

Toronto Technical School. The chief glory of this association, indeed, was its educational influence. In the year in which it was organized the number of boiler explosions and accidents resulting in loss of life from the carelessness or ignorance of engineers was enormously greater than now, in proportion to the population and steam power used. The association in its infancy had great difficulties to contend with. The trades and labor organizations were in arms against them when it was found that the C.A.S.E. refused to interfere in any way with labor disputes, while the employers on the other hand looked on them with suspicion or disdain, and there was the apathy of a great many of the engineers themselves. By keeping the one great object—their advance in knowledge—steadily before them, they have been able to overcome all these obstacles, and they were not ashamed of the work they had accomplished. He congratulated the members of Toronto, No. 1, on their fine hall, and hoped they would live to have many social gatherings such as the present. The entertainment was supplied by Miss Warnock, Mrs. Coutts-Bain, Messrs. Mills, Eversfield, Blackgrove, Grant, Towers, Phelps, Allcott, Parks, Vaughan, and last and best, our only James Fax, who is hailed by no class of Toronto citizens with greater delight than the stationary engineers. One of the best hits of the evening was the topical song, "Goodness Gracious," in which he introduced some new verses for the occasion. The following were two of the verses:

Do you know what I said when I entered this hall?
O goodness gracious!
Those were the words, but that wasn't all,
Good-goodness gracious.
I said "It's a beauty," as it now appears
I think it speaks volumes for our engineers,
And I wish them in it many happy New Years,
Gracious, good-goodness, goodness gracious!

When Wickens first started the C.A.S.E.,
O goodness gracious!
Folks thought he was off of his b-a-s-e,
Good-goodness gracious
But now we have Edkins and Phillips too,
George Mooring, Tom Eversfield—doodle dum-do,
And then as a climax this hulla-ba-loo,
Gracious, good-goodness, goodness gracious!

Mr. Grant gave excellent assistance and the hits in this song were uproariously received. Mr. Parks operated a phonograph to the delight of the audience, and the calisthenic feats of Mr. Eversfield were much admired, especially by the ladies. During the evening several gentlemen announced their readiness to donate books when the library was in shape, and the president expressed the hope that many more would come forward with contributions of works relating to engineering and kindred subjects.

IS THERE ELECTRICAL EXHAUSTION?

Editor CANADIAN ENGINEER.

The following statement appears in the January number of THE CANADIAN ENGINEER, by Wm. Golding, C.E., of New Orleans, in an article called "Over-crowding in the Installation of Electric Generators":—

"It is the practice to install as many electric generators in a given area as the floor space will admit of, never thinking that the electric fluid which is being got from the atmosphere may become exhausted."

We have from this statement to assume that Mr. Golding has some evidence that the atmosphere contains a limited quantity of electric and magnetic force. It has never been proved that such is the case, and further that the electric potential is derived from the atmosphere, and not a result of the power applied to the generator. If Mr. Golding will look over the illustrations in the January number of THE ENGINEER, in which his letter appears, he will find a description of a Storey dynamo in which every part of the apparatus but the conducting wires is hermetically sealed from the atmosphere, no part of it being visible but the outside of the steel case enclosing the machinery, and the end of the armature shaft and pulley driving it, together with the conducting wires to distribute the current. There is not a sign of outside magnetism to be found on it, yet this natural magnetic field is of great density, and is stated to give a greater potential for power applied than any electric machine now on the market, and is so closely sealed that water may be dashed all over the case without in the least affecting its working. Now, if dynamos in an electric station are overcrowded, how much more must this be so? Yet there is no evidence of any deficiency in the working of the many hundreds in use. It is now being realized what has been surmised for a long time past by scientists, including our greatest electrician, Tesla, that ether, an imponderable entity—now known to exist, but having no visible parts, but believed to fill all space in

the universe, and, as proved by Tesla, passes through glass with the same freedom as light, in fact is believed to accompany it and travel at the same rate—is the main factor by which force is accumulated and distributed by the power applied to dynamos, and according to Faraday, having a magnetic affinity with the velocity of light. In reference to this, Prof. C. A. Chant, B.A., of Toronto University, in his lecture on "Electrical Radiation," says, "there is a certain all-pervading, practically imponderable medium through all space that is now well known as ether, and its vibrations are believed to be motions made in transmitting radiant heat and light with a velocity of 185,000 miles per second." Maxwell's mathematics led him to believe that electro-magnetic effects are transmitted with the very same speed, they also must be propagated by some medium. Heinrich Heitz, one of the greatest of German scientists, demonstrated that electric energy is transmitted exactly as Maxwell predicted thirty years before this was formulated. The greatest scientist of his age, Faraday, conjectured that the same medium that is concerned in the propagation of light might also be the agent in electro-magnetic phenomena external to the magnet; such an action may be a function of ether; it should have other uses than simply the conveyance of radiation. This conjecture has been strengthened by all subsequent investigation. The electro-kinetic energy, on the other hand, is simply the energy of the motion set up on the medium by electric currents and the magnets, the motion not being confined to the wires that carry the currents and to the magnets, but existing in all places where the magnetic currents are found, and would under all circumstances maintain its equilibrium till power applied is to it by the action of the dynamos. When this power is applied the velocity of the current is increased by the increased voltage, while the amperes may remain the same, returning to the dynamos to be again reinforced to do its work over again. Under all the circumstances, it cannot be conjectured that the ether or electric energy in any given space can be limited by absorption, as it fills all space, and must, as everything else in nature, maintain its equilibrium. A great deal more might be stated to strengthen the position assumed here. It may be expected that others, better versed in electric science, and observers and experimenters on the laws governing electric phenomena, may throw light on it, in any case, whether right or wrong, this communication may influence others to take up the question and throw more light on it.

J. H. KILLEY.

CALCIUM CARBIDE.

Editor CANADIAN ENGINEER.

SIR,—I have read with great interest your article on calcium carbide and acetylene gas, which, I notice, has been copied extensively by other papers. Calcium carbide and its development into light, heat, power and its various useful chemical combinations, will affect many industries in a profound way. This will have in the near future to be manufactured on a large scale in Canada, requiring many thousands of horse-power in its production and in forcing its gas into a liquefied form, taking up a small space for transport, in this form it is capable of generating a very large amount of heat, light and power in proportion to its bulk. There is no question about its cheapness and usefulness, this has already been proven, but not so the cost to the public. The important purposes to which it can be applied have attracted the attention of United States capitalists and gas companies, so that it may become a monopoly as long as the patent holds good, unless some improved method of manufacture may be devised. This has been the case in the past with many important franchises, and may be so in this, yet even if it becomes a monopoly it will be a public benefit.

Fortunately in Canada we have the possibility of the cheapest and the most powerful water-powers on earth, to enable us to supply all we require ourselves and to supply England and other nations also. Its small weight in its liquefied form allows it to be carried at a comparatively small cost in proportion to its value in the arts.

Yours truly,

CANADIAN.

ONTARIO LAND SURVEYORS.

The fourth annual meeting of the Association of Ontario Land Surveyors will be held at Toronto on 25th, 26th and 27th inst. Papers will be contributed as follows. Artesian Wells, by V. M. Roberts, St. Catharines. An Exploration Survey through the Barren Lands, by J. W. Tyrrell, Hamilton. Boundaries of Ontario, by A. Niven, Haliburton. Sectional Surveys, by P. S. Gibson, Willowdale. National Boundaries, by A. P. Walker, Toronto. Field Testing of Minerals, by W. Hamilton Merriitt, F.G.S., Toronto. The Use of Concrete in Bridge Foundation, by Jos