

The Prevention of Deafness

A specialist in the diseases of the ear, Dr. S.F. Nielsen, has contributed to the Danish Red Cross Magazine an article in which he describes the mechanism of hearing and outlines the many ways in which the risks of deafness may be diminished. As he points out, the hearing apparatus consists of the outer, the middle, and the internal ear. The outer ear includes not only the ear itself, but also the auditory passage leading from it to the tympanum or drum of the ear. This funnel-shaped passage conveys the sound waves to the drum which belongs to the middle ear.

A chain of three minute bones leads from the drum across the middle ear to an oval membrane which is stretched over an opening in the internal ear. As sounds impinge on the drum, they are conveyed by the vibrations of this chain of bones to the oval membrane which in its turn conveys the sounds to the interior of the internal ear. Here there is a harp-like arrangement of tiny strings of different lengths, each length responding to a certain definite note. The vibrations of these strings are conveyed by the auditory nerve to the brain where they are interpreted as sounds of different quality and pitch.

The mechanism just described is the one employed under normal conditions in registering sound impressions. A break in this mechanism such as the dislocation of the chain of small bones in the middle ear would inflict deafness on the side affected were it not that an alternative route for the conveyance of sound to the brain exists. This route dispenses with the drum and the chain of small bones. Sound impressions which impinge on the bone surrounding the auditory passage penetrate to the oval membrane already mentioned. From here the sound impressions are conveyed in the manner already mentioned, to

the brain. As damage to any one of the parts concerned, the external, the middle and the internal ear, can be prevented, each will be considered separately.

The auditory passage is liable to become blocked by foreign bodies such as wax, etc. Amateur attempts at removing such obstacles may well do more harm than good, and tinkering with matches, hair-pins and the like is to be deprecated. Repeated washing and irrigation in the hope of preventing the formation and collection of wax should be discouraged as the irritation set up is likely to promote the secretion of wax. Foreign bodies obstructing the auditory passages should therefore be dealt with by a doctor.

The middle ear may be the seat of a simple catarrh, or pus may form in it and need an outlet for its escape. Normally, the Eustachian tube, which forms an open channel between the middle ear and the back of the nose, affords an escape of fluid from the middle ear to the exterior. But when this tube is blocked by inflammation at the back of the nose or by adenoid growths, fluid in the middle ear is unable to escape. If this fluid is pus, it will erode the walls of the middle ear and may burst through the drum with consequent discharge of pus from the auditory passage.

When pus is seen coming from a child's ear under these conditions, a doctor should at once be consulted. For if treatment is undertaken at once or within the first month of the appearance of the discharge, complete recovery can almost certainly be effected. But when such a discharge has been neglected and has lasted as long as three months, the chances are that the hearing on this side will have been permanently damaged.

The internal ear also is exposed to

dangers which, if understood, can be avoided or greatly diminished. Incessant exposure to violent noise in factories in which machinery is at work may wear out part of the internal ear unless appropriate measures are taken. The worker who finds deafness overtaking him under these conditions should seek some other occupation which is less noisy. Certain drugs such as quinine are also apt to cause deafness if taken in large quantities or over a long period. It may not be generally known that hearing is considerably influenced by the general health. It is well therefore to avoid over-exertion and to lead as quiet a life as possible. Mentally exhausting work and lack of sleep are both liable to impair hearing. The notion that deafness can be diminished by "training" the ear to listen in is quite false; the patient needs to be protected against sounds rather than exercised in them.

Infections such as colds tend to increase deafness, and should therefore be carefully avoided. To this end warm clothing should be worn, and the breathing of cold and damp air at night should be shunned. It is particularly important that the deaf person should not suffer from cold and clammy feet.

Many a case of deafness, whether it be due to chronic inflammation of the middle ear or to degenerative processes in the internal ear, had its beginnings in some disease of childhood. This is an additional argument for being most consistent in ensuring effective isolation when epidemics of children's diseases occur. For after all, prevention is often far more effective than treatment.

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Have you read?

Information Bulletin for Red Cross Nurses. Published by the League of Red Cross Societies, Geneva Switzerland. Copies may be ordered through the Red Cross, New Delhi. The July-September 1943 number of this Bulletin, the first number issued, has just been received in India. The introductory letter to nurses on the first page begins "Just now, when barriers separate nurses in different countries, the Secretariat of the League of Red Cross Societies has thought it would be both useful and interesting to launch a publication which would in some measure remedy this situation. Would it not be regrettable if, at a time when so many nurses in different countries are having experiences which, while sometimes painful, are yet deeply interesting and instructive for every branch of their profession, they were unable to give their colleagues the benefit of these experiences?"

Among other good things this Bulletin contains extracts on the mental health of nurses from a lecture on the *Nurses' art of living* by Dr. L. Dovet given to the Swiss Nurses' Association, an article on the *Volunteer Nurses of the Italian Red Cross*; a brief outline of the *Course for Head Nurses* in Sweden; and news notes from Belgium, Bulgaria, China, Croatia, Finland, Japan, Netherlands, Serbia and Spain. This Bulletin helps to fill the gap left when the International Council of Nurses stopped its magazine because of the war, and also to help build that foundation of understanding and world fellowship which should exist between all nurses the world around. It is believed that graduates and students will find these Bulletins of real interest and value. They will be published quarterly in French, English, German, and Spanish.

"Burma Surgeon" By Dr. Gordon