

CORRESPONDENCE

[This department is a meeting-place for ideas. If you have any suggestions as to new methods or successful methods, let us hear from you. You may not be accustomed to write for publication, but do not hesitate. It is ideas we want. Your suggestion will help another. Ed.]

THE AURORA BOREALIS.

Sir,—Some time ago, in an editorial comment on an exhibition of the aurora borealis, which was visible in Victoria a night or two before, you said something about some persons having heard the northern lights crackle, but you were unable to corroborate the fact.

In Nova Scotia, when a boy and young man, I can recollect some very vivid displays of the aurora, and can remember very vividly occasionally hearing the crackling sound made by them. So far as I recollect, it resembled the crackling or crinkling of a good linen writing paper. The last time I can recollect its occurrence was in the fall of either 1879 or 1880. I was then working at Torbay, the Nova Scotian landing place of one of the Atlantic cables. The working of the cable to Ireland was much interfered with for several days by this severe electrical storm, as the electrical commotion is known in telegraph circles. Sometimes it was so severe that for a whole day only a few messages could be gotten through the cable, fifty or a hundred, while the regular traffic totalled some twelve hundred. The Atlantic cables at that time were worked by what was known as the "mirror system," as delicate an instrument as could well be imagined. It was simply a swell mirror (about half-inch in diameter) suspended by a single fibre of silk between the poles of a magnet. A lamp with a tin chimney cast a beam of light, say, an inch long by quarter inch wide, on to the mirror, which reflected it to a piece of paper stuck up in a rack in front of it. If a very light positive current was sent from Ireland through the cable and through the coils of electric magnet, the mirror, which had three small pieces of steel on its back, would be attracted, say, to the right, moving the spot of light to the right, which would indicate a dash (—). If now a negative current were sent across it would attract the mirror to the left and sign a dot (.). A dot and a dash indicate the letter "n." This system has been superseded by the "recorder," an instrument which makes a record by a small crooked line upon a paper tape which is constantly running.

You will readily understand that an instrument so sensitive as the mirror was quick to respond to outside influences, such as thunderstorms and electrical storms, such as the aurora. Day and night, we could feel it for some days—I think a week or ten days. It got so bad that one day while I was trying to use the cable it became so heavily charged that it burned it somewhere. The trouble remained for years, so that whereas before the event it was possible to duplex it (that is, send a message simultaneously from each end) it could afterwards only be worked simplex (single). This was caused by currents set up apparently in the sea by the aurora borealis.

It affected the land wires in a similar manner, heavily charging them one minute, so that the operator could not break circuit, the current arching across the points of the key (sending instruments), the next moment leaving the wire dead through reversal of one regular battery. During that display I worked with St. John, N.B., with both Torbay and St. John batteries cut off, purely from the electricity picked up from the aurora. We worked so for hours, and it created a good deal of comment at the time, though it has probably been frequently done since. I think the aurora must be, if I may so term it, more powerful in the eastern portion of

the Dominion. It seems rather rare out here, whereas it used to be quite common in the east.

I was reading in the October "Metropolitan Magazine" a whaling story of Hudson's Bay, from which I take the liberty of quoting the writer's description of the aurora and its "crackling."

"Well, the winter wore away, somehow. Once in a while he'd fumble 'round there in the dark—seal-oil was too precious to use much for light, you know—and get to the plank door and open it when his watch said noon, and slip outside and close the door behind him to keep the cold from getting in. Outside he'd stand there in a place that sometimes he kept shovelled, and contemplate the borealis. That, alone, from sheer magnificence and awe-inspiring majesty, was enough to drive a solitary man insane, at close range, like he was. I've seen it from within the circle!"

"Wonderful, it is, man, wonderful! All the colors in ten thousand rainbows; all the fire effects of every Independence Day in history, and Peelee added; a million times the majesty of any sunrise; magnificence incredible, impossible to tell! Think of this reflected on a thousand steeples of the towering ice, which rise there high enough to dwarf the tallest man-built spire in Christendom, and which have been fretted by the King of Cold as no hammer and no chisel ever dreamed of carving stone; think of it reflected on the rounded bosoms of the white snow-mountains; think of it aplay on boundless plains of pure, unbroken, crystal crust! First, the weird, blue, frozen, corpse-light of the North, and then, suddenly this brilliance, as if a million prisms had been broken by the hammers of the gods to dazzling fragments, and were falling in wild riots of mad color, indescribable, right at his feet! And he, you must remember, was quite near enough to hear the lights as well as to see them. There's many that don't know the northern lights are audible, but multiply the musketry of Gettysburg by that of Waterloo, and add the uproar of the Japs and Russians at the Yellow River, and you may have, if your imagination is a giant's, a baby's guess at what the crackling of electricity sounds like up there when the aurora's at its height. You may throw in thundrous crashing of ten thousand tons of ice, cracked, now and then, from brittle bergs a-shrink beneath the pressure of a cold which makes zero feel warm, for the artillery. All this has baffled scientists since science first came from an egg; it makes description falter and fall fainting.

William Christie.

Victoria, B.C.

SAFE SUPERIMPOSED LOADS.

Sir,—Referring again to the article on the safe superimposed loads on reinforced concrete floor slabs, and Mr. Oxley's letter in the October number,—whenever we have had occasion to submit plans to the City Building Department for permit, we have found that in order to satisfy the authorities we have had to base our calculations for strength of beams on the assumption, that the neutral axis in a concrete beam is always the centre between the centre of tension and the centre of compression, this being the interpretation given the written law by the City Building Department. It is, therefore, readily seen, that plans prepared and based on the

formula $w = \frac{61gh^2}{L^2}$ will not satisfy the conditions.

Yours very truly,
Trussed Concrete Steel Co.,
Per, Gustave Kahn.