NEW EAR-PROTECTOR FOR THE PREVENTION OF THE INJURIOUS EFFECTS OF COLD AND NOISE.

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EXPOSURE to cold or to any other noxious influence acts very variably upon different individuals, and the effect is regulated in a great measure by the inherent delicacy of the separate organs. There are individual qualities of refinement in the auditory sense arising from constitutional peculiarities and structural modifications of its several parts, just as there are individual characteristics in other complex organs. It is a fact of common observation that persons differ much in the sensibility of the ear to the effects of cold and noise. The sudden shock caused by an explosion is really painful to some; at the same time, others manifest a dread of cold air, and complain of aural uneasiness when exposed to rough weather, and the cutting easterly winds of our climate. Fortunately, serious injury of the organ does not often follow from these causes; still, it must be remembered, they are very commonly associated with many slight forms of disturbance, which may at length lay the foundation of chronic disease. Many persons manifest a dislike to the entrance of cold water into the external auditory canal, and others complain of irritation, and an unpleasant sensation of fulness in the head, after bathing. Plunging and diving in the sea are often followed by distress, giddiness, and temporary deafness, and many complain of aural disturbance lasting many days after taking a bath. These facts are very familiar to surgeons who reside on the coast, and who have frequent intercourse with those who indulge in the healthful exercise of swimming.

Again, sudden and violent noise is often injurious to the organ of hearing. A loud explosion may excite only temporary distress; but, when it is frequently repeated, the membrana tympani and chain of ossicles are often permanently disturbed. Hammermen, and artisans engaged in factories, are frequently injured in their ears from the incessant noise associated with their daily labour. The varying sensibility of the auditory apparatus is well exhibited among this class. Some appear altogether to escape, and they seem to become accustomed to the unnatural vibration; while, with others, the constant oscillations of the tympanum result in a permanent disturbance of the sensibility of the nervous structures. A loud explosion, especially when sudden and unexpected, is often followed by injury to the ear. The officers and men of the Royal Navy, who are exposed to the powerful concussion of the monster cannon of modern introduction, are frequently deaf and uneasy in their ears for many hours after gun-practice. Occasionally, the tympanum is ruptured, and medical officers have often recorded these accidents, and also cases of a more serious nature, which have been attended with hæmorrhage from the meatus, followed by otorrhœa and obstinate headache and vertigo.

The auditory apparatus, moreover, is often sensitive and prone to injury in consequence of recent inflammation or chronic disease, and, under these conditions, the shock of noise and cold is especially injurious and painful. Ordinary nasal catarrh, associated with temporary disturbance of the middle ear, leaves behind it for a long time a delicate state of the organ, and this is just the kind of recurring disorder which is often neglected, and frequently terminates in chronic mischief within the tympanic cavity. At the onset, these affections of the ear are so slight, that they are treated with indifference; still, they are attended with increased susceptibility to all external influences. The organ is also especially delicate during early life, and some children are constitutionally liable to aural injury from careless exposure. It is particularly tender after acute disease, and in children convalescent from scarlatina or fever, though they may have been fortunate enough to escape destructive changes. The catarrhal inflammation of the external ear involving the integument and periosteum of the canal, and sometimes the tympanic membrane, is also followed by a sensitive condition of the organ, and the disease is very prone to recur on slight exposure to cold.

There exists, then, a large class of individuals labouring under slight and chronic forms of disease, which are often scarcely recognised, but at the same time they render the organ extremely liable to injury and inflammation; and therefore it is evident that the circumstances are very common and very variable in which the ear, like the organ of vision, demands special care and protection. The question of preventive treatment is one of great practical importance, and deserves more attention than it has hitherto received at the hands of aural surgeons. It includes attention to hygienic surroundings, to habits of

temperance and regularity, to the selection of suitable occupations, and to careful avoidance of unnecessary exposure to noxious influences. The organ itself, however, often requires special protection; and the obvious method consists in the introduction of a suitable septum into the external auditory canal, for reducing the intensity of the sonorous undulations, and preventing the shock of cold air and water. A plug of cotton-wool has been almost universally employed for this purpose; and this material is both light and soft, and also admits of very easy application. Still its use is not free from many objections. In appearance, it is both conspicuous and unsightly, and is a very feeble protector against the entrance of water into the meatus. It readily becomes soiled, and is prone to be impacted in the auditory canal. Concretions, consisting of a mixture of cotton-wool, ceruminous matter, and exfoliated epidermis, are often removed by the syringe, which have become gradually matted together in the passage in the course of months or even years, causing at length great irritation and deafness. The ear-protector which I have now used for several months, with very great success and comfort, in a large number of cases of aural delicacy and susceptibility, is a very simple contrivance. It consists merely in a little conical cap of vulcanite, made of flesh-colour material, so that it is scarcely discernible under ordinary circumstances. (Fig.) The edge

Three sizes of the protector (enlarged).

is surrounded by a little flange, which prevents it from slipping into the meatus. At the same time, this edge assists in its introduction and removal. The special advantages of the vulcanite protector are very apparent. It is very durable, and admits of washing; it causes no tickling or irritation, and is both light and soft in the ear. At the same time, by its perfect elasticity, it becomes moulded at once to the shape of the canal. The protector is prepared for me by Messrs. Lynch and Co. of Aldersgate Street, in various sizes, to suit the varying capacity of different ears. It completely prevents the entrance of water to the tympanum, and this makes it a perfect protector for bathers and divers. It does not suspend the sense of hearing, but is only a modifier of sound, diminishing the intensity of sonorous vibration; and this effect can be regulated by the size of the shield selected and the degree of firmness with which it is introduced into the canal. It is also an excellent ear-protector during ordinary exposure to severe and rough weather, and it can be carried in the pocket by a timid patient ready for any emergency. It is adapted for a large number of cases of aural delicacy and chronic disease, and it will be found far more convenient and sightly than the old-fashioned plug of cotton-wool.

BULLET-WOUND OF ABDOMEN, WITH EXTENSIVE HÆMORRHAGE FROM LEFT KIDNEY: RECOVERY.*

By J. J. GORHAM, M.D.

WILLIAM B., labourer, a man of small stature and cachectic appearance, aged about 50, was accidentally shot by a friend with a bulldog revolver, at a distance of not more than a few yards. The bullet entered the abdominal cavity on the left side, at a point midway on the vertical line drawn from the lower ribs to the iliac crest, one inch behind the anterior superior spine of the ilium. Immediately on receiving the injury, he fell to the ground, and unconsciously passed a considerable quantity of urine, normal in appearance. This was followed, or rather accompanied, by vomiting. Neither vomit nor urine contained any appearance of blood.

On my arrival about half an hour after the occurrence, I found the patient extremely collapsed, the pulse very rapid and scarcely perceptible—the frequency of its beat could not be ascertained—the skin moist and cold, face blanched, eyes sunken and glassy, and other symptoms of internal hæmorrhage, as well as of shock. Strong brandy and water was administered in small and frequent doses; and, on careful examination of the wound and clothing, it could at once be seen that the bullet had entered and remained in the abdominal cavity, and that no part of the clothing had been carried into the wound. The wound itself presented the usual appearance of “close quarters”; the neighbouring parts of the clothing were charred, and the skin inverted:

* Read before the West of Ireland Branch.

and, although the bullet was large, the wound would not easily admit the little finger.

On consultation with Staff-Surgeon Bell-Murray, R.N., who came soon after my arrival, we probed the wound slightly in order to have an idea of the direction of the bullet, and we ascertained that its course was almost directly inwards, and a little downwards and forwards. From the action of the bladder, which we looked upon as reflex, it was surmised that some part of the urinary apparatus was involved, especially as the wound was near the kidney, and was directed towards the distended bladder.

A few hours after the injury, he had rallied so much from the shock as to admit of his being removed to bed. The wound was dressed with simple carbolised dressing, a full hypodermic injection of morphia having been previously administered. I may here mention that he was kept fully under the influence of the morphia for ten days after the injury, as it was feared the intestines were injured.

On visiting him again in the evening, I found him more comfortable. Temperature 100°; pulse 105, weak, and slightly "thready"; mind quite clear, and complained of little pain. He had passed no urine in the meantime. On the following morning, there were decided symptoms of peritonitis; his urine was distinctly bloody, but was passed with little pain. His abdomen was distended and painful, and the pain was most marked between the umbilicus and symphysis pubis. Temperature 100.2°; pulse 105. During the succeeding three days, the symptoms did not vary much, but the tympanites was exceedingly troublesome. The pulse varied from 100 to 110, and the temperature from 100° to 101.5°.

The urine always contained blood. Turpentine stupes afforded relief to the tympanites, and tincture of the perchloride of iron (15 minims three times a day) and gallic acid were prescribed for the hæmaturia. His diet was composed of slops, excluding all preparations of animal food. He was allowed to drink large quantities of mineral waters mixed with milk.

The whole aim of treatment during this time, and for the first week, was to restrain peristaltic action by the hypodermic injection of morphia two or three times a day.

Beyond a little flatulency, there were no indications of any action of the bowels until the fifteenth day, when he received an injection of thin gruel and an ounce of castor-oil. This injection was retained for thirty-six hours, until brought away by a further one of a pint and a half of tepid water, and with it came several hardened scybala, which caused a good deal of pain and disturbance.

On the eighteenth day, the morning temperature was 102°. He received an occasional enema for the succeeding few days, with little effect until the twentieth day, when I gave him internally an ounce of castor-oil, which was soon followed by a copious evacuation, almost normal in appearance. His temperature immediately fell to 99.8°, from 101° on the preceding day.

From the twenty-first to twenty-fifth day, the urine was gradually becoming clearer; but, on the afternoon of the latter day, I received an urgent summons to attend him, and on my arrival I found him extremely collapsed. He had just passed, by the urethra, about thirty ounces of arterial blood without any admixture of urine, doubtless from ulceration of one of the vessels of the kidney. His attendant told me that it came in a free stream, but immediately coagulated in the utensil, and that the patient fainted while the expulsive efforts of the bladder were being continued. His pulse was scarcely appreciable; temperature 98.1°; face perfectly colourless.

For the succeeding four days, his condition was extremely critical, from the large quantities of blood he had been passing daily, or rather hourly, for his bladder was very irritable. A large catheter was occasionally passed to wash out the bladder, and this process was unattended by pain. The gallic acid was increased to 10 grains every three hours, and the tincture of iron given as before.

From the thirtieth day, a gradual improvement was registered; and, on the thirty-fifth day, his urine was again normal, as were also his pulse and temperature.

Beyond a few accidental changes of temperature, his progress towards recovery was uninterrupted from this day. On the fiftieth day, he was allowed to leave his bed for an easy-chair; and, sixty-two days after the injury, he departed for his home, a distance of more than two hundred miles. The wound had perfectly healed up. Nothing remained but a hardened cicatrix, which was not tender to the touch.

Since this report was written, I have heard from the patient. His letter was dated more than six months after the injury. He is "regaining strength daily, but is not yet able for manual labour".

REMARKS.—There are some interesting points to be considered in connection with the foregoing case.

1. The man's future. What value, for instance, would an insurance

office set on his life? He has a bullet in his abdomen, probably in or near the left kidney. The latter organ was certainly injured, for a wound of any other part of the urinary tract would not account for the large quantity of blood passed by the urethra on the twenty-fifth day. Is there any danger of the bullet being displaced by gravity, or muscular action, or some other cause, and giving further trouble?

2. The peritonitis resulting from the wound was comparatively slight, and did not give any trouble after the fourth day. The descending colon seemed to have escaped injury altogether.

3. I regard the vomiting after the injury as exceedingly fortunate, as he had just partaken of a hearty dinner of boiled beef and vegetables.

4. The *B. P.* hypodermic injection of morphia acted very satisfactorily, and effectually paralysed the action of the bowel for the first fortnight. As a rule, each hypodermic injection was succeeded by a comfortable sleep of some hours' duration.

RUPTURE OF THE HEART.

By NEIL MACLEOD, M.D., Shanghai.

THE following case, from the absence of symptoms during life, the well marked *post mortem* lesions, and the mode of termination, is, I think, worthy of record.

G. W. B., a short, stoutly built man aged 58, was seized, on July 4th, at 5 A.M., with a violent pain in the chest. When I saw him at 8.30 A.M., he had a very anxious look, and complained of intense pain, confined to the middle line, along the whole length of the sternum; also of a little difficulty of breathing, and weakness of voice. There was no lividity. The right pulse could scarcely be felt; the left was weak, but quite distinct. There was no impulse in the episternal notch, nor was there any abnormal dullness. The heart-sounds were feeble, and no *bruit* could be heard. The breathing was laboured and wheezy, and made the examination of the heart somewhat difficult. A quarter of a grain of sulphate of morphia was given hypodermically.

At noon he expressed himself as feeling better, his breathing as easier, and the pain as much less. The left pulse was fuller than in the morning, the right remaining as before. He did not know whether there was usually any difference in the wrist pulses; and added that he had been quite well up to the time of seizure. His heart had never been examined, and he had never felt anything unusual in that region.

He died suddenly at 6 P.M. A friend who had been sitting by him at the time stated that, after expressing himself as feeling much better, he laid his head down as if to sleep, became black in the face, and was dead—all in the interval between the first and the fourth guns of a salute which was then being fired, that is, in about two minutes. An hour after death, the face, and particularly the lips, were unusually pale.

Post mortem examination on the following morning at 7. Rigor mortis was well marked. The lungs, liver, spleen, and kidneys were healthy. Puncture of the pericardium was followed by the escape of bloody serum; and the heart lay embedded in a firm dark clot which, with the serum, filled a large breakfast cup. On the middle of the anterior wall of the left ventricle, a dark line, about one inch long, ran almost transversely; no distinct opening could be made out in it. The heart was then removed, the aorta slit down to its valves, and water poured into the heart from above, slowly oozed through tiny openings in the dark line. The heart was well covered with fat except over the rent, and seemed of natural size. There were a few atheromatous plates in the aorta and at the attachments of the aortic valves. Hard nodules could be felt in the thickened mitral valves. The wall at the rent measured about one-and-a-half lines; at the apex half an inch thick. In the tissue surrounding the rent, extravasated blood was seen on section to extend for half an inch in every direction, and dark blood clot was firmly plastered over a corresponding area on the internal surface. On section of the apex, at some points, it was impossible to distinguish the inner limit of the fat covering, white patches shading off into the muscular tissue, firmer, however, than the fat, and offering resistance to the knife. There was no naked eye sign of fatty degeneration. The left coronary artery and its chief branch could be traced by the fingers among the fat, being atheromatous and in some places nodulated. On dissecting these vessels out, and slitting them up, at the nodules were small half decolorised clots filling up a much diminished lumen. The rent lay in the angle between the artery and its branch.

At a microscopic examination in the forenoon of the same day, specimens taken from a healthy-looking papillary muscle presented some of the muscular fibre perfectly striated; others had the striae partially obscured by minute fatty granules; while the fibres themselves were perfectly