

HEARING IMPAIRMENT FROM NOISE OF PNEUMATIC DRILLS

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RECENTLY I had the opportunity to test the hearing of pneumatic drill operators engaged in road repair work. Although this was a small number of cases which did not allow generalizations, certain conclusions were possible. The results are of sufficient interest to make them available to those studying the effects of industrial noise on hearing.

Material and Methods

Nine men were examined. Their ages ranged from 30 to 55, giving an average of 39. There was an interval of a few minutes between the end of drilling and the test, which was carried out in a quiet, acoustically treated room.

The men were questioned about their experiences connected with drilling, and concerning tinnitus, and hearing of speech.

Considerable financial reward had to be given to the men to induce them to attend for the test. Previous attempts to persuade another group to co-operate, without offering a reward, ended in failure.

We measured the intensity of the noise produced by the drill. At a distance of 6 feet from a single drill it was 95 db. Probably it is higher between two machines when several drills are used simultaneously in a team but measuring this was not feasible in the given circumstances.

Results†

Tinnitus was experienced only by three men. One of them (H) was drilling only two weeks. He noticed a rushing noise in his ears the evening after the first day of work. This disappeared and he did not experience it again.

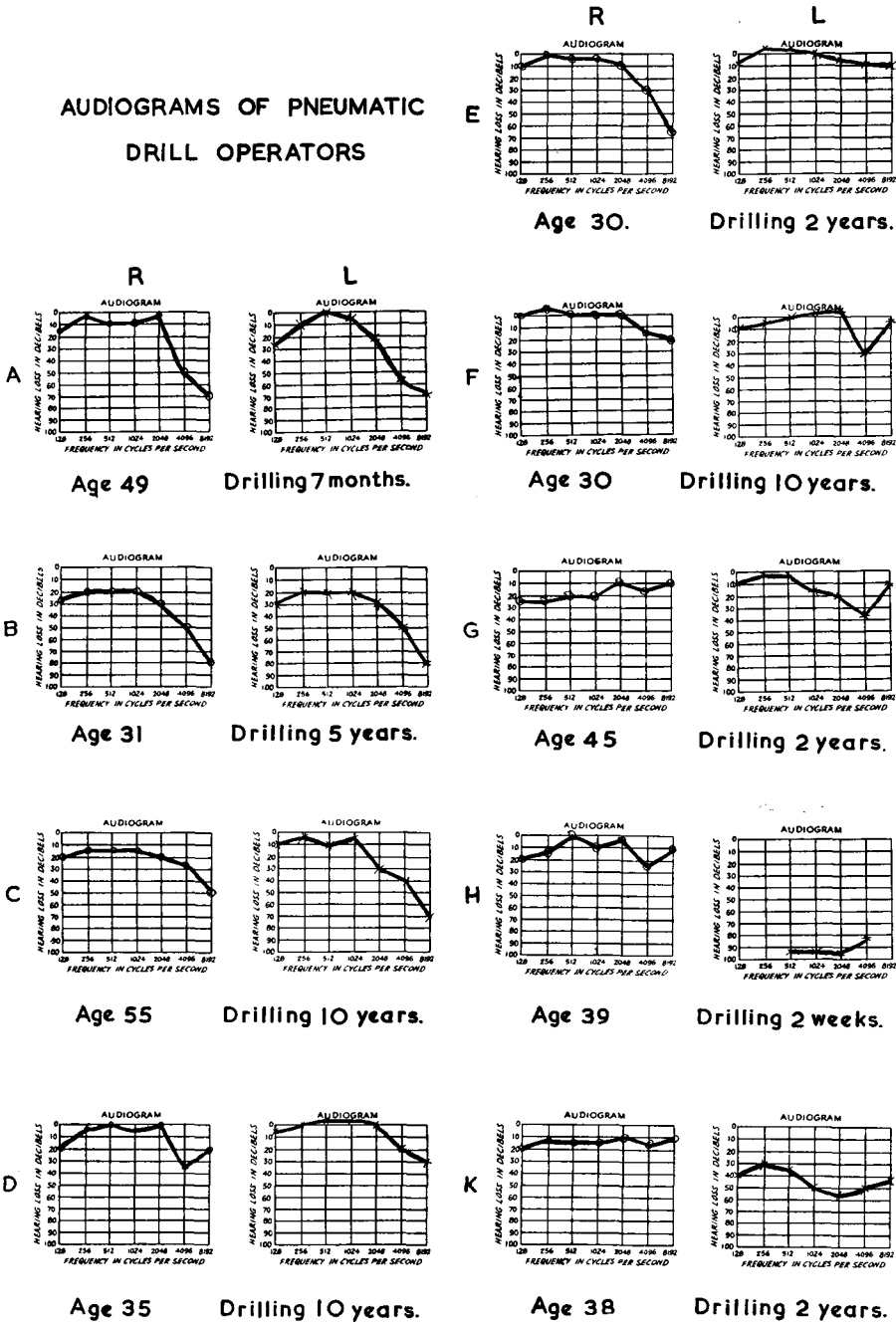
Another man (F) reported that in a quiet room, after drilling, he had a buzzing in his ears. He worked with drills for ten years. The third one (A), who was drilling for seven months, said that only when working in a team of several drillers he had a rushing noise in both ears after work. This usually disappeared after a night's rest.

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† See audiograms on page 847.

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AUDIOGRAMS OF PNEUMATIC DRILL OPERATORS



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Ear Trouble. None of the men had active aural disease. One had otitis media in the past (E) but now there was only a small scar in the drum of that ear. The hearing was slightly impaired in one ear but not in the one with a past history of otitis media.

One man (R) had wax in an ear and the hearing was impaired accordingly. He was sent to have the ear syringed, but unfortunately he did not return for another test, and no further reward could be offered to him because of the limited financial resources. It also occurred to us whether it was wise to have the wax removed. It produced an effective protective plug. In another case (H) there was a severe, almost total, congenital deafness in one ear. The possibility of damaging the good ear by exposing it to excessive noise did not occur to him. When told about it, it did not worry him much. He was especially keen to continue with this type of work, which was well paid.

Hearing of Speech in Daily Life. Only two men experienced some difficulty in hearing speech. One of them (F) preferred to use the telephone with his right ear because he noticed some difficulty in understanding with the left one. The other man (B) had difficulty in hearing speech from a certain distance, and mainly in unfavourable circumstances. When his hearing was tested for speech he started to confuse test words from 7 feet. For example for "sister" he heard "biscuit", etc. He was the only one in the whole group whose hearing for speech was considerably impaired. He was drilling for five years.

None of the men worried about the possible effects of noise on hearing, and none of them considered using a protective earplug.

Audiograms. Of the 18 ears tested in 2 the graph could be assessed as quite normal. Of the affected ears only in one the hearing was impaired for the single frequency of 4,000 c/s. In six ears there was impairment for 4,000 c/s and 8,000 c/s. In seven ears there was impairment for 2,000 c/s 4,000 c/s and 8,000 c/s. Apart from the two cases of severe unilateral deafness which could be attributed to other causes than noise, in three ears there was an impairment through the whole range of frequencies.

Generally the impairment of hearing in the majority of ears was slight to moderate, and not affecting practical hearing for speech. On the other hand in the majority there was a definite high frequency loss, producing a very similar pattern of the audiogram.

Conclusions

This is a too small group of cases for far-reaching deductions, but the following conclusions can be made:

It is possible for some individuals to be exposed for many hours a day to a very loud noise (at least 95 db.), for several years without necessarily suffering serious damage to the function of hearing. Three of the tested

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men worked with pneumatic drills for ten years, and in two of them (one started at the age of 20, and the other one at 25) the hearing was only slightly impaired for the highest frequencies. In the third man, who was 55 years old at the time of testing, there was a more marked impairment in one ear. On the other hand there is hardly any doubt that in the majority of pneumatic drill operators the noise *does* impair the hearing and in few the impairment can be of such a degree that hearing for speech in everyday life could be seriously affected.

In severe unilateral deafness from other causes, such as discovered in one of the men tested, even a moderate impairment for the higher notes in the good ear is bound to have a serious effect on hearing speech. Such a person should be discouraged from undertaking this type of work.

The comparatively slight impairment of hearing in the majority, in spite of exposure to this very severe and unpleasant noise, indicates that the use of proper earplugs could prevent effectively any damage to the ears from this particular type of industrial noise.

Acknowledgment

The measurements of the noise level in the street near the pneumatic drills were carried out by M. Reed (Audiology Unit).