prevent much of the ruinous competition which in some cases is eating the life out of the business and rendering large investments of capital entirely unproductive. United action on the part of central station men would have considerable influence in placing the business on a more substantial basis, and an interchange of ideas would lead in many cases to more profitable working. We shall be glad to have the opinions of electric lighting men on the subject. Those who think the idea a good one should at once express themselves in favor, and if there are any who see objections in the proposition, let us hear from them and we will give their views an equal prominence.

A NEW departure has been made this year by the municipal authorities of Hamilton in exempting from assessment all machinery constituting manufacturers' plant. The chief assessor is of the opinion that no appreciable difference will in consequence appear in the assessment, as nothing like the right estimate of machinery values was formerly obtained. It is said that the foundries owning expensive patterns which come under the head of "plant," will be largely benefited under the new system, the chief assessor stating his belief that one foundry in the city would come out about $20,000 ahead. A few such instances should be sufficient we imagine, to make an "appreciable difference" in an assessment as large even as that of Hamilton.

WE do not pretend to be an expert in the prophesying business any further than may be attained by the exercise of a medium amount of plain common sense. In a previous issue we predicted that the results of electrical execution would be "more horrible and ghastly than usually produced by the hangman's rope." Now that the experiment has been tried, the opinion then expressed is more than confirmed. It appears that the anxiety of the executioners to do the thing right led to the very catastrophe they were anxious to prevent. They got their electrodes, sponge and so forth, that were intended to make good contact with the victim, in such good order that his electrical resistance was made as low as possible. The result was that as soon as the switch was turned the dynamo was practically short-circuited, and the belt being unable to drive it, slipped round the pulley to eventually come off. Before it could be replaced the poor fellow partially came to life again, and it took two or three successive applications of the current, the engineers holding the belt on the dynamo with pieces of board the while, to complete the work. This is not a nice subject, but as an electrical journal, we feel bound to protest against the agent which is being so rapidly made the docile and efficient servant of mankind being degraded to the level of the brutal business of the executioner. When death by poison or anæsthetic was proposed as a substitute for present means, physicians with one voice protested against their profession being abused, but were quite willing to see electricity substituted. Electricians can with equal or much greater reason protest, and that we hereby do, and at the same time express the hope that the representatives of the people of New York will see their way at the next session of their legislature to wipe out a law that threatens to be a disgrace to any civilized community.

THE judicial killing of William Kemmler has demonstrated, among other things, the fact already well known to electricians who have the handling of heavy currents, that it takes an immense amount of electricity to kill a healthy man. The effect of a heavy shock when taken through the vital parts of the body seems to be for the time being to paralyze the action of the heart. If the current is continued long enough this would undoubtedly prove fatal, but the fact that so many take severe shocks and survive is owing to their being able to get away from the influence in time for the circulation to be restored. In these cases, after the first effect has passed away, no evil results follow. With more or less extremely nervous persons, the effect would last proportionately longer. It is also owing to the comparatively high resistance of the human body that serious results are so seldom recorded. A man may *think* he received a shock of so many volts intensity, while actually, following out the law of shunted currents, he might not have experienced one hundredth part of the amount. In cases of prolonged contact there is an electrolytic action upon the muscular tissue which produces a very painful sore, the decomposed tissue taking a long time to heal. While it is possible, of course, for men engaged in the work of handling electrical machinery as a means of earning their daily bread now and again to experience a shock from a heavy current, statistics show that the chance of being hurt is greatly less than a many other walks of life which are not looked upon as specially hazardous. Industries such as the saw and planing mill, and even the ordinary machine shops contribute a greater proportion of accidents than the electrical industries. After all, it is largely a matter of careful and intelligent handling by the individual, rather than any special immunity being connected with particular branches of mechanical manipulation.

PROF. THOMSON, erstwhile of the high school at Philadelphia and now presiding genius of probably the most extensive electrical industry of the world, has once more demonstrated his marvelous ingenuity by evolving a new style of dynamo in which there is no wire on the moving parts and no sliding contacts, brushes or commutator. It is true the current developed is an alternating one, but by the peculiar arrangement of polar distribution an almost entire absence of hysteresis is obtained. From the performance of experimental machines great results are expected, though as most well-built and designed dynamos at present return about 85 per cent. of the energy supplied to them in available current, the margin for increase in efficiency is small. There is room, however, for very considerable improvement in other directions. In mechanical construction, absence of heating and durability there is considerable margin left, and Prof. Thomson has undoubtedly made quite a stride in this direction. Alternating machines have been previously made without sliding contacts, such as the permanent magnet machine of De Meritens, but their commercial efficiency was low as compared with those of more modern date. There is considerable discussion going on amongst electricians as to the possibility of constructing a direct current dynamo without a commutator. If such a thing is attainable, the man who gets there first will be in luck. The commutator is the thorn in the side of the dynamo manipulator and the chief source of expense to the dynamo owner. Some radical change in the construction of a dynamo, while not increasing its efficiency, might possibly eliminate the nuisance, but it seems as though it were the very nature of things that an induced current must be an alternating one and require commutating to straighten it out so as to make it measurably direct. The inductive action of field magnets would not exist were it not for reversals of magnetism by their opposite, and consequently reversals of current in the secondary field of the armature. To produce a direct current dynamo without a commutator — the el-Dorado of all electrical hopes — is a problem that will provide any amount of brain work for our enterprising young electricians.

ONE of the most remarkable indications that the various electrical industries are rapidly cutting loose from the scientific laboratory and taking their place in the ordinary grooves of every-day life and their share in the work of the world, is the attitude towards them of the underwriters and insurance men. It is but a short time ago that the electrical field was looked upon as a *terra incognita* and the dynamo as a monster always ready to explode into fire and smoke on the least provocation, and it was impossible to obtain insurance on an electric plant except at exorbitant rates, and often not at all. When a Canadian firm could get insurance it was probably in some one-horse company in Kalamazoo or the Sandwich Islands, or at any rate far enough away to make it extremely problematical if in case of loss, anything could be realized on the policies. So strong was this prejudice that the electric companies were compelled to unite and establish an insurance company of their own on the mutual basis. So successful has this been that last year a considerable dividend was paid back to the policy holders and the enterprise established on a firmer basis than before. Agents of companies who would not look at electrical risks a year or two ago are now canvassing for the business, and it is becoming a recognized fact that there is no more risk in a dynamo room than in an ordinary mill or machine shop, and not nearly so much as there is in a wood-working establishment or a building in which combustible staples are being manufactured. As far as the electric light itself is concerned, it is conceded by even conservative associations, such as the New England Board of Insurance Underwriters, to be, when properly installed, the safest known method of illumination. More particularly is this the case in buildings where light, loose, fibrous material is being handled, in flouring mills where the dust would be very liable to ignite at an open flame, and in places where inflammable vapor is liable to accumulate. In these places the electric light is the very acme of safety, and is becoming recognized as such. Instead of their former antagonistic attitude, insurance men are commencing to welcome the advent of electricity as an element of safety, and one likely to lead to a more solid and profitable business being done wherever it is adopted.

TWO important questions present themselves to the minds of Canadian millers at the present time, viz.. What supply of wheat are we to have this season, what the quality and what the quantity in comparison with last year? Having obtained our supply of wheat, where is the demand for our flour to come from? Considering first the question of supply, the statistics obtainable go to show that last year Ontario produced 18,600,000 bushels, and Manitoba and the Northwestern Territories 9,000,000 bushels, making a total of 27,600,000 bushels. The Government's calculation of the yield in Ontario was, however, calculated in measured bushels, and much of the wheat having been from two to five lbs. under standard weight, it will be fair to calculate the entire yield at not more than 27,000,000 standard bushels. From this must be deducted 1,000,000 bushels for seed for the Northwest and 1,850,000 bushels for seed in Ontario, leaving for food purposes only 24,150,000 bushels. Estimating the population of the Dominion at a little more than five millions, and allowing a fraction over five bushels for the necessities of each person, we have a total requirement of say twenty-five and a quarter million bushels, which leaves us face to face with a deficit of something over 1,000,000 bushels. Statistics will show that about this quantity was imported into this country from the United States in the shape of wheat and flour. Prior to the advanced duty on flour, flour was imported; since then our millers have brought in considerable hard wheat from Duluth for consumption within the Dominion. The present outlook goes to show that all this will be changed the coming year. Instead of a shortage we shall have a surplus. While no reliable statistics are at present obtainable, yet from reports to hand from various parts of Ontario it is reasonably safe to calculate that instead of 18,000,000 bushels, the production of the province will this year be not less than 22,000,000 bushels, while the production of the Northwest will be doubled as compared with last year. We may consequently base our calculations upon a total crop of 40,000,000 bushels. Presuming that our food and seed requirements shall have increased to 30,000,000, we shall have 10,000,000 bushels for export. Fortunately for our farmers, Great Britain, the only market to which we can export bread stuffs, is likely to take our surplus at a fair price. Nevertheless, it is better to look the situation square in the face. If no wheat is ground for export, about every fourth bushel of wheat grown this year will have to be exported, and if all the wheat not used for seed is ground into flour, about every third barrel of flour manufactured will have to be exported. The sooner this surplus is got out of the Dominion and its equivalent in money brought in, the better for all concerned. It would be well for our millers to put themselves in communication either with reliable receivers of flour in Great Britain, or with exporters of flour here, at once, ascertain the values for export, and set it down in their minds that for this season that will be the price. While at the moment American markets are excited and higher than our own, their prohibitory tariff against our wheat and flour makes them no criterion for us, and this year, for the first time in six years, our prices for wheat and flour will be measured by prices on the other side of the Atlantic.

THE USE OF FERTILIZERS IN IMPROVING THE ONTARIO YIELD OF WHEAT.

IN view of the fact that the McKinley Bill is threatening to destroy the market for Canadian barley, the question of the possibility of doing something to bring about the return of the wheat yields of 30 and 40 bushels per acre which obtained on Ontario farms a quarter of a century ago is of sufficient importance to demand attention at the hands of our farmers and millers. From the success which has attended recent experiments, the possibility of much being accomplished in this direction is sufficiently encouraging to induce others to make similar trials. We give in this article names and places in connection with the tests referred to. Other important information on the subject is being collected. As it is not available at present, however, we give in the present issue such facts as have already come into our possession.

We are informed that at Smith's Falls, Ont., a gentleman whose name we are unfortunately not able to give, has commenced the manufacture of phosphates for fertilizing purposes. Mr. Woods, the local miller of that town, speaks very highly of the uniform superiority of the product of this manufactory, and we are sure he would be pleased to hand to the proprietor any enquiries on the subject which might be addressed to himself.

We give below the experience of several well-known