The Municipal World

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PAGES

MISSING

of the said question respectively. If no persons make application on that day, some might think that the clerk would have no appointments to make, but an application made at any time previous to polling day should be considered. The clerk shall appoint from among the applicants, if any for such appointment, or on behalf of the applicants for each municipality, ward or polling sub-division in the said district in writing, signed by them, two persons, on behalf of those interested, and desirous of obtaining the affirmative answer to the question, and a like number on behalf of the persons interested in and desirous of obtaining the negative answer. Before any person is so appointed he shall make and subscribe, before the clerk, a declaration in the form given in the act that he is desirous of obtaining the affirmative or negative answer. From this, it would appear that no persons could be appointed unless they came personally before the clerk and made the necessary declaration. The clerk should keep a list showing appointments for each polling place. At the polling, the agents are required to produce to the deputy returning officer their written appointments. Where no person has been appointed by the clerk, and in the absence of persons who have been duly authorized to attend at the polling place, any elector, upon making and subscribing, before the deputy returning officer or clerk, the declaration in the form, may be admitted to the polling place to act for the absent person.

There is apt to be a misunderstanding among deputy returning officers and clerks, owing to the fact that the voters' list required to be used, is same as required under the Municipal Act, with the addition of part three, and it must be thoroughly understood that, for the plebiscite vote, all in parts one and three, and *only* the *widows* and *unmarried women* in *part two* are entitled to plebiscite ballots.

In the ordinary polling book, to be provided for use at each polling sub-division, the clerk is required to add a column, headed Prohibition, and entries, as required by law, are to be made therein, showing the names of persons voting on the said question, in addition to the entries required to be made in the poll book at municipal elections. For this purpose, the right hand column in the poll book, used for remarks, may be divided. The proceedings, during the poll and at the close of the poll, are provided for in the act and are the same as in the case of municipal elections. To ensure correctness all deputy-returning officers should be required to employ a poll clerk, to be paid by the municipality, under the authority of section 26.

Good men do not differ as to whether extravagance should be checked and municipal affairs placed in the hands of competent and faithful officers.

A Practical Question.

Perhaps no more important practical question was discussed in any of the sections of the Provincial Association at its recent convention than that of the relation between the public school leaving and the high school entrance examinations. Viewed in the abstract, the most natural plan, and that which seems most in accordance with the idea of a unified and harmonious system, on which the Minister of Education so often dwells, would seem to be that the high school work should begin just where the public school work leaves off. The double examination appears illogical and anomalous. Few will now doubt that a step in the right direction was taken when the high school examinations were excepted as equivalents, *pro tanto*, for departmental and university examinations. Why should not the same principle be applied in the case of the public and high schools? It is clear, as was urged by some of the speakers, that the pupil who has passed the entrance can scarcely be relied on for any earnestness or enthusiasm in further public school work. He is pretty sure either to feel that his education is complete and that his school days ought to be over, or that his proper place is now in the high school, which is henceforth the goal of his ambition.

To our thinking the ideal system would be one in which the public schools should carry the pupil onward to the point, whether fixed at the end of the fifth-form work or elsewhere, at which he could profitably enter upon the high school course, and there should be no overlapping of the two. The completion of the regular public school course, as determined by a leaving examination or otherwise, should be the ticket of admission to the high school, without further test. But the real difficulty is the financial one, and that is, we fear, for the present insuperable. Not one in ten of the public schools, so far as we are able to judge, has the staff and other equipment necessary to enable it to do thoroughly and efficiently the work necessary to carry its pupils successfully to the end of the fifth form, and it would be, there is every reason to fear, impossible at present to induce the parents and trustees to provide the funds necessary to put the schools in a position to do this work. To require a teacher who has already, as the public school teachers in nine cases out of ten have, his or her hands more than full with the work of the four forms, to undertake fifth-form work in addition, would be not only unjust and cruel to the teacher, but destructive of thoroughness in the teaching. Not only would additional help be needed, but the payment of higher salaries to the teachers as well. In view of the fact that so large a proportion of the children never go beyond the public school, it would be a grand advance if fifth-form work could be made a regular and integral part of the public school course. In many cases the fifth or last year would be worth more to the pupil than any two years preceding, because he would have reached a stage of maturity and of mental power which would enable him to turn his time to vastly better account than at any previous stage.

Until the tax-payers are willing to contribute much more largely for educational purposes, we fear the present illogical over-lapping system is the best practicable. Meanwhile, it is a legitimate and praiseworthy thing to work with a view to a better.—*Educational Journal.*

The Rights of the Wheelmen.

The case referred to on page 157 of THE WORLD (Oct.) has been again before the courts since our last issue. The plaintiff, Mr. Hardy, who suffered defeat in the original action, made application in the regular way, for a new trial. The application was not granted, for the reason given by His Honor Judge Elliott, in deciding the case for the defendant, when it came before him in the first instance. We notice that contributory negligence on the part of the defendant was a material factor in causing the learned judge to arrive at his conclusion in both the instances cited, as suggested in the Oct. issue of this paper.

Owing to the short time intervening between the meeting of the council on the 15th December and nominations, it will be necessary to have the financial statements, required under the provisions of section 263, sub-section 3, of the Municipal Act prepared, so that they can be placed in the printer's hands immediately after the meeting. The statement should show in detail, receipts and expenditure for the portion of the year ending on the day of said meeting, together with a statement of the assets and liabilities and uncollected taxes, and a similar statement in detail is required to be attached thereto respecting the last fifteen days of the preceeding year. The statement should be signed by the mayor or reeve and by the treasurer, and published forthwith in such newspapers as the council may direct. Instead of publishing the statement in the newspaper the council may cause the same to be posted up not later than the 24th day of December in the offices of the clerk and treasurer, as well as the post offices in the municipality, and not less than twelve other conspicuous places therein. The clerk is required to procure not less than 100 additional copies of said statement and deliver or transmit by post to the electors who first request him to do so, one of such copies not later than the 24th day of December, and shall also produce copies of the said statement at the nomination. This section does not apply to East or West Algoma, North Renfrew, Muskoka, Parry Sound, or Haliburton.

John Brown, Treasurer, in Account with the Municipality of Howard.

RECEIPTS, DR.

1894		CASH.	DEPOSIT.	TOTAL.
Jan. 1	By balance on hand	$ 56 00	$ 100 00	$ 156 00
	License Fund			
" 4	By Inspector	78 10		78 10
	Collector			
	By Taxes	200 00	1,300 00	1,500 00
" 11	*Deposit*		78 10	
" 15	*By Cash for Office*	150 00		
		$ 484 10	$1,478 10	$1,734 10
Feb. 1	By Balance	$ 383 00	$1,262 10	$1,645 10

EXPENDITURES, CR.

1894		CASH.	CHEQUE.	TOTAL.
Jan. 2	Road and Bridge Account To H. Axford	$ 13 00		13 00
	Expense Account			
" 2	To S. Roe		39 00	39 00
" 11	*To cash deposited*	78 10		
	Dog Fund			
" 15	To J. Smith	10 00	27 00	37 00
" 15	*To cheque cash for office*		150 00	
		$ 101 10	$ 216 00	$ 89 00
	Balance	383 00	1,262 10	1,645 10
		$ 484 10	$1,478 10	$1,734 00

Model Cash Book for Municipal Treasurers.

The above is example of cash book pages with entries as required by the Municipal Amendment Act, 1893. The page of receipts, by first entry, shows balance in treasurer's hands to be $156, of which $100 is on deposit in a bank and $56 cash in office.

The second entry shows an ordinary receipt in cash, while the third entry shows the receipt of moneys deposited to the credit of the treasurer at the bank, and also a payment on same account to him at his office on same date. The fourth entry shows deposit of money received (an entry on expenditure page shows this as a cash payment). The fifth entry shows receipt of cash from bank account as per cheque of same date, entered in expenditure page.

The expenditure's first entry shows ordinary cash payment; second entry shows ordinary payment by cheque on bank; third entry shows payment of cash in office to be deposited (see entry in receipts of deposit); fourth entry shows payment partly by cash and partly by cheque on bank; fifth entry shows treasurer's cheque on bank account, which is to increase cash in office.

A cash book, kept in this manner, may be balanced at any time by adding up the three columns, when it will show correctly cash in office and on deposit at bank, which, together, should equal total balance.

The right hand, or total columns, contain the entries to correspond with vouchers and stub of receipt book, and are the only amounts to be transferred to the ledger. If a three-column cash book, such as above, cannot be procured, an ordinary two-column one may be used, and two additional lines ruled to provide column for cash entries and ledger folio.

This is a most important book for treasurers, so much so that the legislature have deemed it advisable to require all to keep one, unless otherwise ordered by the council, and we would recommend no council to consider a proposition to amend or alter it in any way.

Collectors' Returns.

In making settlements with the collector on the return of the roll, care should be taken to see that the provisions of sections 132 to 136 of the Consolidated Assessment Act are strictly observed. The treasurer has the authority to administer the oaths necessary to be made by the collector in connection with the completion of the returns. The following may be used as form of oath under section 132:

I, , of the of , in the county of collector for the municipality of the of , in said county for the year 189 , make oath and say:

That the date of the demand of payment and transmission of statement and and demand of taxes required by sections 123 and 125, of the Consolidated Assessment Act, 1892, in each case, has been truly stated by me in the collector's roll for the said municipality for the said year 1892.

Sworn before me at the of in the county of this day of A. D 189

Treasurer, municipality of

And the form of oath used, under section 136, may be as follows:

I, , of the of , in the county of collector for the municipality of the of in said county for the year 189 , make oath and say:

That the sums mentioned in the above account remain unpaid, and that I have not, upon diligent inquiry, been able to discover sufficient goods or chattels belonging to or in possession of the persons charged with, or liable to pay such sums, or on the premises belonging to, or in the possession of any occupant thereof, whereon I could levy the same or any part thereof.

Sworn before me at the of , in the county of , this day of , A. D. 1890,

Treasurer, municipality of

We would suggest that the collector's return for the county treasurer be made in triplicate instead of in duplicate, as required by section 135. That the collector make the affidavit, required by section 136, in the form given above, entered on the return or on a separate paper attached to same. That one copy thereof be sent to the county treasurer, as required by section 145 of the Assessment Act; one copy to the clerk of the municipality, and that the original be retained by the treasurer as his authority for crediting the collector.

Section 489, sub-section 1, of the Consolidated Assessment Act, gives the councils of every local municipality authority to pass by-laws disqualifying any elector from voting at municipal elections, who has not paid all the municipal taxes due by him on or before the 14th day of December next preceding the election. A by-law, under this sub-section, should be passed a sufficient time before the election to give persons in default an opportunity to obtain the restoration of their franchise under the provision of section 81 of the said act. Where a by law has been passed under this section the treasurer is required, by section 251 of the Consolidated Municipal Act, to prepare, on or before the 20th December in each year, and transmit to the clerk, a list of all persons who have not paid their municipal taxes on or before the 14th day of the said month of December. Section 81 provides that any who may be included in the defaulters' list, required under the provisions of the above-mentioned sections, or of section 119, may put in their vote, by depositing with the deputy returning officer a receipt from the treasurer of the municipality showing that they have paid their taxes.

ENGINEERING DEPARTMENT.

A. W. CAMPBELL,
P.L.S., C.E., AM.C.S., C.E.,
EDITOR.

During the past two years, the press of America have been doing their utmost to distribute information with reference to improvement of highways, and in the United States some magazines have been started devoted entirely to the important subject of good roads.

A letter from the editor of the *Woodstock Sentinel Review*, recently published in the *Toronto Globe*, states: that he has been requested to take the initial steps to bring about an organization of a Good Roads Association in this province, and that during the latter part of the present year or the beginning of next, a general meeting or convention of those interested should be held in Toronto. We would be very pleased to see an association formed such as that proposed, and to assist in securing a successful organization, it would, we think, not be advisable to hold a meeting until February of next year, and that each county council be requested to send a representative to the proposed meeting for organization. In that way the municipalities would at once become acquainted, through their representative, with the objects of the association.

We believe that no great improvement will ever be made in the roads of the province nnless those who direct the expenditure of municipal taxes are interested, and have confidence in the recommendations of the association.

Roads and Roadmaking

Ideal perfect stone road construction is rarely or never reached. We have not been looking in the right direction for that in recent years. Only by accident, or after considerable periods of time, by resurfacing and patching (never so perfect as original work may be) is here and there a chance for closer observers than ordinary to correct their theories of construction by actual facts. Our many blunders involve the disgrace and ill-repute of broken stone roads, with chronic disgust or lack of desire for questionable street improvement among those who might otherwise be glad to pay for them.

How often have we told somebody with ineffable sapience that "to dry up your mud and water on a road, you must have some even-sized stones dumped or spread upon it?" Dare we convey that principle into the kitchen or laundry as a remedy for sloppy floors? or tell it to the marines, even, who are not supposed to realize the rotundity of ship's decks, and the use of lee-scuppers. The smallest urchin knows now that a glass of water will hold a tumblerful of nails, and French engineers decided years ago that a cubic yard of even-sized stone would hold half a cubic yard of water.

Ask a caulker, a steam piper, the dentist who fills our teeth, or the laborer who properly packs earth and gravel beneath a railway sleeper, or about a post in the ground, and see what tools they use for stuffing and solidifying the filling crevices and we shall know more of the demands for rock road-making where thousands of interstices to the cubic yard are to be made solid.

Skilled workmen, quick to notice any redundancy or lack of fine or coarse stone in the texture of the metal as delivered with lithe stone hammers in handas whips for cracking a few stones upon occasion and pull forks adapted to the shifting and reassortment of small quantities of material, will be ready when the science of rock road-making is fully understood.

* * *

In the country, the value of occasional showers will be felt in road-making, and secured by very nice road workmen in putting the finishing touches to his job. As it is, it is possible that a sudden heavy rain on raw work may wash fine rock-filling dust down too fast, in spite of the best management. So it is possible that such places will show plainly when the sun comes out to supply the little fine material to make good the deficiency. The practice of robbing the internal structure of a stone road of its full proportion of interstical matter for the sake of dressing the surface, is vicious in both ways. Filling and packing should proceed contemporaneously. As soon as these points are thoroughly appreciated and the minds of inventors are fixed upon them, we may expect a developement of patent compounds designed to facilitate the union of broken stone work, and now impossible by reason of rude and dirty ways of working. Lime and iron were suggested by road engineers many years ago.

* * *

Road stone differs materially in different sections of the country. In controlling these differences, when otherwise they would go against us, more opportunities for skill and dexterity will occur than can be put in an essay or book. Some persons live long and useful lives, and die very much regretted, without having learned at all stages of temperature to spread butter on bread handsomely. It is highly probable that some few people, even if they try hard and are well paid for so doing, will never succeed in finishing a road perfectly and with despatch. Tom Hood's old florist, who was "too dry" or "too wet" herself, when her plants were suffering, might have been the mother of roadmakers, sufficiently sensitive to know how their work was going on without being told of it.

* * *

After a road is done, and about as hard as it ever can be when loads of stone and the best improved narrow-wheeled steam roller fails to make an impression on it, when we know that all the inside of it is one coherent mass, when it actually does shed water, even then a road artist, proud as the skilled modern surgeon, of healing the fairly-glazed rock surface by "first intention," may wish to give a color of age to his work. How can he best do this? By adding the least top-dressing, not a fourth of an inch anywhere, for it's only a coat of mineral paint—of tough, fiine earthen gravel to suit his complexion. This is but varnish. Perhaps only feet trotters and bicyclists willing to save their rubbers from sharp grit will thank him for it. This is the way to give age at once, to a bit of new road. It can well be omitted, for this is all the excuse there ever was in the best stone work, for outside binding material. The apparent need of that follows from the foolish stealing away of stone chips from the body of the road.

* * *

Pauper labor and chain gangs—the offspring of learned craft and studied proletarian ignorance—cannot well be the raw material of the best road-making, except they are warmed over and renewed by a touch of divine charity and human fellowship. The best roads will be engendered in the thought of the best artisans, and these will be most familiar with the nature of all things. Have we seen the quiet gangs of men engaged in artificial rock pavement around our national buildings? Where every man is a master tradesman, and it is impossible to tell who the boss is, so closely do they all mind their business. Those are working models of applied science. Let us begin road-making in that way, and trust imitative human nature to follow us. It would be cheaper that our present half civilized methods of choosing a new road-maker every year.

* * *

Whenever water, with or without frost, is liable to render the foundation of a road insecure, provision must be made against it. There are perennial springs that anyone can see, and basins of rock, hard-pan or clay, which become springs in wet weather, that few will see beforehand. These are very apt to cause trouble where cuts have been made for roads. The chances are too numerous for specification. Simple land drainage will improve lines of highways in frosty regions. Three inches of sand, along the line of a wet meadow, under drain, furnishes a dry foot-path; and when it is outgrown with grass, thatched roofed, as it were, with grass fibre, frost never softens that sand, and we see illustrated the effect of solid stone floor roofing upon a ridge of drained clay highway.

Ventilation of Sewers.

The first consideration, after settling which town or part of the country it is desirable to live in, should be the situation of the house, *i. e.*, not only its aspect, but the condition of the soil on which it stands, and its position in regard to any ponds, streams, rivers or other natural features.

Taking first the aspect. It is generally considered that a house is most favorably situated when its principal front is towards the north-east, for it then gets the morning sun, while the rooms are sheltered, to a great extent, from the mid-day heat. The south-west is the rainy quarter in the country, and should, therefore, be avoided. A gravel soil is commonly to be preferred to any other, although I believe that in towns which are well sewered and drained, the nature of the soil is not of so much importance; indeed, one might readily imagine a case in which a gravel soil would be anything but a benefit, as, for instance, where there is a pond near the house and on about the same level, or. in towns where percolating cess-pools are the fashion. Running water, near a house, is not objectionable, indeed many pers ns consider it rather beneficial than otherwise; but, before taking the house, care should be exercised in ascertaining that the water is free from sewage contamination, especially if it be a small stream, or liable to dry up in summer. Stagnant ponds should always be avoided, especially if the house is nearly of the same level.

With regard to artificial sanitary conditions, as distinguished from natural situation, soil, etc., the first question to be asked of the landlord should be as to good water supply, other than from wells on the premises. There being no such supply, or means of laying one on, would certainly be against the house, inasmuch as where there are no waterworks, there is generally no system of sewerage, and it may safely be said that in any unsewered town there is hardly a well, the water of which is fit to drink, to say nothing of the labor of pumping water into cisterns, etc. From this follows naturally the question as to the sewage of the town or village. If there is no system of sewers I would say, "live anywhere else if you possibly can," for the absence of sewerage indicates the existence of some form of cesspool, an evil so great that nothing but absolute necessity should cause any person to take a house to which a cesspool is attached. I say "some sort of cesspool," for I am quite aware that there are schemes which profess to do away with water-closets and cess-pools and partially with sewers, but, upon examination, they will be found wanting in some material point. Among these plans are the dry earth and pail systems, both, in my opinion, but forms of cesspools. This is undoubtedly good advice, and yet if rigidly followed it would depopulate many American villages and small towns that have and deserve a reputation of healthfulness. Throughout the country may be pointed out towns which, owing to the natural advantages, have been cheaply supplied with an abundance of good water laid to the houses, but have as yet not risen to meet the expense of a general sewerage system. Such towns are not necessarily unhealthy or to be avoided, although a sewered town is preferable. Certainly privies and cesspools are preferable to the most extensive system of sewers combined with bad plumbing. The cesspools, which should always be properly constructed, need not be a source of disease, and there are house locations where its use seems to be a necessity. If it can be supplanted by some better means of disposal let it be done, but a building is not necessarily unhealthy which discharges into it.

If the town or village is sewered, the first part is to make sure that the house drains are properly connected with the sewers. It is no common thing for the drain to be carried from the house to the outside of the sewer and to stop then, being thus rather worse than useless. The bricklayer would probably call this "leaving another job." After seeing that the connection is properly made, that the pipe really passes into the sewer the next thing to be done is to find out if the house drains are properly constructed.

Next make sure that the house drains are properly ventilated. The landlord or builder will probably tell you that they are "trapped," and that no foul gas can pass the trap. This is a great delusion and should not be listened to for a moment. The trap is a very useful and necessary thing, but it must not be expected to do more than it can, and in order to make this clear I will explain what the common siphon trap is, viz., a bent pipe. These pipes always retain a certain quantity of water, when in use in the dip or bend. The upper part of the pipe dips into the water, which completely fills the bend, and the water is sometimes said to seal the trap, and it is assumed that it will entirely prevent any gasses from passing into the house. A little consideration will show, however, that if the gas is generated in snch quantities as to cause any considerable pressure in the sewers it will readily pass through the water into the house. The traps should be ventilated and the ventilating pipe should not open into the house. There are several kinds of traps but the principal of all is nearly the same.

How Land Values Increase.

Land values are increased by improved roads. This effects increased assessment and taxes on lands abutting because most benefited. This increased assessment reduces per cent. of tax, and tax on lands not abutting, and which are hence less benefited.

An Experiment with Steel Rails.

One of its interesting experiments, noted by Mr. Mertens in Valencia, Spain, is that of a cart track of steel flat top rails, which gave such excellent results that a double track was to be laid the whole way to the port for heavily laden carts. The distance between the two iron tracks is about 1¼ yards, and a steel crossbar holds them at the right distance, the roadway between being paved. One side is used as an up route and the other for going down. The cost, though the steel rails are imported, is only about $10 per running yard, put down and ready for use.—*New York Sun.*

Civic government in Toronto is admitted by thinking men to be a failure, both on account of its expensiveness and its ineficiency, and there is plenty of talk of government by commission, and getting a special charter for the city. Toronto's experience in this matter is not singular. It is an admitted fact that our municipal law in cities and large towns has become intolerably expensive, while it works fairly well in rural municipalities. Government by commission has its advantages, in simplicity of machinery, directness of action and cheapness. The objection to it is an alleged tendency to refuse to move in any direction without a precedent and becoming, in consequence, unelastic and non-progressive, of which, we think, there is not much danger in a country like Canada, where public opinion has such free scope and facility of expression through the newspapers. The mayor of Toronto is reported as in favor of governing the city by a commission of four citizens and a mayor. Many towns, the size of Owen Sound, could be better, and more cheaply managed by commission than by the present system of ward grabbing with its demoralizing and corrupting influences. *Owen Sound Times.*

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Mr. J. C. Morrison, the well-known clerk of the township of McKillop in a letter to the *Seaforth Expositor* refers very pointedly to the necessity of a meeting in each county of the reeves and clerks, to discuss the proposed amendments of the Drainage, Ditches and Watercourses and Assessment Acts, which the legislature has referred to municipal officers and others for their consideration. We have given some suggestions in reference to the Ditches and Watercourses Act, and were surprised that more interest was not taken in these proposed amendments, which have been distributed very generally throughout the province. We believe that it is only by intelligent discussion of important matters, such as those referred to that workable amendments to the various Municipal Acts can be suggested.

There will be plenty of space in the January and February numbers for all who desire to express their views in reference to the proposed amendments of these acts.

Bridges.

The amount of money annually required for the construction and maintenance of highway bridges, calls for the most careful investigation by all those interested in public economy, as to what means are necessary to reduce the cost of maintenance, and naturally leads to inquiries as to whether iron bridge building will contribute to this result; whether iron bridges have been sufficiently tested to render their adoption no longer an experiment, but a success; whether cast or wrought iron should be adopted for bridge work; whether wrought iron if adopted will be effected by corrosion or other causes; what the proper capacity of an iron bridge should be; what are the best plans for iron bridges, and what is the best mode of obtaining an iron bridge of proper construction.

We have thought a short history of iron bridge building in connection with a review of ascertaining facts as to the use of iron for bridge building, and the proper capacity for load and strain of highway bridges, together with points suggested by our experience in bridge work as to the proper means of securing good iron road bridges, would be of much value in arriving at a correct conclusion on these important points.

The first form of iron bridge was doubtless suggested by the stone arch well known to constructors for many centuries, and the facility with which cast iron could be molded into curved segments forming an arch suggested its use instead of stone, and at an early date, the plan of erecting a cast iron deck arch was carried into execution.

The cost of constructing piers and abutments of sufficient strength to withstand the thrust of the arches made these bridges expensive in construction, and latterly a bridge was designed known as the bow string girder bridge consisting of a cast iron arch having its ends united by an iron chord which sustained the thrust of the arches instead of having them thrust on the abutments. All of these forms of bridges depended primarily upon the arch as the sustaining member, acting mainly under a compressing strain developed on the line of its axis, but the strength thus displayed by the iron led others to adopt it as a girder, or beam acting under a transverse strain either by itself or in connecting with wrought iron bars forming truss rods

The very unreliable character of cast iron under repeated loads, such as occur in bridge work, especially where transverse strains are produced and the great difficulty in combining cast and wrought iron in one structure so as to secure their united strength was soon shown by the failure of several of this style of bridges, and the attention of constructors was then turned to wrought iron for all parts of the bridge.

Extensive experiments have been made by which reliable information was obtained concerning the tensile crushing and shear ing strength of wrought iron, and the art of rolling large bars, plates and shapes of wrought iron instead of forging them.

The extended wants and limited capital of Canada led to the adoption of wood in the construction of early bridges, that material being very abundant, and therefore the cheapest that could be obtained, and economy in first cost being the main consideration without much regard to durability of construction. But wooden bridges, after having been thoroughly tried, and brought to the greatest perfection as to construction and span have been almost abandoned for iron bridges, the public having been convinced by experience that the greatest durability, less cost of repair, and immunity from destruction by fire, far more than compensate for the additional first cost of the iron over the wooden bridge.

That the strength and durability of iron bridges for road purposes has been sufficiently tested and proven by actual experience in spans of all lengths usually required for practical use, to be beyond reasonable question.

The general adoption of wrought iron for bridge construction has lead to extensive experiments, to determine what its ultimate strength was under various loads, how it was affected by the strains brought upon it in practical use, and what actions would tend to its destruction. And the results show an average ultimate capacity of wrought iron to resist pulling apart by a uniform load of 53,760 pounds per square inch of section, and an average ultimate capacity to resist crushing under a uniform load of about 35,840 pounds per square inch of section. It was found, however,that the capacity of a wrought iron column to resist a crushing load varied very much with the form of the section of the column and the ratio of the diameter to the length of the column, that wrought iron columns having a greater length than ten times their diameter gave way under a crushing load by bulging out at the sides, and not by being crushed together lengthways; that the greater the diameter of the column of any given length, the greater was its crushing strength for any given sectional area length and diameter.

Experience has also shown that the ultimate strength of wrought iron was no test upon which to base its merits for bridge work, as a bridge is intended to be loaded many times with a moderate load and not to be broken down with one trial with an immense load, and experiments made to ascertain how much load a bar of iron should withstand, without injury, instead of how much load was required to break and destroy it, or to ascertain its elastic limit of capacity. The life of an iron girder or bridge is only about eight years if repeatedly loaded with little over one-third its full breaking capacity, while the same girder will live over 300 years when subjected to repeated loads of only a little over one-quarter its full capacity.

We suggest the following facts relating to the practical use of wrought iron in bridge construction.

1. That a wrought iron bridge should never be subjected to a load much exceeding one-fourth of its breaking load.

2. That the common mode of fixing the maximum strain on wrought iron by using a "factor of safety" or a common fractional part of its ultimate tensile or crushing strength is incorrect since the practical value of iron for bridge work depends on its elastic and not its ultimate breaking strength and the the elastic strength of wrought iron is much greater proportionately for crushing than for tensile strains.

3. That for highway bridges, where loads were never so intense or suddenly applied as on railroad work, the limit of tensile strain for wrought iron can be fixed at about 19,000 to 20,000 pounds per square inch varying from the limit down to 10,000 pounds per square inch with the quality of the iron and the character of the travel over the bridge.

4. That the limit of compression strain per square inch for wrought iron may, with safety, be taken the same as for the tensile strain, so as to be subject to reduction in accordance with the relation between the length and diameter of the column under compressive strain.

5. That any practical injurious effect of corrosion or rust on wrought iron can be fully prevented by carefully painting the inner faces of closed iron work before uniting the parts, and then keeping the outside surfaces well coated with paint.

The maximum load per square foot, ever occuring on road bridges in practical use has been determined by various observers by ascertaining the weight of crowds of people, or cattle and trains of loaded teams and varies from 147 to 83 pounds, 90 pounds being about the average weight obtained from all the experiments, and 41 pounds the average weight shown as the ordinary working load of bridges located on well travelled highways.

We believe, however, that the working load per square foot should vary with the span of the bridge, the width of roadway and walks, and the location of the bridge, because the longer span is much less liable to be loaded its full length than the short one, and a wide bridge is not so liable to have a square foot of its surface covered with the full load as the narrow one. While a country bridge is not usually loaded as much at any one time, or is the load as often applied as on a town or village bridge, which in turn is not as heavily or as often loaded as city bridges, the proportion of load to span has long been applied to railway bridges, and no reason appears why the same rule should not apply to road bridges, within proper limits.

Drainage Laws.

In further discussing the bill, an act to consolidate and amend the drainage laws, we find that it provides, that, upon the petition of the majority of the number of resident and non-resident persons (exclusive of farmers' sons not actual owners) as shown by the last revised assessment roll to be owners of the land to be benefited in any described area within any township, incorporated village, town, or city, to the municipal council thereof, for the draining of the area described in the petition by means of drainage work.

We think this should not be owners as shown by the last revised assessment roll. In our experience, we find that land changes hands so often, and the owners according to the last revised assessment roll, are not the owners at the time of preparing the petition, and, according to the section as it now reads, the actual owner would have no voice in the matter, but the owner, according to the last revised assessment roll, who really is not the owner, and it certainly would be a great injustice not to allow the actual owner to have a voice for or against the work, until he became the owner according to the last revised assessment roll. The owners of the property at the time of preparing the petition for or against the work should be the persons entitled to sign the petition, and where they are not the owners as shown by the assessment roll, they should be required to make a statutory declaration that he or she is the real owner. Agents under power of attorney, executors and guardians of estates should have the same rights as the owner, and the greatest care should be exercised by the council in seeing that the majority of owners of property to be affected have signed the petition before such interference with the rights of the owners of the property should be undertaken. The requiring of a statutory declaration may mean some trouble and inconvenience, but where the majority is allowed the right of binding, the minority in obtaining a very large expenditure there should be no reasonable doubt allowed to exist as to the existence of such majority.

The lands and roads of any municipality, company or individual using any drainage work as an outlet, or for which when the work is constructed, an improved outlet is thereby provided either directly or through the medium of any other drainage work, or of a swale, ravine, creek, or water course, may, under all the formalities and powers contained therein, except the petition, be assessed and charged for the construction and maintenance of drainage works so used as an outlet or providing an improved outlet, the owners of lands and roads thus made liable to assessment shall count neither for or against the petition required unless within the area therein described is a proper and necessary provision. If the upper land owners have dug or require to dig to drain their lands, and if by said work the actual flow of water will be increased ; in such cases the upper lands should contribute to carry the water to a proper outlet without even being asked to sign a petition for the improvement necessary to convey the water so sent down through the lands of the lower owners, and it is quite natural to expect that parties living on the uplands will prosecute the drainage works so long as they have sufficient outlet in to low land, the owners of which at the time may have no objection, but afterwards the upper owners refuse to sign a petition to construct a drain through such lands for the purpose of carrying the water sent down by them, to the injury of the lower parties, to a proper outlet.

It is right that the question of authority of the engineer, and the power of the council, should be made clear beyond a doubt. The petition should in no way influence the engineer. When the engineer receives notice and is presented by the council with a copy of the petition for a drain or other work contemplated, he prepares himself for going on the ground described in that petition, and the use of the petition to the engineer should only be to point out to him the territory and nature of the work contemplated, and not for directing him as to the lands to be assessed. Upon entering upon his duties he is required by statute to take and subscribe an oath or affirmation that he will, to the best of his skill, judgment, and knowledge, honestly and faithfully and without fear, favor or prejudice against any owner or owners, perform the duties assigned to him in connection with the work and make a true report thereon. Now, he is the man who is to lay the foundation for an improvement to lands which will make the owners liable for paying any taxes extending over a period of years, the value of the said improvements, and the incidental expenses connected therewith, and there should be no interference with him or his work on the part of the council, and certainly not by the parties with whose rights he is to deal. The only thing which should guide him outside of his own knowledge and skill is the provision of the statute applying to the case, and this provision should be made so clear that there can be no misunderstanding as to his duties, for, if his guide is imperfect so will be his report, and so will be the foundation of the work, of the court of revision, the appeal to the county judge, and the people will be put to the expense of having the whole matter set aside in the higher courts, and with the various cases which have been tried by the different courts up to the present time, the knowledge and experience of the people in operating and asking for amendments to the drainage laws, the provisions relating to the nature of the petition which is the foundation of the whole work, should be made so clear that the council will thoroughly understand what petitions should be accepted whether it is in proper shape for acceptance. What the duties of the engineer are with reference to the assessing of lands when his report is received ; what the duties of the council are in comparing the petition with the report, and assessment in order to properly determine whether they have sufficient ground for preparing and passing the by-laws.

Section 6 of the bill, provides, that the engineer or surveyor in assessing the lands to be benefited or otherwise liable for assessment under this act need not confine his assessment to the part of the lot actually affected, but may place such assessment on the quarter, half or whole lot containing the part affected, if the owner of the portion is also the owner of such lot or other sub-division.

We think this is not sufficiently definite, as in a great many cases, by simply describing the lot, does not inform you within five or ten acres of the amount of land contained in the said lot, and very often lands most requiring drainage are cut up into small parcels that it is impossible to describe in any other way that part of a certain lot. We very often find in these cases parts of lots are sold for taxes ; first one parcel is sold off the corner of the lot in proportion to its length and breadth, and next a parcel following the two sides of the first parcel in the same proportion, or in other ways as the county treasurer may see fit. If the engineer uses the description of part of lot as given in the last revised assessment roll in the municipality in which the land lies, it is very indefinite. We often find where the land is divided into a number of small parcels, the description on the assessment roll is simply part of lot, and this is the only description the assessor can be expected to give, and there are cases reported where the by-law was quashed because the report of the engineer, upon which it was found, and which was embodied in it, described the land to be assessed as part of lot without a more particular description, and we think that the engineer in making his assessment should be obliged to prepare a plan showing the lots, parts of lots, roads and railroads, etc., to be assessed with the measurements of all the limits, and the sub-divisions designated by letters for reference in the assessment. This, of course, would entail greater work on the engineer and greater expense on the drainage area, but this small expense in the early stage of the proceedings may be the means of saving, as past experience shows, a very large amount of costs, loss of time, trouble and annoyance in trying to enforce payment of taxes against the property imperfectly described. This additional expense would only be in the first construction and would simply require that the plan be verified when it would be necessary to make a re assessment for any subsequent improvement.

It is the duty of municipal councils, who are familiar with drainage laws, to fully discuss the bills sent out to the legislature for expression of opinion and make such suggestions as they might think proper to insert in the bill and state any changes they think would be advisable in order that the bill, as presented at the next session, may be such that the difficulties, which have heretofore existed, will, as far as possible, be removed.

LEGAL DEPARTMENT.

H. F. JELL, SOLICITOR,
EDITOR.

Municipal Councils.

THEIR POWERS AND JURISDICTION—HIGHWAYS.

Where an accident is occasioned by a defect in the highway, existing by reason of the necessary repair of such highway, the corporation may be held liable in damages to the party injured; for in such a case there should be a light or signal of some other kind to warn travellers of existing danger in the use of the way. The duty of maintaining the streets and roads in a proper condition for public travel being imposed on municipal corporations. This duty rests primarily, so far as the public is concerned, upon the corporation, and the obligation to discharge this duty cannot be evaded, suspended or cast upon others, by any act of such corporations. Where a dangerous excavation is made and negligently left open (without proper lights, guards or covering) in a travelled street, road or sidewalk, by a contractor under the corporation for building a sewer or other improvement, the corporation is liable to a person injured thereby, although it may have had no immediate control over the workmen. Even the obtaining by the corporation of a stipulation from the contractor that proper precautions shou'd be taken for the protection of the public, and making him liable for accidents occasioned by his neglect, will not absolve the corporation from such primary liability. If held liable, however, in any case, a stipulation of the kind mentioned will give the corporation a remedy over against the contractor. If a defect in a highway arise otherwise than from faulty structure, and from some act other than the direct conduct of the defendants (corporations) as their servants, and be a recent defect, it is generally necessary to show that the defendants or their servants had knowledge thereof, or were negligently ignorant of it. It behooves every officer or servant of a municipal corporation, if he is alive to the best interests of that corporation, to keep a watchful eye over its roads, in order that all defects therein may be noticed and promptly put in a proper state of repair. Notice to the corporation may be inferred from the notriety of the defect and from its continuance for such a length of time as to lead to the presumption that the proper officers of the municipality did, in fact, know, or with proper vigilance and care, might have known the fact. This latter is sufficient, because this degree of care and vigilance they are bound to exercise, and, therefore, if, as a matter of fact, they do not know of such defect, when, by ordinary and due vigilance and care, they would have known it, they must be responsible, as if they had actual notice. If the defect be palpable, dangerous, and has existed for a long time, it may very properly be inferred that there was either negligent supervision and ignorance, consequent upon and chargeable to neglect, or notice of the defect and a disregard of the duty to repair it, but where an injury has been caused or produced by some sudden and unexpected cause, it has been held that the corporation were not liable till they had a reasonable opportunity to repair.

Legal Decisions.

The Sheep-Worrying Case.

FOX VS. WILLIAMSON—DECISION REVERSED BY THE COURT OF APPEAL.

This was an appeal from the judgment of His Honor Judge Chadwick, referred to in the August number. The matter first came up at the last sessions of the county court. It was an action brought by Mr. J. J. Fox, of the township of Guelph, against Mr. J. B. Williamson, of this city, for damages arising from a number of thoroughbred ewes and some lambs having been killed by Mr. Williamson's dog. The action was brought under R.S. O. 215, section 15, which authorized anyone sustaining damages in this way from dogs to recover the amount from the owners of the dogs. The statute is somewhat obscure as to the mode of trial. The plaintiffs contended the whole case could be tried by a jury and duly gave the usual notice of a jury at the trial. The case was tried by a jury, subject to the objections of defendant that such was not the law. His Honor afterwards heard argument as to the construction of the statute, and decided the jury could not try the case. Accordingly he set aside the verdict of $125 which they had given the plaintiff at the trial. The defendant had paid into court the sum of $100, claiming that was his share of the damage sustained by Mr. Fox. Judge Chadwick held he had the sole right to try the case, and this sum was ample to satisfy the damage done by Mr. Williamson's dog, and he directed the $100 be paid out to Mr. Fox, and that Mr. Fox pay all the costs of the action. From this decision Mr. Fox appealed to the court of appeal for Ontario, claiming that on the construction of the act the plaintiff was entitled to a jury by the first sub-section of section 15, and that there was no provision anywhere depriving him of it in the subsequent sections; that these sections did not apply to a case like that of Mr. Fox, where all the known owners of the dogs were before the court, and consisted of one only, and on other grounds. A unanimous judgment was received, allowing the appeal with costs, in both courts, and restoring the verdict of the jury for $125. In the course of his judgment, Mr. Justice Osler stated that the Dog Act was quite inartistic, and required considerable amendment before it could be looked upon as a model piece of legislation.

IN RE OLVER AND THE CITY OF OTTAWA.

On page 147 of THE WORLD for 1892, November number, will be found the decision in this matter in the first instance. The city appealed to the Court of Appeal for Ontario, from the judgment of Mr. Justice Rose; given in this periodical as above, quashing certain resolutions passed by the council of the city on the 20th of June and 4th of July, 1891. The purpose of these resolutions was to accept certain tenders for the construction of a new bridge across the Rideau River between the City of Ottawa, and the County of Carleton, and to authorize the extension of the contracts for the carrying out and performance of the work. The bridge was a work within the joint jurisdiction of the two corporations, and it had become necessary to re-construct it, or to close it altogether in consequence of its being so much out of repair, as to be dangerous. The city's share of the cost of re-construction was estimated to be about $13,000 or $14,000. No provision had been made for this in the estimates for the ordinary expenditure for the year 1892; nor had any special by-law been passed for raising the money by rate in that year, or for incurring a debt by the issue of debentures in order to pay for the work. Contracts were entered into about the 9th August, 1891, between the two corporations, and the contractor for the execution of the works, which were to be completed on or before the 15th of November, 1892.

On the 25th of August, the applicant gave notice of motion to quash the above mentioned resolutions, on the following amongst other grounds:

That the municipal corporation of the city of Ottawa have no unappropriated money on hand to meet the expenditure necessitated by the construction of the bridge, and no provision by rate or otherwise, has been made to raise the amount.

That the expenditure authorized by such resolutions being beyond the ordinary and usual expenditure and not payable within the present municipal year, can only be legally authorized by by-law after receiving the assent of the electors.

At this time the only provision made by the council to meet the expenditure which might become necessary if the bridge should be re-built, was by a resolution said to have been passed on the 5th of March, 1892, which authorized a special appropriation of $15,000 to be granted to pay the city's share of rebuilding the bridge on the understanding that one half of this amount will be charged to the general expenditure account of this year, and the remainder to the appropriation for 1893.

The court of appeal held, that a municipal corporation has no power, without a by-law, assented to by the electors, to enter into contracts involving expenditure not payable out of the ordinary rates of the current financial year, and quashed the resolutions referred to above as being a controvention of sections 344, 357 and 359 of the Municipal Act.

Municipal Elections.

The municipal nominations, except as hereinafter provided, will be held this year on Friday the 22nd day of December, and the council should, not later than its meeting on the 15th December, pass a by-law appointing a returning officer, deputy returning officers, and fix the places the nomination, and polls will be held. The clerk or other returning officer should advertise day of nomination not later than the 16th of the month. In the case of corporations which have been newly erected, and the first election under the proclamation or by-law, by which the change was effected, shall take place on first Monday in January, next after the date of the proclamation or of the passing of the by-law by which the change was made, the nomination shall be proceeded with at the same time and in same manner as if such change had gone into effect on the last Monday in December, the date fixed for the nomination, and any returning officer, appointed to hold the first election, is required to perform the same duties as the returning officer of any other municipality.

* * *

Where the council of a county has passed a by-law before the 31st October, in accordance with the provisions of section 91 of the Consolidated Municipal Act, making provision for a first election in the junior township of a union, the returning officer appointed is also required to act in accordance with the provisions of the section referring to the duties of that office. In the case of separation of union townships, the first election of councillors is required to be by general vote. In townships and incorporated villages, not divided into wards, the election shall be by general vote; when divided into wards, the election is required to be held at the place or places where the last meeting of the council was held, or in such other place as may be from time to time fixed by by-law. No election of township councillors can be held in any city, town or incorporated village, nor can the election for any municipality be held in a tavern, or house licensed to sell spirituous liquors.

* * *

In cities the nomination of candidates for the office of mayor is required to be held at the hall of the municipality at 10 o'clock in the forenoon, and for the nomination of aldermen at noon of the same day. This may be changed to half past seven in the evening, if the council pass a by-law to that effect. In towns, nominations for mayor, reeve and deputy reeves are required to be held in the hall of the municipality at 10 o'clock in the forenoon, and the council of any incorporated town divided into wards may pass a by-law providing that the nomination of councillors for the several wards may be held at the same time. Where no such by-law has been passed, the meeting for the nomination of councillors in towns shall be held at noon. The council of a town also has the authority to decide that the nomination of mayor, reeve, deputy reeve or reeves and councillors may be held at half past seven in the evening instead of the above hour mentioned. The councils of villages also have this power.

* * *

In villages, and in townships not divided into wards, the meeting for the nomination of reeves, deputy reeves and councillors is required to be held at noon. In townships divided into wards the nomination of candidates for the office of reeve shall be held at 10 o'clock in the forenoon, and the nomination of candidates for the office of councillor to be elected for each ward shall take place at noon at the township hall or at such place in each ward as may be fixed by by-law. When a township adjoins the limits of any city, town or incorporated village, the nomination meeting may be held at such place therein as may be designated by by-law of the council. As we said before, the nomination is to be held on the 22nd of December, but in counties where the county council has passed a by-law to that effect on or before the first day of July, and of which the clerks of the local municipalities have received notice, the nomination will be held on the 18th December.

* * *

In a municipality where the election is to be made by wards or polling sub-divisions, the council is required by by-law to appoint places for holding nominations for each ward, and returning officers who shall hold the same, the places at which the polls shall be opened if required, and the deputy returning officer who shall preside thereat. The clerk of the municipality is always the returning officer for the whole municipality. Where the election is not by wards or polling sub-divisions, the clerk is required to act as returning officer, and also to perform the duties of deputy returning officer at the polls.

* * *

The returning officer appointed for each ward, or the clerk, as the case may be, is required to preside at the nomination meeting. When he is absent, the meeting may choose a chairman. Nominations may be received for one hour from the time fixed for holding the meeting. Where there has been a delay in opening the meeting, it is sometimes advisable to extend the time, and allow a full hour to expire before closing the meeting. A nomination is required to be moved and seconded. After the nominations have been received, and there is more than one candidate for the same office, the candidates themselves or any elector should demand a poll on behalf of the candidates. The returning officer or chairman should then adjourn the meeting until the first Monday in January, and state when and where the polls will be opened.

* * *

Any person proposed for one or more offices may resign at the nomination meeting, or the following day, or elect for which office he is to remain nominated, and failing to do this, he is to be taken to be nominated for the office in respect of which he was first proposed and seconded. Any person who wishes to resign after the nomination meeting, is required to do so in writing, signed by him and attested by a witness. This is required to be delivered to the clerk not later than the day following the nomination. It is distinctly stated in section 117 of this Act, that if a resignation is not received at latest, on the day following the nomination, the clerk or the returning officer has no alternative but to go on and hold the election.

* * *

After the nomination meeting, the clerk's duty is to see that the ballots are prepared, and that the ballot boxes and other supplies required are furnished to the deputy returning officers, the list of defaulters who have not paid their income tax, required under the provisions of section 119, must not be forgotten. Sections 120 to 141 states very fully the clerk's and returning officer's duties in regard to the preparation necessary for the election. In performing these duties he is not to take instruction from members of the council, if they interfere in any way with these provisions, as he alone is liable if they are not carried out. The poll will be held on Monday the 1st January, from 9 a. m. to 5 p. m. Sections 142 to 160 refer to the duties of the deputy returning officer and others, in regard to the taking of the votes, and casting up the number given for each candidate. The deputy returning officers should be furnished with a copy of the Municipal Ballot Act for their information and reference in the performance of their duties.

* * *

It is only now necessary to furnish deputy returning officers with a certified copy of the printed voter's list for the ward or polling sub-division, a blank poll book must be supplied, to be used in accordance with sub-section 2 of section 143. This sub-section seems to direct the work to be done by the poll clerk. The members of the council must not forget that when fixing the amount to be paid deputy returning officers, as it should also include the amount to be paid the poll clerk.

* * *

After all the returns of the votes have been received, the clerk is required at noon on the day following, to publicly declare the names of the candidate or candidates having the highest number of votes. This should be done at the town hall or at some other public place or places where the nomination meeting was held, or where the council usually hold their meeting, would be considered sufficient. In case of a tie, the clerk or other person appointed to discharge the duties of returning officer is required to give the casting vote.

Municipal Elections and Politics.

The formation of political parties upon differences as to general principles or methods of Provincial or Dominion policy is useful and necessary. But it is rare indeed that any such questions upon which good men ought to differ, arise in connection with the conduct of municipal affairs.

There is no more reason for politics in municipal matters than in a business corporation, and good municipal officers can only be secured by the united action of interested citizens. Political divisions are the great obstacles to this united action, and in many cases prevent the election of the most capable and honest candidates. The desire for recognition in either Provincial or Dominion politics is a strong incentive and induces candidates to stir up political feeling, and the result is a contest in which party is first and the well-fare of the municipality is second. We would be very sorry to see politics introduced into the Ontario municipal elections to the extent to which it is in many of the United States, but, judging from the past, and the practice followed in many of the electoral divisions of bringing forward ex-wardens, mayors and reeves as candidates for political favor, we cannot look forward to the removal of this element in municipal elections. In the United States, political interference has prevented many good and capable citizens from identifying themselves in the management of local affairs, and the result is, that in every direction, legislation is being enacted which tends to remove in part the obnoxious influence of politics in municipal affairs. The greatest evils exist in large cities, where the system of appointing new officials throughout, after each election, causes great pressure to be brought on successful candidates controlling the appointments; to remove this difficulty in many of the larger cities, the mayor has the appointment of the heads of each department, and he is responsible directly to the people for the conduct of his officials.

One of the dangers to be guarded against in an election is promising favors to others. This has destroyed the career of many a councillor, who, in the excitement of the campaign, has been led to commit himself, and after the election he sees, when too late, the position in which he is placed. No one who cannot act independently, should be elected or appointed to look after the interests of his fellow-citizens. If all could realize that a municipality is a business corporation, every department of which, be it large or small, should be conducted on business principles, we would have little complaint to make, but allow the election of candidates who will use their position to further their own ambitions and we will soon have such great evils to contend with that the Civic Church referred to in the last number will be the only remedy.

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