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Peculiarities of Sound Transmission

FROM time to time we hear from the retreating wounded soldiers stories of the terrible intensity of noise of battle when hundreds of big guns are belching forth their deep-moaned roar, and we wonder what becomes of this great volume of sound and whether it can be heard at any great distance.

Professor Tyndal in his wonderful research discovered many amazing properties of sound. He also discovered certain peculiarities in relation to the transmission of sound waves that remain to this day a great puzzle. He found, while experimenting with fog signals on the English Channel coast, that there are occasions when a person placed at a greater distance from the sound producing instrument may hear the signal distinctly, whereas a person much nearer had no perception of the sound. This perhaps is the most puzzling thing of all in connection with a study of sound.

This discovery might lend itself to the belief that sounds that seem to be swallowed up very quickly may not be, after all, silenced, but bent away into regions by those opaque bodies, where there are no ears to apprehend them. It might be quite possible, with delicate instruments, to hear in St. John's the sounds that rise from the French battlefields.

Very strange phenomena in respect to sound was witnessed at the Battle of Gains Farm, when Lee gave battle to McClellan on the evening of June 28th, 1862. Prof. R. G. H. Kean, at the time rector of Virginia University, hearing of Prof. Tyndal's experiments and wonderful discoveries, wrote to him relating his experiences.

He related how, standing on the hill-top overlooking the valley of the Chickahominy wherein fully 50,000 men were engaged in battle, he heard not a sound of the combat. The evening was calm and the valley from hill-top to hill-top is only a mile and a half wide, and although he could see the flash of musketry and of cannon, not a sound was audible to his ears or those of General Randolph, who stood beside him on the hill.

This is perhaps the most remarkable instance on record of a sound being, as it were, swallowed up where it was produced, but doubtless the sounds of that battle were heard many miles away by other listeners.

Speculation as to the cause of the strange occurrence is idle, and with that we are not at present concerned, but merely wish to recall to your some remarkable experiences that have come under our own observation.

The City of Niagara Falls is situated quite near to the great wonder of nature from which it takes its name, yet one may walk its streets all unconscious of the big cataract as far as sound goes. We walked down to the Fall early one morning and were quite surprised when we found ourselves on the brink of the Fall, as we were unwarned as to the nearness of the Fall, by any extraordinary amount of sound.

We fully expected to have our ears assailed by a tremendous volume of sound, but such did not transpire. This impressed us greatly at the time, and caused us to wonder. The road by which we reached the falls had been painfully effected our hearing, and rendered all attempts at speech utterly futile, but there talking could be carried on quite comfortably. Of course we were not at the foot of the Falls, and that might make a big difference. At the same time we consider it quite remarkable that the noise was not more deafening.

Tyndal also discovered that the quality of the sound had much to do with its audibility. It was found that the length of the wave is a determining factor, rather than volume. Thus it is found that the syren can be heard much farther than the report of a cannon.

In school days we were taught that in the North a person may be heard speaking at the distance of a mile. This is not always so, as our experience shows. Indeed it often is difficult for a person to make himself heard even at a very short distance, but the Eskimo can carry on a conversation over great distances when the whiteman could not make himself heard. Fitch seems to have much to do with that.

Certain conditions of the atmosphere seem to blanket sounds very effectively. Suspended particles of snow often retard the passage of sound waves, and this condition is often witnessed in the extreme North. The air is often thick with invisible frost flakes, and it would seem that these have the property of being able to absorb sound.

One morning when not more than twenty yards from our tent, in Adam sound we tried to attract the attention of our friends in the tent and shouted frequently, but not a sound reached them. We had to walk back to the tent to make those inside understand. We have seen large boulders fall from the high cliffs and seen the sparks fly as they bounded from pro-

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BAD ROADS ARE COSTLY

Farmers Handicapped by High Cost of Haulage

The question is often asked, "What do good roads cost?"

If this question were put in another form, viz., "What do bad roads cost?" the answer would bring home to the people of Canada what they are paying as a sacrifice to poor transportation facilities. This, in addition to the discomfort and dissatisfaction of having to travel over them.

One of the chief causes of young people leaving the farm is the lack of good roads. Rugged and muddy roads retard social life, especially when associated with the unpleasantness of driving. It is the fact that the equipment becomes mud-battered and requires constant washing. To avoid these and other inconveniences, farmers and their families remain at home, more or less in isolation, and when the opportunity arises, many of them leave the farm. There is but one remedy for this isolated condition—by means of good roads, farmers and their families must be placed in touch with the social advantages of the larger communities. Just as soon as this condition is reached, the drain of population from the farm will decrease.

Of the economic losses due to bad roads separating the farmer from his market, that of cost of transportation is most important. A comparison of the load one horse can haul on good and bad roads, respectively, shows that on a muddy earth road, the amount varies from nothing to a maximum of 800 pounds; on a smooth, dry earth road, from 1,000 to 2,000 pounds; on a gravel road in bad condition, from 1,000 to 1,500 pounds; on a gravel road in good condition about 2,300 pounds; on a macadam road, from 2,000 to 5,000 pounds; on a brick or concrete road, from 5,000 to 8,000 pounds. In 1905, the Bureau of Statistics of the United States Department of Agriculture, from about 2,800 county reports, deduced an average cost of 22.7 cents for hauling one ton over one mile of unimproved roads. The equivalent cost of haulage per ton over different roads, taking 2,000 pounds over smooth earth roads as a basis, would be as follows:

Class of road	Load for one horse	Cost per ton for hauling
Muddy earth road	1 lb.	22.75
Smooth earth road	800	22.70
Gravel road in bad condition	1,500	28.40
Gravel road in good condition	2,000	15.15
Brick or concrete road	5,000	9.00

To Feed Poland By Parcel Post

Berlin, April 30 (via the Hague).—Many thousands of persons in several districts of Poland face starvation today. The German Government survey shows that in many places a food supply of from two to three weeks only is available. The question of relief is now being considered, but because of the difficulty of purchasing food outside of Germany this is a hard task. The American Red Cross and the Rockefeller Foundation, in charge of the relief work, are trying by every means in their power to obtain food for these needy people. After several months of effort Roumania is now permitting the purchase of corn, beans and barley in sufficient quantity to feed the Polish non-combatants in the territory held by Austria.

But there are a number of sections where food is still needed. Sweden has refused to permit the exportation of wheat or other foodstuffs, even though they are purchased for philanthropic work.

Carleton Gibson, head of the American relief work, to-day issued an appeal to Americans to aid in this work. He urges all who can to send immediately, by parcel post, flour, beans, corn and rye, addressed: "Carleton Gibson, Distribution General, International Commission for Relief of Poland, Berlin."

If the responses are prompt no doubt the necessary food will be available in the near future to tide the inhabitants of Poland over until the relief forces can get a supply of grain.

fecting crags, but although quite near, were unconscious of any sound whatever.

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