthropists and others, horrified by the conditions of slum life, often raise the cry of "back to the land," but it is the children or young adults who must go to the land. They alone can be given the training which is necessary to make them successful in the highly technical and somewhat precarious work of agriculture. Adults, with a few exceptions, could not be trained to make such employment remunerative. So it is with other forms of occupation. A middle-aged man or woman may

be said in general terms to be incapable of learning a new trade, and in fixing compensation where the lack of binocular fixation destroys a man's power of working at his former employment, compensation should be for permanent disablement.

From this point of view it would be well to have an official list enumerating all the trades at which monocular men in the past have been known to work. That, to a considerable extent, would be of service to judges in giving their decisions. If it can be proved beyond reasonable doubt that men with only one eye have in the past been known to pursue a certain calling successfully, then there is no reason why they should not do so in the future.

In the second place, should compensation be given or continued indefinitely because a man with such a defect may experience a difficulty in getting employment? Many learned judges have held that this is too remote. Their opinion seems to be that if a man has recovered from his injuries, and it is proven that he is fit for his work, there the matter ends, and that he is not entitled to compensation for future contingencies which are only problematic. At the same time, it cannot be denied that, as matters stand at present, a man so situated may experience great difficulty in getting work. Such a person is what may suitably be called an under-average risk, and an employer, either of his own accord or acting under the instructions of the company with which he is assured, may refuse to employ such a man. This brings me, naturally, to the consideration of what I have called under-average risks and the effect of legislation in producing unemployment.

Since the passing of the Act elderly people, persons with any physical defect, or whose employment would involve any undue risk, have been thrown out of work in large numbers. No one can live in an industrial community without meeting this phase of things at almost every turn. It is a mere matter of time till insurance companies will insist on all persons insured by them being sound both in body and limb. Already the Act has compelled many men who are perfectly able to earn their own living, and who are more than willing to do it, to enter the ranks of the unemployed. When the insurance companies become more particular, as they certainly will before very long, then probably as many as one-third of the entire workers in the United Kingdom will be thrown out of work.

Take but one example out of many. Suppose a man has an aneurysm of the aorta. At any moment he may succumb to his malady. If at the time of the fatal termination he happens to be doing something in his usual occupation, then his death is almost certain to be attributed to strain, and damages claimed. Before long insurance companies will insist on the medical examination of all employees, and then the wretchedness and destitution which we regret to think are so characteristic of British city life will be multiplied enormously.

Now, for under-average risks, such as are involved in serious defect of sight, there ought to be the possibility of a contracting-out clause in the agreement between employer and employed. If an individual is certified by some competent and neutral authority, such as a factory surgeon, as being definitely under average, then there should be special treatment. The intention of the Act is a good one; it aims at the prevention of destitution during the incapacity of the bread-winner, but we fear that it has caused infinitely more destitution than it has prevented. Already it has thrown many industrious people out of employment, and the tale of woe has but commenced. The difficulty of any contracting-out agreement would be so to arrange matters that any lawful contracting out would not be taken advantage of to defeat the ends of the Act, which, in the main, we regard as good. The devising of some proper scheme, however, ought not to pass the wit of man. The subject is vast and the time allowed to any one speaker is by the rules of the Association limited. I am glad, therefore, to think that the subsequent speakers in this discussion are likely to supply much of what is lacking in these cursory remarks. On two other points only I would like to say a few words if I have not by now unduly trespassed on your indulgence.

And first I would point out that many employees have the idea that the Act is a sort of accident insurance. As my friend Dr. Marshall of Rothesay said to me the other day, a workman who gets any injury, no matter how trifling, is often apt to regard it as entitling him to a certain amount of money, and the problem that often occurs to him is as to how he is to make the most out of it. An insurance company knows that the expenses of fighting are considerable, and thus often settles for a larger sum than the injured person is strictly entitled to receive.

Now that was never the intention of the Act. It did not aim at accident insurance. All it sought to accomplish was compensation for incapacity, which seems to me a legitimate enough object. This erroneous view has given rise to considerable malingering, and even to a certain amount of neurasthenia. No wonder that insurance premiums have been increased. For one class of work with which I am acquainted the premium was at first 2s. per £100 of the wage bill; to-day it is 30s.

In conclusion, I wish to make some observations on medical refereeships. The idea underlying such appointments is excellent. If a workman knows that he is not going to face a judge and a jury who, however zealous they may be, have no technical knowledge, but an expert, he is not so likely to malingere.

If the medical referee is a man of first-rate professional standing, of high character, and, above all, of a judicial turn of mind who will look at a case in a perfectly unbiassed manner, then the plan of reference is an excellent one. At the same time, medical referees should be pre-

cluded from being, on the one hand, medical officers of workmen's friendly societies, and, on the other hand, of being the medical officers of insurance companies doing this class of business.

While the plan is good if the referees are suitable, it is disastrous if they are not. We are glad to think that Dobson and Fogg are not the rule but the exception in the profession of medicine, a remark which is equally true of the profession of law. All the same it would be much better that a medical referee should be forbidden by law to act for a workmen's friendly society or for an insurance company doing workmen's compensation business. Further, to remove the case from all local bias, the referee for one particular district should reside in another. If, for example, two doctors in Manchester differ as to a case, the reference should be submitted to some one, say, in Liverpool or Leeds. Patients and documents can be so cheaply and easily transferred from one town to another that there can be no objection to this plan on the ground of expense.

Lastly, there are some, with whom I have great sympathy, who advocate that medical referees should be specially retained and paid a proper salary and allowed to do no other kind of practice. For such an area as Scotland, one physician, one surgeon, and one ophthalmic surgeon would probably suffice. The cases would either go to them or they could hold courts in different centres in conjunction with the county-court judges or sheriffs substitute.

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