XXXII.

ON PROTECTIVE SPECTACLES FOR WORKING-MEN.

By ADOLF ALT, M. D.,

St. Louis.

Public hygiene has of late, and by right, paid a great deal of attention to the eyes, the organ without which we can hardly earn our bread or enjoy life.

I do not want to recapitulate to this honored assembly what has been done to find the causes of the increasing short-sightedness and their remedies, nor how the systematic examination of the color-sense of certain officials, and the detection of color-blindness, have undoubtedly prevented fearful accidents in those countries at least where they are rigorously enforced. I now want to draw your attention to another field, in which all of us, who are interested in the welfare of the public, can as yet do immense good: I mean the prevention of those injuries to the eyes to which nearly all mechanics are exposed.

All individuals working at a trade in which chips of iron, brass, wood, glass, or stone are likely to fly forcibly away from the material used in the manufacture, are, of course, likely to receive such chips in their eyes. If the force with which the chip strikes the eye is nearly spent, or not powerful enough, the foreign body will either strike the outer coat of the eyeball and drop off, or it will remain embedded within this coat. Such injuries are, as a rule, but slight, yet may become very important. If the force with which the foreign body strikes the eyeball is sufficiently strong, it will pierce the outer coats of the eyeball and enter it. Such an injury is always a grave one, and may entail the entire loss of the injured eye, and, if neglected, destroy the fellow-eye by what is called sympathetic inflammation.

In order to explain these matters better, I have brought here a drawing of a section through the human eyeball, by which you can see all the different tunic of the eye.

Foreign bodies which become imbedded in the cornea are, as a rule, easily removed, at least by one trained to remove them. The injury inflicted by them is originally but a slight one, and should not be increased by their removal. Yet the very fact that it is in most cases so easy to remove such foreign bodies from the cornea, has given rise to the custom, that before going to the proper place for relief from his suffering the injured mechanic will almost invariably submit to the clumsy and dangerous attempts at removal of the foreign body by one of his fellow-workmen. The instruments used by these greatly honored and admired
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“skilled” help-mates are of the most dangerous and varying kind, and frequently the poor injured workman has to undergo immense suffering, even sometimes the loss of an organ as valuable as the eye is, when the slightness of the original injury does not warrant in the least such a disastrous result.

When the foreign body has penetrated the outer tunics of the eyeball, the original injury is very dangerous in itself, although, of course, to a varying degree. The foreign body may remain in the space between the cornea and iris, or remain embedded in the tissue of the iris. In this case, if seen at once by the surgeon, the foreign body may yet be removed, perhaps, without any lasting defect of function; yet in most cases it is necessary to make an iridectomy,—that is, to remove a piece of the iris,—in order to get the foreign body out of the eye. Such an operation, of course, by increasing the size of the pupil, and taking away the possibility of prompt and sufficient contraction of this naturally so movable diaphragm, maims the eye for life.

But often the foreign body has penetrated even into the crystalline lens. Almost every injury to the crystalline lens produces the formation of cataract,—that is, causes the crystalline lens to become dim. Yet such a cataract develops but slowly, and, on account of the continued state of irritation in which the eye may be kept by this process, the injured workman may be unable to earn his and his family’s living for a period extending over many weeks, if not months, and when the process of the formation of the cataract is finally ended, he is blind in the injured eye, and has then to submit to the operation of extracting the cataract from the eye, which may or may not be successful. In the former case, although sight is regained, it is of but little value to him without cataract-glasses, and in the latter case he is worse off yet, as he not only remains blind in the injured eye, but will probably be kept from work again for a longer period, or have to submit to the removal of this now totally blind eye, in order to be rid of his constant suffering and the constant danger to his so far healthy eye.

The same is the case whenever the foreign body has entered the vitreous chamber, and has either become embedded in one of the coats of the eye-ball, or is remaining within the vitreous body, or if it has passed through the eye-ball and become lodged in the orbital tissues behind the eye. In most cases these injuries I just mentioned (often, even, when we have succeeded in removing the injuring foreign body from within the eye-ball) cause a chronic inflammation of a painful character in the injured eye, which is the more annoying as at times by slight causes it becomes exaggerated. The unfortunate possessor of such an eye, which contains a foreign body, is therefore almost continually, or at least from time to time, unable to work, not to speak of the continued suffering and the danger to his healthy eye.

In the foregoing considerations I assumed always that the injured man has one good and healthy eye left. But what infinitely graver aspect has the question when the injured man has only one useful eye, and that one
the injured one! Yet this calamity is luckily not very frequent. Let us therefore simply consider what danger an individual incurs who, having two good, useful eyes, loses one directly by the injury, or by the after-effects of an injury.

It has for a long time been known that injured eyes, and most especially injured eyes in which the injuring foreign body remains lodged, and which in consequence, as a rule, suffer from a chronic inflammatory process kept up within their coats, are apt sooner or later (mostly in from three to six weeks after the injury has been received, but sometimes many years after) to destroy suddenly, or sometimes slowly, the sight of the uninjured fellow-eye. This affection of the uninjured eye has received the unscientific name of sympathetic ophthalmia, and various forms of this dreadful disease have become known to oculists. An eye once attacked by sympathetic ophthalmia is even at the present time almost certainly doomed to utter ruin, and but very seldom do we have a chance to give the patient at least some sight by means of an operation, and then only many years after an eye has gone through this dreadful disease.

But you may ask, If there is no cure for sympathetic ophthalmia, can it not be prevented? Yes, it can, by the speedy removal of the injured eye. And here comes the dreadful experience which every oculist has to go or has gone through many a time, namely, that all his entreaties and warnings are cast to the wind and counted as nothing, not only by the unfortunate victim himself, but by his wife, whose life and whose children's life and education depend on the eyes of the now injured husband, who does what is in her power to keep him from submitting to the unavoidable necessity of parting with one eye, which is of no further use to him, in order to save one, at least, to earn bread with. Where is the oculist who has not seen such a poor workman return too late, and beg and beg of him to give back what he can never receive? Surely in these cases ignorance is not bliss. What infinite misery may not be due to the injury received by the man's eye, whose life, whose all, depends on the usefulness of that organ! But if, and in fact now-a-days this is often the case, the injured man at once follows our advice, and allows us to remove the offended and offending organ, he has, at best, lost one eye. A man can surely better afford to lose one eye than two; yet does he need to lose that one eye?

I now come to the point aimed at in this paper. Even the prevention of the occurrence of sympathetic ophthalmia, by removing the injured eye at once (thus cutting short also all suffering from the injury), as much good as it certainly has accomplished, is doing the thing only half way. Why not prevent the occurrence of the injury? This, however, is easier said than done; not because there are no means at our hand to prevent the occurrence of such injuries to the eyes of our working-men in a great many, even in most, cases, but because the men will not use them. Ignorance, carelessness, even vanity, are sufficient to prevent the working-men from using what in most cases would shield them, namely, protecting spectacles. (The best ones are made of mica.)
I think it is deeply to be deplored that employers are not held liable for such injuries received by their employés; not because I think it just to make the employers pay, but because this would lead (as it does in all countries where the law holds the employers liable) to their forcing such workmen as are exposed in their trade to injuries to the eyes to wear protecting spectacles while at work. In such countries the number of injuries to working-men's eyes has been so greatly diminished that sympathetic ophthalmia from this, its most frequent cause, has become a comparatively rare disease.