

Musical Director's Policy--Improved Service at Dunedin

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Old World Carillon to Ring Out from 2YA

"The Wellington Carillon has been purchased in memory of our illustrious dead. The rich have given of their wealth, the poor have given of their poverty, and the bereaved have given in memory of their beloved, so that the bells may be used to bring sweetness into daily life, for the lifting of men's minds to high thoughts and noble purposes, for the comfort of the sorrowful and for the strength of all who need cheer."

In those words Dr. E. Marsden concluded an address from 2YA that was of more than ordinary interest to listeners. His subject was "Carillons" in particular relation to the erection of Wellington's War Memorial, which may take the form of a Campanile to house the Carillon. On completion 2YA will be able to broadcast these old world notes across the Southern Pacific to the delight of thousands of listeners.

Dr. Marsden opened his address by some general remarks on the theory of sound and the physical basis of music, that are of interest. The sensation of sound, he explained, was always associated with the vibratory motion of some sounding body. The blurred outline of such a sounding body while emitting sound was sufficient, as a rule, to convince us of its rapid to and fro motion, and immediately this motion was stopped by a touch of the finger the sound ceased, as, for example, in the case of a tuning fork, violin string, or the reed in a reed instrument.

VIBRATIONS AND SOUND.

All vibrations did not mean sound, however, because the normal human ear was sensitive only to vibrations between 20 per second and 40,000 per second. The usual limits of the notes of a piano were from 33 per second to 2,000 vibrations per second. Persons differ like wireless sets in the range of frequencies they can tune to. Some persons could hear low frequency vibrations better than others, for example, the rumble of the local earthquake which exerted low frequency vibrations could be heard by some people and not by others.

After explaining that the sound waves needed a medium in which to travel—the ether—Dr. Marsden proceeded to explain the nature of a musical note. This, he said, had three characteristics: (1) loudness, or intensity, or extent of vibration, (2) pitch, or frequency of vibration, and (3) quality, or purity of vibration. We may have a piano string and a violin string principal or fundamental vibrating with the same frequency, say middle C, and, therefore, the same pitch, but the qualities of the notes are different, and we can distinguish the one from the other.

The reason is that we are seldom dealing with a note of a pure unadulterated single frequency. There is generally superimposed on it, or mixed with it, some other frequency which arises from another possible mode of vibration of the instrument or string giving rise to the sound. For instance, in a piano the basic, or fundamental note given out when we strike middle "C" for example, has mixed with it from the same string an almost equal component of frequency double, that is what we call an

octave higher. With a violin string of the same principal note or frequency, the proportion contributed by this first harmonic or octave is smaller than with the piano; on the other hand there is a larger proportion of vibrations of very high frequencies. It is the addition of these partials or harmonics to the fundamental notes of the string that gives each instrument its own peculiar characteristic or quality, even when the same fundamental note is sounded.

THE SECRET OF MUSIC

With the music from a violin string or piano string these harmonics, or added notes have all frequencies which have a simple numerical relation to the fundamental, twice, three times, etc. I shall not attempt to explain how the same string manages to emit several notes at once beyond stating that they are produced because the string can vibrate not only as a single loop but in two, three or more loops with interven-

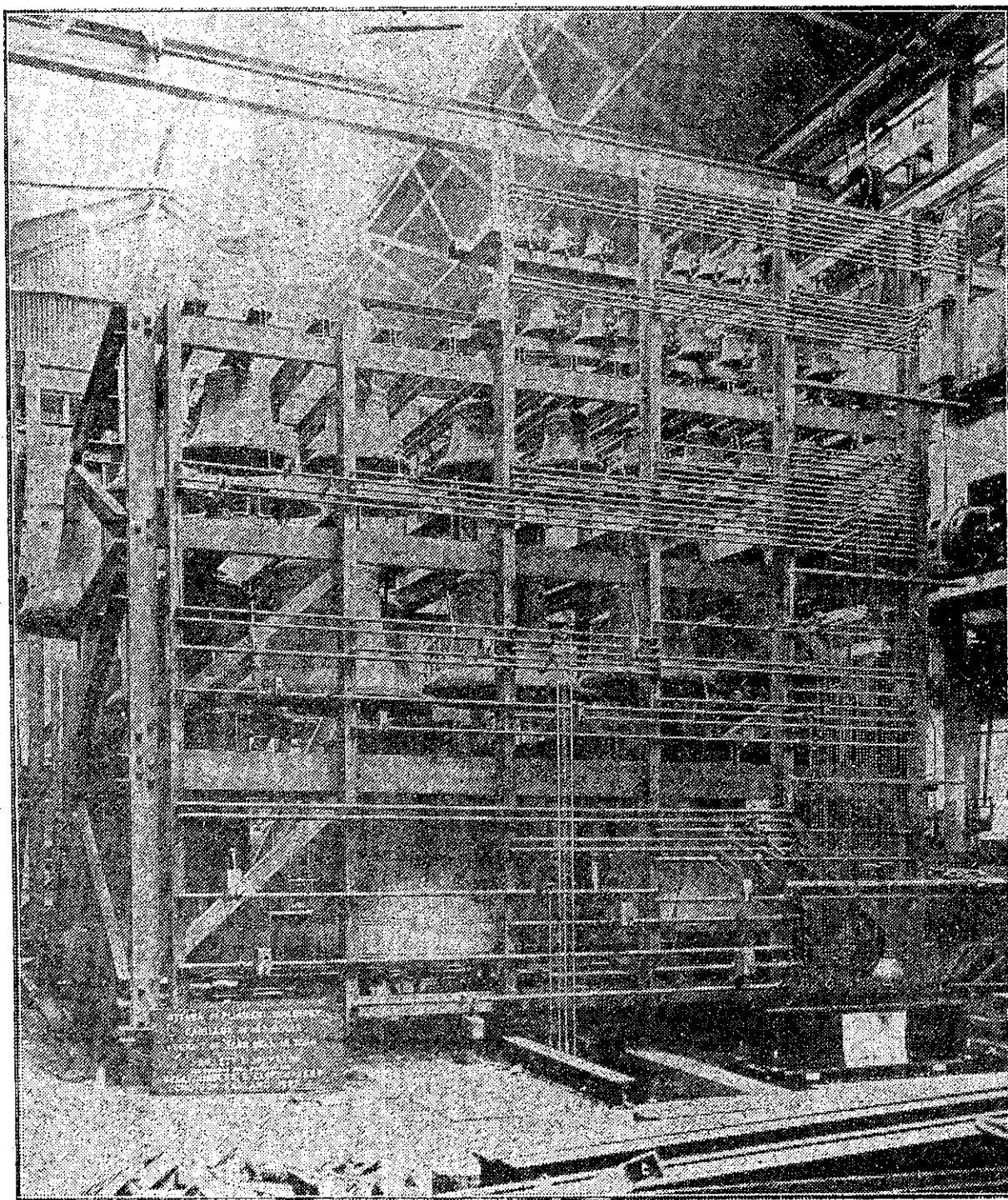
ing notes, partly according to the position at which the string is struck or bowed. The result is that the note produced by a violin string or piano string is pleasing to the ear because after the short time interval corresponding to a single vibration of the fundamental, the vibrations of the overtones comes into the same time-relationship again, and the ear-drum, in its endeavour to reproduce the sound to the

brain has only to follow and repeat rhythmically the relatively simple added effects of the various vibrations. With some instruments, and particularly with a bell which is not well-tuned, this is not always the case; for the various modes of vibration of the various parts of the bell, which occur simultaneously, may not have a simple relation to one another in their frequencies and the sound does not produce a simple rhythmic effect on the ear-drum, and we have a discord or a non-pleasing sound.

THE PROBLEM OF THE BELL

Thus, the great difficulty with a bell is that it must be so shaped and fashioned that it is in tune with itself; otherwise it cannot possibly be in tune with other bells. Every bell emits at least five tones at once—(1) the strike-note, (2) the nominal, which is above the strike-note in frequency, and (3) the hum-note, which is below. These three should be perfect octaves with each other if the bell is properly made and shaped. In addition, between the strike-note and the nominal, we have the tierce or minor third and the quint or perfect fifth, both of which make harmony with the fundamental. Consequently, for a carillon, the greatest care must be taken in the manufacture of the bells so that the sounding of each bell may be a chord of music in itself. It is the effect of the combination of these partial tones of the same bell which gives the special charm to the carillon. As the bell vibrates after being struck their relative intensity changes and gives the gradually changing quality to the note and gives the aerial haunting character to the music.

(Continued overleaf).



The illustration depicts a carillon of the class that is to be secured for Wellington. (Block: "Evening Post.")