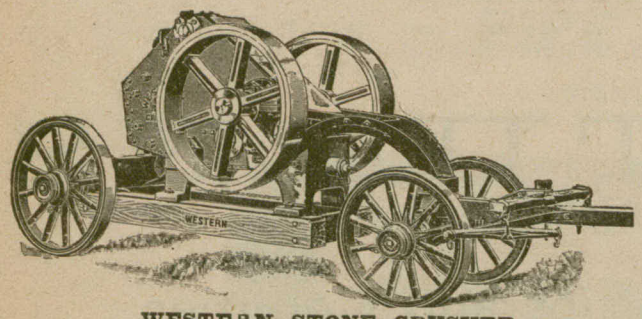
The Municipal World

PUBLISHED MONTHLY IN THE INTERESTS OF THE MUNICIPAL INSTITUTIONS OF ONTARIO

Vol. 5. No. 2. ST. THOMAS, ONTARIO, FEBRUARY, 1895. Whole No. 50

Western Roadmaking Machinery



WESTERN STONE CRUSHER

MUNICIPAL OFFICERS in Ontario will consult their best interests by examining the Western Rock Crusher before deciding on the purchase of machinery for the preparation of roadmaking material. With reference to the crusher purchased by the City of London last year, the City Engineer says :

LONDON, ONT., Jan. 5th, 1895.

H. A. BROWNELL, Esq., General Manager Western Wheel Scraper Co. :

DEAR SIR,—The No. 10 Western Rock Crusher, bought of you last season, has proved entirely satisfactory and fulfils all claimed for it in every sense of the word. As it crushes to any size required, the product is especially adapted for the making of good roads. Since the Western has been in operation here, some seven months, it has not cost the city one cent for repairs, which speaks volumes for its first-class construction ; nor have the plates or jaws, that are subject to nal so much wear and tear, been found necessary to replace. The committee who visited towns and cities where other crushers were in operation, and fi ly selected the Western, not because it was the cheapest in price, but because they thought it was the best crusher tendered for, have had their judgment confirmed, and join with me in recommending the Western to any municipality or others requiring a first-class crusher. Yours respectfully, ORMSBY GRAYDON, City Engineer.

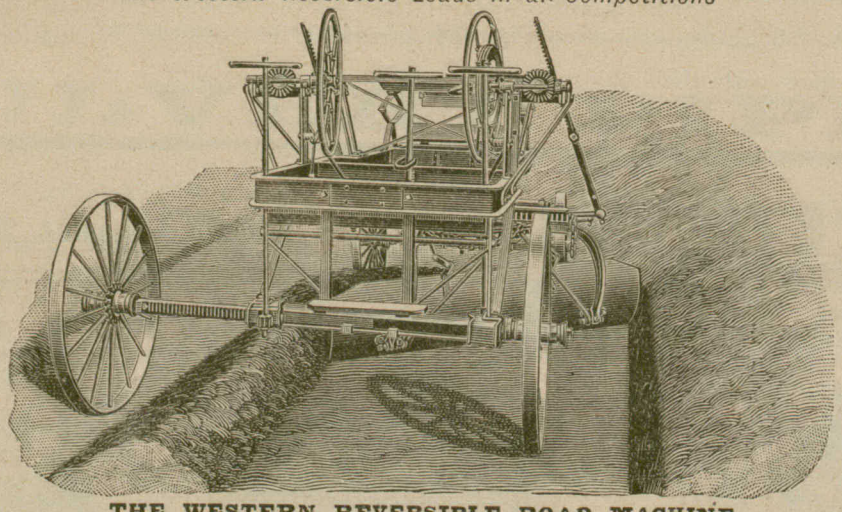
P. S —The other crushers in competition were the Champion, Blake, Chicago and others.

Crushers can be furnished with or without screens, trucks or elevators.

The Western Reversible Leads in all Competitions

In the preparation of roadbeds for gravelling, the construction and maintenance of earth roads, and the repair of gravel roads, the **Western Reversible Road Machine** will do the work in the best possible manner.

All machines sold on trial.



THE WESTERN REVERSIBLE ROAD MACHINE

That these machines are the best is the opinion of those who have been using them. That they are economical is shown by the following testimonials from municipal officers. The Western Reversible is an all-steel machine.

All machines sold on trial.

TESTIMONIALS :

H. A. BROWNELL, General Manager, London, Ont.:

Burford, Ont., Nov. 26th, 1894.

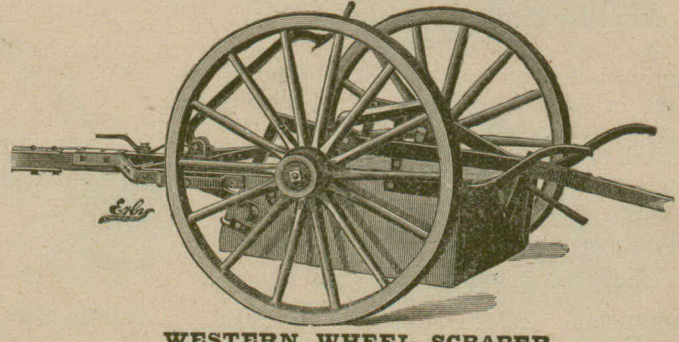
DEAR SIR,—We, the undersigned members of the municipal council of the Township of Burford, having witnessed the operation of your machine, the Western Reversible, on trial with the American Road Machine in this township, on the 22nd of last May, have no hesitation in saying that we consider the Western Reversible a superior machine in many respects. Although the price of your machine was considerably more, we had no hesitation in placing our order with you, and, after using it all summer, have no cause to regret it. We consider it a first-class machine, far superior to any method hereto employed by us, both as a labor-saving and economical system of building or repairing our streets or roads, and can recommend it to any city, town or rural municipality. PHILIP KELLEY, Reeve, Warden of Brant county ; CHAS. VANHORN, Deputy Reeve ; JOHN MCCLELLAN, ADAM CROZIER, Councillors.

KINGSVILLE, January 25th, 1895.

H. A. BROWNELL, Esq., Gen. Mgr., London, Ont.:

DEAR SIR,—After using the Western Reversible Machine last season, we can truthfully say that the machine has paid for itself three times over. We can further say that other road machines have been used in this township, but, in our opinion, they will not bear comparison with the Reversible Road Machine. In fact, the Western Reversible is worth more than any two machines of other makes that we have seen in Essex county. We consider that the work done by the Reversible machine was worth at least $1,000, ordinary expenditure, to the roads in the township of Gosfield South last year. We recommend all the municipalities to examine into the merits of the Western Road Machine before placing their orders. As already stated, we have used other machines but do not hesitate to say that they are not as good as the Western, which, in our opinion, has no equal, and is the best all-round road machine in the market.

Yours truly, C. G. FOX, Reeve ; R. W. SHANKS, Dep.-Reeve.



WESTERN WHEEL SCRAPER

Crushers, Rollers, Western Road Machines, Wheel and Drag Scrapers kept in stock at London. Any of these, or repairs for same, can be furnished at shortest notice. Correspondence solicited. Write for catalogue.

For Catalogue, Price List and Terms, address

H. A. BROWNELL, General Manager for Ontario LONDON, ONT.

THE MUNICIPAL WORLD

Published Monthly in the Interests of Every Department of the Municipal Institutions of Ontario

Vol. 5. No. 2. ST. THOMAS, ONTARIO, FEBRUARY, 1895. Whole No. 50

CONTENTS.

Calendar for February and March, 1895.

Legal, Educational, Municipal and Other Appointments.

FEBRUARY

1. Last day for Railway Companies to transmit to Clerks of Municipalities statements of Railway property.—Assessment Act, Section 26.

   Last day for Collectors to return their Rolls and pay over proceeds—Assessment Act, Section 132.

   Last day for County Treasurer to furnish Clerks of Local Municipalities with list of lands in arrears for taxes for three years—Assessment Act, Section 140.

6. First meeting of Board of Education at 7 p.m., or such other hour as may have been fixed by resolution of former Board at the usual place of meeting of such Board.—Public Schools Act, Section 106; High Schools Act, Section 13.

7. Provincial Good Roads Association meets at Toronto, at 2 p. m., in Y. M. C. A. hall, corner Yonge and McGill streets.

15. Last day for Assessors to begin to make their rolls.—Assessment Act, Section 49.

28. Last day for Councils to pass By-laws limiting number of Tavern Licenses to be issued for the ensuing year, or for imposing a larger duty for tavern or shop licenses—Liquor License Act, Sections 29 and 34.

    Last day for City and Town Councils to pass By-laws to prescribe further requirements in Taverns.—Liquor License Act, Section 42.

MARCH.

1. County Clerks to transmit Minutes of County Council to the Minister of Education, also report of Auditors.—Public Schools Act, Section 114.

   Auditors' Reports on the accounts of High School Boards and the Boards of cities, towns and villages should be mailed to Education Department.

   Separate School Supporters to notify Municipal Clerk.—S. S. Act, Section 40.

NOTICE.

The publisher desires to ensure the regular and prompt delivery of THE WORLD to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so should give both the old and new address.

The Municipal World

PUBLISHED MONTHLY $1.00 PER ANNUM

PUBLISHED MONTHLY

In the interests of every department of the Municipal Institutions of Ontario.

K. W. McKAY, EDITOR,

A. W. CAMPBELL, C. E. } Associate
H. F. JELL, Solicitor. } Editors

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COMMUNICATIONS. Contributions of interest to municipal officers are cordially invited.

HOW TO REMIT. Cash should be sent by registered letter. Draft, express or money orders may be sent at our risk.

Address all communications to

THE MUNICIPAL WORLD,
Box 1252, - - St. Thomas, Ont.

ST. THOMAS, FEBRUARY 1, 1895.

Public Opinion.

Newly elected councillors are apt to govern their actions by what may appear to them to be public opinion. This has cut short the career of many a useful citizen in the past. Public opinion is an aggregate opinion of all the people; the resultent movement of the various thoughts of many men with many minds. In the formation of a sound and strong public opinion it is necessary that all of us or at any rate the great majority should form clear opinions on current questions and fearlessly express them. They must be our own opinions, we must know what we think and why we think. The first condition of sound public opinion is clear individual judgment. You must not catch the phrases from your neighbor and glibly repeat it, you must think it out for yourself, and refuse to utter it until you know that it is true. This means that a good many times in your life and especially in your official capacity you will stand alone. Every man who thinks thoroughly and courageously will often stand alone. Very often the crowd will be borne along by some popular tide of feeling—all wrong. This is the time for men who have convictions of their own to stand upon them ; the fact that nearly every one would disagree with us is the reason why we should speak. Hidden convictions have very little influence on public affairs. It is necessary that good men should make their opinions public ; their failure to do this simple duty is the immediate cause of our worst municipal conditions.

Boards of Health and Small-Pox.

Many local boards of health are composed of men who have had no experience in dealing with a contagious disease like small-pox, and when notified of the existence of a case within their jurisdiction or the adjoining municipality, are at a loss to know exactly what to do. The Public Health Act gives unlimited powers to health officers. Section 49 authorizes the municipal treasurer to pay any order issued by the local board or any two of them for services performed under their direction. When a member of a board of health receives notice of the existence of small-pox in his municipality he should immediately place constables night and day in charge of the house in which the patient lives to see that no one leaves the premises, and notify the public to keep away. If he ascertains that any person has been exposed to the disease, or is suspected to have been exposed he should notify them to remain on their own premises and appoint a constable to see that his instructions are carried out.

Having taken these precautions to allay excitement which is worse than the disease a meeting of the local board should be called at once, and a physician appointed to ascertain the true state of affairs, in suspected cases.

When it is known beyond doubt that it is small-pox, the secretary of the provincial board of health should be notified, he will advise and furnish assistance as required ; a letter or telegram addressed to him at Toronto will be sufficient. The medical health officer and sanitary inspector appointed by the council should be in consultation with the board, and it is their duty to carry out any arrangements they may decide on in reference to quarantine. A physician and nurse should be engaged to remain with the patient. When necessary a place to be used as an isolation hospital must be provided.

Having taking these precautions, the management of the case or cases should be left entirely in charge of the medical health officer and sanitary inspector, who should be given authority to employ sanitary policemen and other assistance. It is not advisable for members of the board to take too active a part in enforcing their instructions owing to the suspicion that generally attaches itself to the active workers and their liability to exposure. This would destroy their usefulness to a great extent. They should be satisfied with placing efficient officers in charge of all the details.

It is a wise precaution for boards of health to know before hand the names of those who would be willing to take charge of a small-pox case when called upon. The loathsome natute of the disease renders it very difficult to procure assistance on call, without paying extravagant charges. The secretary of every board should keep a list of the names of those who would act as sanitary policemen or nurses.

Purity of Drinking Water.

It is now generally admitted that impurities of organic origin are alone the dangerous element in drinking water, and by far the greatest risk to the health of the community is incurred by using water containing certain living organisms which are capable of producing specific effects when introduced into the alimentary tract.

The presence of organic matter can be most certainly demonstrated by chemical analysis, but by this means it is impossible to demonstrate whether the organic matter contains living organisms, as all organic matter does not contain them, so that a chemical analysis of water alone is very misleading. They can most certainly and accurately determine the chlorides, nitrates, phosphates and ammonia of organic matter, and of the amount of oxygen consumed, all of which is of great importance as an index of the purity or impurity, and as to the degree of pollution of the sample analyzed, but their chief importance is that they throw some light as to the probable source of the impurity. Water from some sources might contain excess of nitrates, and mean nothing, while another sample contains less nitrates and from a different source, be unfit for use. Erroneous conclusions may be drawn from the determination of oxygen consumed and of albuminoid ammonia. Many samples of water are passed by the chemist that are absolutely unfit for use. Although a chemical analysis cannot guarantee pure water, yet it can reveal impurity and danger. A sample of water into which a small quantity of typhoid excreta was introduced could not be detected by the chemist, so that chemical analysis is of use only as indicative of the probable source of contamination.

When, however, the specific micro-organism of cholera, typhoid, etc., had been isolated from water, the examination passed out of the hands of the chemist into that of the bacteriologist. But this is even as misleading as the chemical if taken alone. For instance, the cholera bacilli could not be detected in the water that undoubtedly poisoned Hamburg. Neither could the typhoid bacilli be detected in the water that caused the epidemic in Worthing, in the South of England, some few years ago. In water reputedly good, the number of liquefying colonies are few in number, but in sewage polluted water they are numerous ; this fact is of only medium value, because it shows only gross pollution, as most of those liquefying colonies are harmless. Bacteriology, like chemistry, cannot be depended upon to determine absolutely whether a water is injurious to health, since the posibility of accidental pollution is too often overlooked, consequently neither methods alone should be accepted as positive, but both should be combined, indicating more certainly the probable source and effect of contamination.

The Township Council System.

In the township system we have had experience with that form of government in which the people are the only source of power, and municipal independence is therefore a natural consequence.

Statistics show that in 1881 the average rate of taxation, per head of municipal population assessed, was $3.26 in townships, and that this amount gradually increased to $4.17 in 1892, or an advance of nearly 25 per cent. in ten years. During the same period the taxation in towns and villages increased 83 per cent., and in cities 122 per cent. The average for all municipalities being $6.18 per head, or an increase of 46 per cent. A gradual increase of the rate of taxation in townships without any corresponding benefit is sufficient to warrant the statement that township affairs are not managed with the economy necessary to inspire the people with confidence in the system.

The expense of municipal government in townships amounts to $275,000 annually. This is not a large amount when divided among the various townships and the officials they are required to employ.

The expenditure for roads and bridges in townships varies from $600,000 to $800,000 annually, and to this expenditure must be added the amount of statute labor performed, which is equal to $950,000, making a total of $1,750,000. This is the only fund dispersed in its entirety, by the municipal council and owing to the necessity for keeping roads and bridges in a constant state of repair to prevent actions for damages, they are unable to economize on this item, as much as they might desire to do.

The present system of electing township councillors, together with the ward system in operation, in many townships, is the cause of municipal extravagance or mismanagement.

The great bane of municipal government is the ward system. There is no inducement to the ward member to interest himself in the general affairs of his municipality. The idea of a council elected irrespective of ward divisions is the correct one, it enlarges the constituency of a councillor and calls for a wider application of his influence. The aim should be to adapt the public expenditures and improvements without consideration of ward boundaries.

It may be said that the system of electing members of the township council by wards is not in itself objectionable, but when the council endeavors to proportion the annual expenditure equally between each ward irrespective of other considerations, a serious fault leading to extravagance is the result.

The township is a small enough unit for local government. It is impossible to find a township the four wards of which require the same amount of money each year. Then again there is a great difference of opinion as to how much money should be expended. Some are inclined to be economical and others the opposite, and the result is that each member tries to get the lion's share. A councillor who by manipulation succeeds in securing this is sure of re-election. The ward is his first, last and only consideration. On the other hand in a council elected by the whole municipality the members are not interested in any particular section, but each receives what its actual requirements demand.

If the ward system is to be continued, the road expenditure of the whole township not including the cost of bridges should be raised annually, in the wards in which the money is expended.

Under the present system of election, township councillors, do not have an opportunity to display their ability to carry on municipal work in an economical manner. This could be easily remedied by extending the term of office of township councillors. School trustees are kept in office three years, one being elected each year, the result being that experienced men always form the majority. In the townships, if the reeve and one councillor were elected each year, the councillors retiring in rotation, experienced men would always be found at the council board. Municipal office would then be accepted by many who object to the annual election. Road and bridge improvement, which now costs one-third of all taxes collected, would be carried on in a uniform manner. A new member with ideas would have men of experience to advise him, and an economical management of every department of the municipal service would be the result.

It will be admitted by all, that the reasons advanced for a change in the township council system, are applicable to the county council, the business of which should be transacted by experienced members. It is rather misleading to say that the business of county council is to be judged by the amount of the controllable expenditure. It is their duty to keep the uncontrollable expenditure within reasonable limits. In many cases, the greater portion of the county rate is for works and other debts contracted by former county councils, and it is to prevent a repetition of these expenditures that experience is necessary. In addition many questions not of a financial nature are brought before county councillors for discussion.

Underneath all the remedies that may be suggested for the better government of any municipality is the doctrine that all their affairs must be conducted on sound business principles. The first is to place these affairs in the hands of an experienced board of management. The second is to secure an efficient supervision or audit of financial transactions. It has been shown how in townships these experienced members may be secured. For many years the complaint has been that municipal audits are inefficient. The numerous defalcations of municipal treasurers and collectors reported from time to time show this, and in addition the report of the bureau of industries shows that a uniform system, on which to keep municipal accounts, to be actually necessary. To secure this, the appointment in each county of an auditor is recommended. The duties the auditor would perform may be briefly outlined as follows: 1st, to be ex-officio auditor of the accounts of the county treasurer and of every local municipality in the county, to act with an auditor to be appointed by the council in the yearly audit of the treasurer's books and also as a member of the administration of justice audit; 2nd, it should be his duty twice each year to check over each treasurer's cash account and verify balance; 3rd, to furnish the bureau of industries, as required, with statements of the finances of his county and local municipalities therein; 4th, to make recommendations to the council from time to time of anything he deems advisable to bringing before them and in a general way, to have the entire supervision of the financial transactions of the municipalities. Many would say that there is an objection to the appointment of an additional official on account of the expense, but when we consider that one-half of the cost of our present audit system and in the counties that a proportion of of the administration of justice audit expenses would go towards his salary, any objection on this account is uncalled for. The fact of having the financial transactions of municipalities conducted in a business way, would be true municipal economy. An efficient man would be required to fill this office. The auditor should be independent of the council, and his duties should be regulated by statute. He should be appointed by the county council, and when once appointed, a 2-3 majority of the whole council should be required to dismiss him.

In quite a number of municipalities throughout the province, the recent municipal elections were keenly contested, and several of our exchanges are discussing the propriety of a compulsory voting act and prohibition of canvassing. Smiff, in the Bobcaygeon *Independent*, also favors making it a fineable offence for a voter to confidentially inform a candidate that he had "given him a lift," he then relates a bit of personal experience, as follows:— "A great many years ago, Smiff was a candidate for some public office, and forty-seven different voters distinctly assured him they had given him a lift. When the poll was counted, Smiff had two votes, and one of these was his own."

The Limits of Party Obligation.

(From the American Magazine of Civics.)

In all free nations government by party seems to be indispensable. It is natural that such should be the case, for government by party has its root in the very nature of man, and its growth is fostered by his progress in the line of political thought, wherever that thought and its natural result, action, are not suppressed by arbitrary power. Man is gregarious; ideas can be transformed into action on an extended scale only by union; co-operation is necessary for achievement.

In an unenlightened state of society, people form themselves into groupes, or rather followings, about the strong man, and personal leadership divides the community into bodies which uphold the rule of this or that individual; personal devotion is then at its height; the followers of each leader cling to him with personal fidelity; he is a hero. Once attracted to him by the force of his personal character, or otherwise, an unreasoning spirit of loyalty takes possession of his adherents; his enemy is their enemy, his friend their friend, his will their will; all is referred to the chief. As man progresses, as his mind becomes more enlightened, when he learns to criticise and to search out the motives, the reasons, of the actions of his chief, he gradually comes to follow him as representing some particular policy or line of action, some idea, or, perhaps, merely some sentiment. This is the first step away from merely personal fealty; he follows the chief but as the embodiment of an idea, although as yet he does not regard the person of the chief and the idea embodied as capable of divorce. Later, man recognizes the fact that not only can there be a separation, in thought, of the leader from the idea, but also that the leader may be a bad exponent of ideas, or an insufficient instrument in the carrying out of a policy. This leads him to consider to which his allegiance is, of right, due—to the man who assumes to represent the truth, or to truth itself. As in his thought he distinguishes between the abstract and the concrete, and finds in the one the truth, in the other the mere accidental representative or symbol of it, he rises above the mere devotion to person and fixes his loyalty upon principle, and upon that foundation are, or profess to be, erected modern parties and the system of government by party, which has come to its highest development in the two freest countries in the world, England and the United States of America.

Now, as we review the history and the present condition of those two great countries, we may unhesitatingly say that whatever evils have sprung from party government, whatever injustice has been caused by the excess of party feeling, the results of the existence of parties have been, on the whole, vastly beneficial. It is hard to imagine how popular liberty and free government could be maintained without them, and it is the duty of the citizen, in regard to all great political matters, to belong to one party or another. There is little sympathy due to the "non-partizan" citizen at large, whose non-partizanship, boast he never so loudly of it, is too often but a cloak for indolence, which prevents him examining into and making up his mind upon the great questions which arise; or for indifference, or sometimes even for cowardice and self seeking. There is much to be said in favor of the old Athenian law, which punished severely the man who, in times of public tumult and threatened overturn of the government, took neither one side nor the other; punished not the man who espoused the unsuccessful side, as an enemy of the people, after the fashion of a Roman proscription; not the man who joined the insurrection, as a rebel; not the man who attempted to uphold a falling power, as an instrument of tyranny and oppression; but the man who stood aside, ready to submit to either party, but who raised no hand to exalt either, or to put down either.

Party, properly conducted, is a great educator; it is more—from its organization it gives to men, capable of serving the public in high station, opportunity to demonstrate their ability. The opposition of parties insures the presentation of both sides of any question of public moment; it insures the existence of an organized body of men, active and united in the maintenance of those rights, belief in which enters into the party creed, and interested in making their fellow-citizens take an interest in what interests themselves; and, in various ways, compels persons who otherwise would be listless and careless in public matters, to at least hear about them, and probably to judge and to act with reference to them. A republic in which party feeling is dead is on the verge of decay and destruction itself; and furthermore, where questions upon which parties may be properly formed are involved (and from this category should be excluded everything which has not its foundation in a belief that the enforcement of a principle or the carrying out of a policy is for the public good), the dogma, "Principles, not men," should be unhesitatingly accepted. In parties, and for the sake of party, it often becomes the duty of the good citizen to lay aside personal predilections, to suppress personal preferences, to stifle personal resentment, and while, under no circumstances, is he justified in doing or conniving at what is wrong, or dishonest, or dishonorable, he may often be required to accept a compromise which is distasteful to himself and, if he cannot, through his party, accomplish all he would in what he considers the right direction, to accept what he can obtain, and patiently bide the time, waiting and working within party lines until the day when his hopes may be gratified, and his objects fully accomplished, and for the present to solace himself with the reflection: *Quadam est prodire tenus, si non ultra debat.*

The difference between being willing to take what can be obtained and to wait, and insistence upon an immediate fulfillment of a political end, is often what, in great part, constitutes the difference between a statesman and a mere enthusiast. Cavour was none the less the patriot and the father of Italian unity, because in 1859 at the treaty of Villafranca, when Italy failed to obtain the enfranchisement of both the northern states from the Austrian rule, he assented to a peace which freed Lombardy while it left Venetia still in the possession of the stranger.

But party government has its limits. A battlefield wide as the empyrean is reserved for the contests of party, but such a field befits only giants, and giants should contend only about things great, high, majestic in themselves. The Titans might well, consistently with the law of their being, strive with Jove for the possession of Olympus, and Jove might well use his thunderbolts to defend such a possession, but what would have been thought of the Titans had they interferred in the contest of the frogs and mice, or what would we have thought had Jove used his bolts to knock down shellbarks from a hickory tree?

Parties must be formed upon great principles, and, in support of those principles, the good citizens may even follow the lead of one whose private character he cannot respect, so long as he is assured that such person will be loyal to the principles or carry out the policy of the party to which the citizens belongs, and it must be an extreme case, although perhaps such a case may arise, which will justify him in voting even for a good man, whose very excellency will be used the more effectually to subvert the principles which the voter believes to be true.

We may well agree with Burke when he defines party as "a body of men united for promoting by their joint endeavors the national interest upon some particular principle upon which they are all agreed," and further endorse with these limits his words: "Every honorable connection will avow it as their first purpose to pursue every just method to put the men who hold their opinions into such a condition as may enable them to carry their common plans into execution with all the power and authority of the state. As this power is attached to certain situations, it is their duty to contend for these situations. Without a proscription of others they are bound to give to their own party preference in all things, and by no means for private considerations to accept any offer of power in which the whole body is not included; nor to suffer themselves to be lead, or to be controlled, or to be overbalanced in office or in council, by those who contradict the very fundamental principles on which their party is formed and even those upon which every fair connection must stand."

(TO BE CONTINUED)

Good Roads.

BY A. W. CAMPBELL, C. E.

Stone Culverts.

In some localities good stone is plentiful and cheap, and this fact, together with other local considerations, will make it seem best to construct stone culverts. In nearly every case rough rubble masonry will answer. Hard stone that will not absorb the moisture is well adapted to the purpose. The foundation must be perfectly solid, and the work done in a careful manner. If the earth foundntion is not satisfactory, concrete or plank should be used. Plank should only be used in living stream where it will always be under water. If the foundation is not perfectly solid, the settlements will cause a fracture in the masonry and render it unsafe. In laying the stone work plenty of headers should be used so as to give a strong bond. Strong stone should be used at the angles of the up stream end of the culvert to resist the action of flood-wood and floating ice. The bottom of the opening should be concaved. Care must be taken to have the bottom of sufficient depth below the stream to prevent the water from getting underneath the foundation. Where the fall is very great it is necessary to make a shute or apron at the lower end to prevent the water from washing out the earth, and the bottom should always be below the frost line, and the top at least two feet below the top of the grade. Stone work should be laid in the best mortar composed of good hydraulic cement and clean sharp sand. Where the openings required are larger than twenty-five feet, sectional area, these culverts should be made with an arch, and the best masonry employed. The cost of the work will vary from $8 per cord of one hundred feet, laid in the wall of common rubble in small culverts, to $16 per cord, in large arch culverts.

CAST IRON CULVERTS.

Cast iron pipes for culvert purposes are coated with a solution of hot tar, and are almost indestructable, and make an excellent culvert but of course are expensive. For small culverts cast iron water pipes can be obtained which are not sufficiently strong for waterworks purposes, at reduced cost. In constructing these culverts no skilled lsbor is required to put the pieces in place All that is necessary is to dig the trench the necessary depth, giving it sufficient fall, secure a solid foundation, put the pipe together, and see that the small end is placed to the full depth of the hub in the next pipe. This pipe can be procured up to five feet in diameter, and like culvert tile may be placed side by side if greater capacity than this is required.

The price of cast iron pipe at the found.y, is as follows.—

6	inch pipe	60 cents	per foot
8	"	95 "	"
10	"	$1.35 "	"
12	"	1.75 "	"
14	"	2.25 "	"
16	"	2.00 "	"
18	"	3.25 "	"
24	"	3.87 "	"
36	"	6.58 "	"
48	"	9.30 "	"
60	"	12.40 "	"

Roadmaking Machinery.

In the view of the marvellous exhibition of human progress and especially that part of which relates to applied mechanics, it is useless for us to assert that the history of this country is one of mechanical progression and as almost every conceivable social and economical advantage which we enjoy is directly traceable; improved mechanical appliances are, and will be, a very important factor in bringing about a better condition of public roads, and of greatly reducing the cost. A great many machines are now manufactured and in successful use in the building of streets and roads in Canada and the United States.

PLOW.

In breaking up the surface of a new or long travelled or partly macadamized road, it is very slow and expensive work, when performed by hand, and to break this surface with ordinary plows is possibly more expensive on account of their not being able to stand the strain. Plows must be made especially for this purpose, the whole frame should be heavier, and certain parts upon which the strain is greatest must be increased sufficient to resist it, and it is necessary that these plows should be selected by seeing that the parts are sufficiently strong to resist the strain which will be brought upon them by the class of work for which they are intended to be used.

SCRAPERS.

Experience teaches us that to excavate earth cheaply the less it is handled the better, and where the fill and dump is not far apart the drag scraper is the proper implement to use in this line the lightest, strongest, and the most endurable should be chosen, they require to be of the best material and to work in any soil, to enter the ground readily, and be easy on man and team. The solid steel drag scraper will be found to be the best.

Where the haul is so great that the expense is increased by the loss of team in moving a small load on the drag scraper, the proper implement for use is the wheel scraper, which saves a large amount of labor necessary in filling and dumping the wagons. These scrapers can be procured to carry at least one half as much material as an ordinary wagon, and there is no loss of time in changing teams or unloading. With a wheel scraper the team can be constantly on the move, and one man will unload it with perfect ease.

ROAD MACHINES.

These implements, like all other machinery, should be made with as few parts as possible, in order that there will be less to get out of repair. The axle, tongue, braces or bale, cross truss, lever hanger, bowl, or box, should be made of first class steel. They should be so constructed so that the team does all the lifting and one man can easily fill, raise, and dump the largest load by the operation of a lever, There is no strain on the horses necks. The scraper is usually operated by the lever, which, when dis-engaged, lowers the bowl to the ground in position to fill, and the operator by the use of the handles of the scraper and the lever, can cut as deep or as shallow as required in order to fill the box.

When filled, the lever is simply lowered and hooked, thus raising the bowl with its load sufficiently high to escape the ground. When the dump is reached the lever is raised until the point of the scraper catches the ground, this revolves the bowl, and the load is dumped. The ground before the scraper is used, should be plowed deep, and no part left uncut to make it work properly.

In improving earth roads, or in prepariug a roadbed for gravelling or mettling where the material does not require to be hauled from one portion of the road to the other, there is no implement more useful, labor saving, and money saving than what is known as the reversible road machine. This is a fitting example of the possibilities of ingenuity in the construction of road machinery, it is simple, durable, and easy to operate, and so great in capacity that it cannot fail to give entire satisaction in every respect when properly managed.

The road machine fills a long felt want and where yards can be made by hand, rods by the use of the road machine can be completed at the same cost, as the self-binder takes the place of the sickle, so does the road machine take the place of the spade and hoe. Besides doing so much more work, when properly operated it will be done in a uniform manner. Of course these machines, like labourers, require to be properly managed in order to do the work economically, like all classes of machinery they may be condemned and discarded, without receiving a fair trial, by having men to operate them who do not understand the machine, and who have no interest in their work beyond putting in their day. Men instructed especially in the use of the machine should be employed to look after and operate it. If this is done and the instructions closely and carefully followed their can be no question as to their advantage.

ROLLERS.

After the road machine has completed its work the whole of the road should be carefully and thoroughly rolled to a hard and unyielding foundation. This is as necessary for a good road as for building a bridge or any other structure. Rolling is essential in making this foundation, it consolidates all the loose earth which the action of the scraper has left in the line of the roadway, and it packs the material so that it will shed the water and carry all loads to which the road is subjected without destroying its surface. Great difference of opinion exists at the present time as to the proper weight of the roller to be used, but all who have studied the question are united in its necessity. Some argue that the heavier the roller, the more effectual will be its work, and the expense of repeating the operation will be saved. Experience shows however, that a roller weighing about five tons is the proper one to use in making good road foundations for improving earth roads. The object is to bring a sufficient weight upon the material to compress it so that every atom will be gradually worked into its place; this can be more properly done by repeating the operation than by attempting to perform it by once passing over. Compression made a little at a time can be reasonably compared with the hammer at the forge, light blows contract the fibres of the iron more closely than heavy ones, and increase the tonsile strength materially. Light blows of the hammer in driving piles is the only known success. A five ton roller can be easily operated by four horses and two men. It can be safely moved over bridges etc, additional weight means expense out of proportion to benefit. Rolling should begin at the sides and work towards the centre in order to preserve uniformity of the crowning.

DUMP WAGONS.

Dump wagons are now being constructed especially for this purpose. They are built low making them easy to load, coupled short, light draft, and has no reach so that they can be cramped short and turned in a short space. The hopper and box is made with a capacity of from one to one and a half cubic yards, and is encased in a frame. The axles are made especially heavy, and built to stand the wear and abuse, and are calculated to outlast three common wagons. They are arranged so that the driver can dump a load by pressing the lever with his foot without leaving his seat, or moving his horses, the dump of the box stands at so steep an angle that it is impossible for any material to remain in it. Besides crushed stone, it can be used for hauling gravel, or in fact any kind of material not of a liquid nature. The use of this wagon saves a great deal of time and expense in loading and dumping.

The following rules will be useful to roadmen:

1. Never allow a hollow or rut or a puddle to stand on a road, but fill it up at once.

2. Never put fresh stones on a road if by cross picking and a thorough use of the rack, the surface can be kept smooth and at the proper strength and section.

3. Remember that the rake is the most useful article in your collection, and that it should be kept close at hand the whole year round.

4. Do not spread large patches of stone over the whole width of the road, but coat the middle or horse track first, and when this has worn in coat each of the sides in turn.

5. Always arrange that the bulk of the material may be laid down before frosty weather.

6. In moderately dry weather and on hard roads always pick up the old surface into ridges six inches apart and remove all large and projecting stones before applying a new coating.

7. Never spread stones more than one stone deep, but add a second layer when the first has worn in if one coat is not enough.

8. Use a steel pronged fork to load the barrow at the stone heap so that the siftings may be available for binding and summer repairs.

9. Go over the whole of the new coating every day or two with the rake and never leave the stones in ridges.

10. Never put a stone upon a road for repairing purposes that will not pass freely in every direction through a one and one half inch ring and remember that still smaller stones should be used for patching.

Use fine stone screenings if possible for binding newly laid stones together, and remember that road sweepings, sods of grass and other rubbish when used for this purposI, will ruin the best road in creation.

11. Remember that round or worn stones should never be allowed upon steep gradients so they will bind together.

12. Never allow dust or mud to lie in large quantities on the surface of the road for either of these will double the cost of maintenance.

13. Remember that the middle of the road should always be a little higher than the sides so that the rain may run into the side gutters at once.

14. Never allow the water tables, gutters and ditches to clog, keep them clear the whole year through.

15. Always be upon the road in wet weather and at once fill up all hollows or ruts where the water may lie.

16. The business of the path master should not be so much to make repairs as to prevent repairs being required, as it is not so much a question of repairing a road after it is out of repair as it is to keep the road from getting out of repair.

17. See that the water outlets during the breaking up of ice are kept free from jams, to prevent as far as possible the flooding of the roadbed, and consequent washouts.

Earth Roads.

Bad as they are, and difficult as it may be to make them much better, they will for sometime be the only obtainable thoroughfare in many districts. It is of the highest importance, that everything should be done towards the improvement of our earth roads. There is perhaps no subject that has perplexed our legislatures, and all public spirited citizens more than this. A vast amount of what has been published about roads is in relation to this branch of the subject is rather indefinite. No practical plan has been devised to put a stop to the wasteful expenditure in connection with our country roads. Almost every township has a different system, but in all, I believe the complaint to be the same. What is wanted is more honesty. If we employ commissioners honest enough to insist on a good day's work from those employed, the same as is requested in private business, and men honest enough to do a good day's work, it would be an easy matter to remedy the evil in townships that are not now able to make permenent improvements.

A commissioner with two or three good men constantly employed in going over the roads of a townships, making repairs as soon as they are needed, and using a road machine where possible, would keep the earth roads in good condition.

It seems to be a universal opinion that an earth road when dried by the summer sun, and worn into fairly good condition by passing vehicles is as good a wagon road as can be had for the purpose of farm traffic. This is a mistake. Every dirt road sinks more or less at the point of contact with the wheels of a heavy wagon. If the road is composed of soft material, the depression is of course greater, but whether of soft clay or gravel it always exists in some degree..

With reference to earth roads, the remarks already made as to draining, grading and forming the surface applies. Earth roads do not shed the surface water readily, the water tables should be kept about a two feet lower than the crown of the roadway, which should not be more than twenty feet wide. The result of filling in the ruts with large stones is an extremely rough road. In all cases the material for the roadway should be uniform. No sods or vegetable refuse should be used in grading up crown of the road,or in filling in ruts,but the earth chosen for the purpose should be as gravelly as possible. The transverse slopes of the roadway should not be less than one in twenty-four. In the case of clay roads, sand, old broken bricks, or even charcoal may be spread on the roadway to prevent the clay from sticking to the wheels; it is, however, almost impossible to keep a clay road in good order in wet whether, and the time and money spent in trying to do so would be much better invested in gravelling or macadamizing the road. A very sandy road will be improved by putting a little clay on it. There is nothing strikes a European more on his arrival in North America, than the excellency of the railroads, and the inferiority of the common highways.

This inferiority may partly be due to the fact, that the rich, both in the United States and Canada almost invariable live in cities where the roads are better kept, or else in the immediate neighborhood of towns which they can reach by rail. The country roads seem to be principally used by farmers to whom time seems to be no object, and who do not apparently realize that good roads can be profitable, since they do not actually place dollar bills in their hands, and who seem to think the only way to increase their income is to sell more produce, no matter how much it may cost to draw it to market, and accordingly they spend a great deal of their lives slowly plodding over bad roads without a thought of trying to improve them.

The surface of the road should be made as smooth and as hard as possible. The smoothness sheds the water readidly, and has least resistence to traction. Hardness prevents the formation of ruts, which is the first stage to destruction. It matters not whether the road be earth or macadam, if proper attention is not given to preserve the complete crown of the finished road, ruts will form which will hold water with the effect that on earth roads the wheels more readily cut. Water is admitted in different places to the road bed, destroying its resisting power and finally making it impassible. In constructing earth roads the use of a proper road machine is advisable. In this way the natural foundation of the ground is not desturbed in rounding up the road, as is the case with the use of common plows and scrapers.

Each municipality owning a machine should have one man especially instructed and constantly in charge of it. There will then be no question as to the advantage of road machinery, both for repairing and constructing earth roads. The roadway should be from sixteen to eighteen feet wide, according to the amount of travel, and a strip of from two to three feet should be left between the gutter and the edge of the side ditches. This width of roadway should have a crown of at least ten inches. The road should be always maintained in this shape. After the road machine has completed its work the whole grade should be rolled with a roller weighing about five tons. Rolling is essential in making the foundation and surfacing to form permanent roads, and the argument in the one case holds good in the other.

Road Material.

The question of materials to be used, and how to obtain them, is of the greatest importance in roadmaking, and often difficult to determine. It would seem to be a common notion with many who have essayed to enlighten the public on this subject, that stones suitable for roadmaking are obtainable on every farm, and all that is necessary is to encourage farmers to have them properly prepared at their leisure and delivered on the roads. On the contrary, though there is an abundance of stone on most farms, those suitable for making a first-class artificial road are quite uncommon. Stones gathered promiscuously from the surface of the field, though they may do very well to patch up a small piece of mud road, are most likely unfit to be used even on the poorest kind of turnpike. If generally of a good quality they are sure to be mixed with soft and worthless ones, which spoil the whole. Even where there are quarries of hard stone, it is usually of stratified formation, with layers of different degrees of hardness, and even if generally good they are devoided of that uniformity which is so essential in making a good road. A quarry of road stone, to be worked to advantage, must be situated very near a railroad, and have a track convenient for loading cars direct from the crusher. Breaking stone by hand will soon be a lost art. Stone for surfacing a road should be uniform, and possess the greatest degree of hardness. The best measure of the quality of stone for this purpose is its power of resistance to crushing force, though it appears from experience that the qualities of hardness and toughness are not always the measure of the resistance to abrasion, or the wearing away by the contact of horses' feet or the wheels of vehicles. The material employed for stone roads should be both hard and tough. Hardness is that disposition of a solid which renders it difficult to displace its parts among themselves, thus, steel is harder than iron, and the diamond almost infinitely harder than any other substance in nature. The toughness of a solid, or that quality by which it will endure heavy blows without breaking, is again distinct from hardness, though often confounded with it. It consists in a certain yielding of parts with a powerful, general cohesion, and is compatible with various degrees of elasticity. The virtue of broken stone on roads lies not so much in the support it offers to vehicles as it does in the protection it affords to the natural soil by shielding it from the effects of moisture. The weight must really be borne by the natural soil, which does, in fact, carry the stone road itself as well as the carriage.

Some geological knowledge is required to make a proper selection of materials. The most useful are those which are the most difficult to break up. Such are the basaltic and trap rocks, particularly those in which the hornblende predominates. The green stones are very variable in quality. Flint or quartz rocks and all pure silicious materials are improper for use, since, though hard, they are brittle and deficient in toughness. Granite is generally bad, being composed of three hetrogenious materials—quartz, felspar and mica, the first of which is brittle, and the second liable to decomposition, and the third laminated. The scientific granites, however, which contain hornblende in the place of felspar, are good, and better in proportion to their darkness of color. Gneiss is still inferior to granite, and mica-slate is wholly inadmissable. The argillaceous slates make a smooth road, but one which decays very rapidly when wet. The sandstones are too soft. The limestones of the carboniferous and transition formations are very good, but other limestones, though they will make a smooth road very quickly, having a peculiar readiness in binding, are too weak for heavy roads, and wear out very rapidly. In wet weather they are liable

to be slippery. It is better economy to bring good material from a distance than to employ an inferior article obtainable close at hand. No large stones should be employed. Whenever a carriage wheel or horse's hoof falls eccentrically on a large stone it is loosened from its place, and disturbs the smaller ones for a considerable distance round it, thus preventing their consolidation.

If too small the stones crush too easily; but on the other hand the less the size of the fragment the smaller the interstices exposed to be filled with water and mud, and the sooner will they make a hard road. For roads little travelled, and over which only light weights pass, the stones may be reduced to one inch in thickness.

Small, angular stones are the cardinal requisites. When of suitable material of proper size, and rightly applied to a well-drained subgrade, they will unite and consolidate into one mass almost as solid as the original stone, with a smooth, hard, and unelastic surface. The stones should be as nearly cubical as possible, the largest of which in its longest dimensions can pass through a ring three inches in diameter. In reducing them to this size there will, of course, be many smaller ones in the mass.

Twelve inches of well-consolidated materials in a good condition will be sufficient for roads of the greatest travel, and will resist all usual weights and frosts. McAdam considers from seven to ten inches sufficient, the latter depth of well consolidated material being equal to carry anything. In the climate of France ten inches has been shown to be quite enough for the most frequented roads; a band six and eight inches enough for others. The thickness should vary with the soils, the nature of the material and the character of the travel. It should be such that the greatest load will not affect more than the surface of the shell, and it is for this purpose chiefly that thickness is required in order that the weight which comes on a small part only of the road may be spread over a large portion of the foundation.

Earth roads as main thoroughfares will soon be a thing of the past, and the time will soon come when such roads will give way to stone. They cost more in the first outlay, but are much cheaper in the end. In order to obtain material in municipalities where rock is to be found, they should have in their possession one or more rock crushers. These machines should be simple in construction and light in weight, yet possessing the important qualities of strength, durability and efficiency. For the last fifteen years manufacturers have been making improvements on these machines, so that to-day those manufactured cannot fail to give results which will prove their value. The amount of product obtainable from any crusher is governed by the fineness to which the stone stone is crushed, the speed at which the machine is run, the diligence with which it is fed, and the character or quality of stone used, varying from ten to twenty tons per hour. They are usually mounted on trucks for portable use, and are moved and operated along rivers and streams where boulders are abundant. A suitable attachment to these crushers is an elevator, which carries the material to the top of the bins, roughly constructed to hold the product, which passes through a screen, dividing the material into three grades, depositing each in a separate bin. These bins are provided with shoots, which are constructed at sufficient elevation above the ground to permit of a waggon passing underneath to receive its load; the shoot is opened and the waggon filled without any cost. These machines cost from $600 to $1,000. In the construction of these roads there are a few points which would seem to bear investigation. One of these is whether the material used in surfacing the road should be broken small of uniform size, or should have a foundation of large stones covered with those finely broken. The first of these systems, called Macadamizing, has derived its name from one who has, perhaps, done more than any other to enlighten the world on the subject, and give an impetus to the improvement of roads. Stone roads, before the time of Macadam, with a few exceptions, were made without any pretense of scientific construction, and were composed of stone laid promiscuously, and through which horses and vehicles could clambor without actually sticking fast. These were described by writers of the times as the most horrible invention that could be conceived. Macadam, though not first to discover the advantages of having the surface of roads covered evenly with stones broken small and of uniform size, was the first to bring this system into prominent notice, and, being very energetic and persevering, he succeeded in creating a complete revolution in roadmaking, not only in Great Britain, but in the civilized world. In building stone roads in St. Thomas, the stone was supplied from the quarries in three grades of coarseness. 1. screenings, consisting of the stone dust and small particles of stone not over five.eighths of an inch in diameter. 2. Egg, consisting of what passes over the five-eighth screen, and will pass through a one and a-half inch screen. 3. Tailings, or what is too large for the one and a half inch screen, averaging from two and a-half to three inches in size. A first coating of the largest size six inches thick in the middle of the road and four inches thick at the sides, is laid on a prepared subgrade, and rolled until it is well consolidated. If possible it is well watered or advantage taken of wet weather, to facilitate the binding of the materials. This is coated over with stone of the second size to a depth of three inches, and the road is again thoroughly rolled. On this is placed a layer of screenings sufficient to fill the surface intertices between the stones and to cover them. This last coat, like the preceding one, is watered and well rolled. In place of screenings, fine gravel or very coarse river sand may be used, but on no account fine or dirty pit sand is admissable. Coarse pit sand may be allowed after having been thoroughly washed, so as to remove all earthly matter and the finer particles of sand which could work down between the stones and prevent them from binding, and thereby convert the macadam in a short time into a loose mass of rounded stone little better than ordinary gravel. The great object is to cause the stone to consolidate under traffic into a fine, compact and smooth roadway. If any loose earthly or other fine material be mixed with the stones they cannot become so consolidated.

BURNT CLAY.

Burnt clay has not as yet been used very extensively in building roads and therefore experience has not proven its merits, as a road material. Railroads have used it for ballast with great satisfaction, and a great many competant enggineers, after studying the question, believe that it will make a road evual if not superior, to macadem or gravel, at a much less cost. Wherever it has been used for road purposes it appears to be giving good satisfaction. The distinguishing characteristics of it are such as to make us believe that it is a good thing for a road. Clay, for this purpose,, of course must be carefully chosen and be free from sand.

One process of manufacturing is to make long rows of the clay with soft coal mixed much like a coke oven. The rows are fired and tended so that they burn uniform, and when the fire goes out the claywill have been completely burned. The material is porous and highly absorbant, and can be easily settled into a firm mass without being packed as stone or other material. It will not support vegetatation, and if properly laid with a crown, it will not allow water to stand upon it. It will stand a great deal of wear, and will not deteriorate; it is to a certain extent flexible, and resists crush to a remarkable degree, and if twelve inches of this material were placed on top of a well-drained and properly made dirt foundation, it will make and excellent road. It certainly will require careful attention in order that ruts may not be formed, and a stock of the material should be kept at hand, so that any breaks in the surface can be readily filled. While this is necessary we do not believe that the material will rut as quickly as gravel or Macadam, but the effects of water, standing in the ruts, may be more destructive. In this western part of the province where there is plenty of clay suitable for the purpose a road can be made very cheaply, as the cost of manufacture would be small.

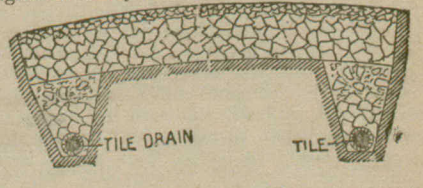
Another plan, and the one commonly used, is in summer weather,and during the hot season, to cut out the soil in the proposed road, to a depth of two feet, into large spits, laid roughly one upon the other, and left in that condition for about ten days. So soon as thespits dry they are submitted to the action of fire in the following manner. A circle is formed, twenty feet in diameter surrounded by a wall made of the roughest and largest spits two feet high, in the enclosure thus formed, straw or other light,combustible material is laid, small pieces of wood are placed on these and over them are placed other spits so as to form a cone or pyramid the whole structure to be about eight feet high. Fire is then applied to the several parts at once, due care being taken that the spits sink evenly until the whole mass is well alight. After being well banked the mass is left for a day or two and as soon as it attains a good red appearance is drawn down, the wall broken and the spits thown out. Others are added as required from day to day until all the earth dug has been submitted to the same process. In a length of one hundred yards of road thus served it would take about six fires to burn the 12,000 cubic feet contained therein, the cost of labor would probably be twenty-five cents per cubic yard. The burnt clay is then after cooling, relaid upon the road and forms the middle section, and will last for years.

CHARCOAL.

The novel expedient of using charcoal for road covering is not likely to be resorted to except in heavily-wooded districts where standing timber has no market value, and must be removed before the land can be cultivated. Take timber from eight to sixteen inches in diameter and twenty to twenty four feet long, and pile it up lengthwise in the centre of the road, about five feet high, being about nine feet wide at the bottom and two feet at the top, and then cover it with straw and earth in like manner to coal pits, the earth required to cover the pile being taken from either side leaves two good-sized ditches. The timber, though not split, is easily charred. The earth is then removed to the sides of the ditches; the coal raked down to a width of fifteen feet, leaving it two feet thick in the centre and one foot at the sides, and the road is completed. The material is found to pack well, not forming into ruts or get soft or spongy in wet weather. This kind of material for road covering is useless unless the roadbed is thoroughly drained and the crown of the road surface maintained.

MACADAM ROADS.

The peculiar system of Macadam consisted of having all the stones on the roads he constructed broken quite small—six ounces in weight being the limit—and after the road was properly graded so as to ensure proper drainage and a slight convexity of surface these were spread



over the ground at a depth of from five to ten inches without laying on any admixture of

earth or gravel on pretence of binding and never with stone or any special foundation. He persistently insisted that clear broken stone will combine by its own angles into a smooth, solid surface that cannot be affected by vicissitudes of weather or displaced by the action of frost. Macadam always contended that stones laid in this manner would, with the travel over them, become bound together so firmly and compactly as to become entirely impervious to water. This he contended was the whole secret of roadmaking, the great object being to keep the earth dry, the only use of the stones being to form a roof for this purpose. He contended that the ground was the road and must bear the weight of the stones as well as the vehicles passing over it, and held that nothing can make as good a road as dry earth, and that the thickness of the coating should only be regulated by the quantity of material necessary to form such impervious covering and never by reference to its own power of carrying weight; and he further contended that the wear of the road through travel over it is very much greater where the surface coating is underlaid with an unyielding substance, as on rock, than when on a slightly elastic foundation such as dry earth, and for this reason he always objected to a stone foundation of any kind and insisted that these tended to let in water to the earth below which was the destruction of the road. He always considered such a foundation to be a useless and unnecessary expense but experience has proven it to be positively injurious. For the same reason he never allowed any clay or other substance mixed with the stones, as he said it tended to make the coating more pervious to water.

TELFORD ROADS

These roads are made with a foundation of large stones covered with those finely broken, and are the most comon in this country. They differ from a road made of stone broken small and of uniform size in having the foundation first made in the shape of a roughly made pavement of stone six or eight inches in depth, this being first covered with stone coarsely broken and then with a coat broken quite small and afterwards covered with a coat of gravel or screenings from the crusher and the whole compacted with a heavy iron roller. It is the practice to mix some clay with broken stone in making this kind of a road to help combine the whole in a solid mass. When properly constructed they are the best for country districts. A Telford road is the least costly and lasts as well or better than any other. In this climate where frost if liable to penetrate very deep it is doubtful whether the covering that Macadam specifiies would be sufficient.

Where a depth of a foot or more of stone is necessary, if one-half of these may be of unbroken stone and of a cheaper quality—as is allowable in Telford roads—a considerable saving may be made in the cost, and it does look reasonable to suppose that a foundation of large stone if properly laid, will resist the tendency of heavily loaden vehicles to press them into the earth and form ruts on the surface. We can only reconsile the theory of Macadam, that a mixture of any kind of refuse with the stone is unneccessary, and positively hurtful, on the supposition that his experience was not with stone of the hardest and best quality. We consider it probable that in his experience, which consisted largely in lifting the stones from old roads and having them finally broken and properly replaced, that much of this material was of a kind that soon ground up with the traffic over them, and afforded material for consolidating the mass. Experience shows that when the material used is not of the best quality, it will consolidate more readily than that which is harder and better.

It may now be considered as settled that where the best quality of furnace slag is used, screening from this or some other substance must be added to consolidate them. And again, when we consider that the interstices in a body of loose broken stone comprise one half the bulk of the mass, and when pressed as solid as it may be, the open spaces comprise one fourth of the bulk of the mass. It is hard to conceive how this can be impervious to water, unless the crevices are filled with something.

Cost of Construction.

The side ditches should be, on an average, two and one-half feet deep, two feet wide across the bottom, and with side slopes of one foot horizontal to one foot vertical. This would be four and one-half cubic yards to the lineal foot. Twelve cents per cubic yard is a fair allowance for this class of excavation, making the cost $211.20 per mile for drains on both sides of the road. With the use of proper grading-machines, managed by two teams of horses and two men, at a cost of $8.50 per day, allowing forty rods for a day's work, would be $68 per mile. With the additional manual labor to fix the roadbed, make trenches, etc., say $125 per mile. In all cases the cost of draining and grading will be the same. Where the gravel can be obtained within five miles of the work, it will cost $3 per cord to team it, 50 cents per cord for the gravel and 25 cents per cord for spreading, making the total cost of the gravelling $3.75 per cord on the work. If gravel cannot be obtained within this distance, its use is not advisable. Flake stone for foundations can be secured at the quarry at 75 cents per cord; teaming the same at an average distance of five miles, $3 per cord; laying, 50 cents; making the total cost of the flake stone foundation $4.25 per cord. Crushed stone at the quarry costs $3 a cord The total cost will be $6 when procured within an average haul of five miles. If necessary to freight it fifty miles, $1.75 must be added to this estimate. Two teams and two men, taking the work in long stretches, would thoroughly roll one mile of road in a day. Allowing for this $10, the estimates for the different roads will, therefore, be as follows:

Earth roads:

Excavating 1,760 cubic feet in ditches, at 12c. per yard	$ 211 20
Grading, eight days, with machine, at $8.50	68 00
Labor on cross trenches, and finishing grade	60 00
Rolling	10 00
Commission expenses	25 00
	$ 374 20

Gravel roads (material obtained within five miles):

Draining	211 50
Grading	125 00
250 cords of gravel, at $3.75 a cord	937 50
Rolling	10 00
Commission expenses	50 00
Per mile	$ 1,334 00

Gravel roads, with flake stone foundation (material obtained within five miles):

Draining	211 20
Grading	125 00
250 cords of gravel and stone	1,000 00
Rolling	10 00
Commission expenses	50 00
Per mile	$ 1,396 20

For freighting stone where necessary, add to this, $281.25, making the cost $1,677.45 per mile.

Broken stone (material within five miles of the work):

Draining	211 20
Grading	125 00
200 cords of stone, at $6	1,200 00
Rolling	10 00
Commission expenses	50 00
Per mile	$ 1,596 20

For freighting, fifty miles, $350. Total, $1,946.20 per mile.

A crushed stone road would cost from $1,596.20, say $1,600, to $1,946.20, say $2,000 per mile, according to the length of haul. A safe estimate of average cost per mile of first class road is $1,800. This, at the present prices, with a limited demand, would be considerably reduced by the increased amount of work to be done.

Railway companies will certainly reduce the cost of carrying material, on account of the intimate relations between the railways and highways. So far as artificial roads are concerned, almost everything depends upon the facilities afforded by the railroads for hauling the required material at a moderate cost. Without this the making of first class roads would in general be expensive. There are many liberal-minded railroad officials who are far-sighted enough to see that the prosperity of their railroad is largely identified with the prosperity of the country contiguous thereto, and knowing that the common roads are the natural feeders of the railroads, are disposed to aid all they can in their improvement.

In constructing permanent roads it is necessary to avoid running into extremes, either in the amount of work to be done or the material to be employed. The convenience and relative value of the materials at hand for affecting the improvements should be considered. All culverts, bridges and abutments should be made as permanent as practical. The work of construction should be continued over a number of years, and the payments over a long term—say forty years. Those who come after us will reap the benefits of these good roads, and there is no injustice in asking them to pay part of the cost. There is ample skilled labor to perform the work, and the money can be raised in the manner stated. Every other enterprise in public improvements finds sufficient capital to put it through. It is freely admitted that there is no way in which money can be spent that would afford better returns to every part of the community.

To illustrate how these figures would apply to township municipalities, the following estimate of cost of improving 175 miles, being the road mileage at present maintained in the township of Yarmouth, in the county of Elgin, has been prepared by A. W. Campbell, city engineer of St. Thomas, and will form a basis for calculating the cost of the different kinds of roads in any municipality.

175 miles, at $1,800 per mile	$ 315,000 00
Equal annual payments, four per cent., thirty years	18,216 45
Maintenance, at $20 per mile	3,500 00
Total yearly payment	$ 21,716 45
Present maintenance, including statute labor at $1 per day	9,000 00
30 years actual extra rate	12,716 45
Total	$ 21,716 45

Total acreage in township, 70,000.

Assessed value, $2,700,000; per 100 acres, $3,850.

Estimated actual value, $4,000,000.

Extra rate required for annual payment, four and three-quarter mills.

Estimated increase in value of property, 10 per cent., $400,000.

In constructing 175 miles of stone road, 50 per cent., or $157,500, would be expended for labor that could be performed by the ratepayers. This would be equal to $225 per each 100 acres.

(To be continued.)

LEGAL DEPARTMENT.

H. F. JELL, SOLICITOR,
EDITOR.

LEGAL DECISIONS.

ORGAN VS. CITY OF TORONTO.

The plaintiff in this action while walking on Wellington street, Toronto, on 18th January, 1893, slipped on a smooth piece of ice, which had formed on the sidewalk, whereby she fell violently and was seriously injured. The ice was formed by water brought down by a conduit pipe running from the roof of a hotel to the ground, and on the water being discharged from the pipe there was no other mode for it to flow into the gutter. A by-law of the municipality required the occupant of a building—or if unoccupied—the owner to remove ice from the front of a building abutting on a street within a limited time. The defendant had the owner and tenant both made parties to the action. Judgment was given in favor of the plaintiff against the defendant, the city of Toronto, and there was judgment over in favor of the city against the owner—the action as against the tenant was dismissed.

ATTORNEY-GENERAL VS. MANCHESTER.

This was an action brought by the Attorney-General, of England, and certain private owners of property in the neighborhood where the defendants, the city corporation of Manchester, proposed to erect a small-pox hospital in the adjoining municipality, and the plaintiff sought to restrain them from so doing on the ground that the proposed hospital would be a public nuisance. The action failed, the judge holding that a small-pox hospital was not *per se* a nuisance and that the plaintiffs had failed to show that there was a probability that the danger apprehended by the plaintiff would, in fact, ensue. The law of Ontario, however, differs from this decision, the learned Chancellor of Ontario having held in Elizabethtown vs. Brockville that one municipality in Ontario could not, under R. S. O., chap. 205, sec. 595, establish a small-pox hospital within the limits of another municipality.

SMITH VS. FORT WILLIAM SCHOOL BOARD ET AL.

Held that the school board of a city, town or incorporated village have no power or authority to enter into any contract for the building of a school house until the necessary funds have been provided, under 54 Vic., chap. 55, section 116; and that if a certain sum has been provided under that section for the purpose of building a school house, they cannot be allowed to enter into any contract or undertake any work involving the expenditure of any greater sum, and therefore the plaintiff, a freeholder, a ratepayer and elector of the town of Fort William, and a supporter of the public schools therein, sueing on behalf of himself and all other ratepayers, was entitled to an injunction to restrain the public school board of that town, certain individuals, members of the board, and the contractors for the building of a school house, from proceeding with the erection thereof in a case where the contract price exceeded the amount provided under section 116, and to an order compelling the repayment to the school corporation of certain sums paid by individual members of the school board to the contractors for a certain portion of the work already performed.

RE CITY OF OTTAWA MUNICIPAL ELECTIONS

Judgement on two applications (made in the Ottawa Weekly Court) for a mandamus to command the county judges of Charleton to proceed with the re-count of votes for alderman in two of the wards at the last municipal election. Both judges stopped, because, on opening the ballot boxes, it appeared that the various classes of ballots were not put up in separate, sealed and authenticated packets, as required by the Consolidated Municipal Act, 55 Vic., chapter. 42, section 155. Applications refused with costs, the chancellor holding, upon a review of the various sections of the Municipal Act pertinent to the matter, that the authentication of the ballots by the deputy-returning officers was necessary to show the county judges that the ballots were the same and in the same state and condition as when deposited by the voters.

RE CUMMINGS AND COUNTY OF CARLETON.

Judgement on appeal by city of Ottawa and county of Carleton from order of Boyd, C., in Chambers (14 C. L. T. Occ. N. 451) dismissing motion by appellants for prohibition to arbitrators to prohibit proceedings to ascertain the compensation to be paid to Cummings for lands in the county injuriously affected by the building of a bridge over the river Rideau forming the boundary between the city and county. The main question raised by the appeal was whether arbitration was the landowner's remedy, the claim being against two municipalities, there being no by-law for the doing of the work, and the lands affected not being in the city. Held, that the duty of keeping up and maintaining the approach to the bridge being cast by the law upon the county, the claim for compensation should be against the county, which alone could be compelled to arbitrate in respect of it, and the proceedings against the two municipalities were erroneous, and the appointment of an arbitrator on behalf of both without jurisdiction. Appeal allowed an order made prohibiting proceedings in the attempted arbitration, but not so as to prevent Cummings from commencing and prosecuting proceeding de novo against the county alone to compel arbitration, and the county to be set at liberty to set up in such proceedings that compensation has already been made to Cummings.

The Lady Voter.

She walked haughtily yet flutteringly into the voting place to cast her first ballot.

"I want to vote," she said to the returning officer.

"Very well, you will find the tickets right there. How old are you?"

"None of your business," she retorted.

"I beg your pardon, madam, but it is."

"Do you have to know?"

"Yes, madam"

"Do I have to vote?"

"No, madam.

"Then good morning," and out she flounced.—*Detroit Free Press.*

Cowboys.

The question of enforcing a town by-law restraining cows from roaming at large, was the turning pivot which decided the fate of candidates to the Goderich town council at the recent municipal election; and now *The Signal* declares: "The cows elected the new council, and don't you forget it, and the public are hereby warned against sending communications on the nuisance to *The Signal* hereafter. The cows own this town, and anyone who doesn't like the cows is at liberty to leave town."

Tubing made from wood pulp is coming into use for underground purposes, owing to its high electrical resistence and its freedom from the action of earth-return currents, which seriously injure gas and water pipes in cities where electric cars use the ground to complete their circuits. It is also free from difficulties due to expansion and contraction.

In a town not far from Almonte, during the recent municipal election, the mayor, who was a candidate for re-election, met a constable with a prisoner on the road to the lock-up. The mayor took the prisoner from the constable, went with him to the police court, tried and acquitted him, and then took him to the polls and got him to vote for him. Judge McDougall of Toronto, is badly needed in that town, but a new mayor is worse needed.—*Almonte Gazette.*

One voter out of six in Vancouver, B. C., went to the polls in the late municipal election. There are six thousand registered electors in the city, but the mayoralty candidates combined polled only one thousand votes. This indifference is naturally regarded as dangerous, and furnishes an argument in favor of the government of cities by commission, which is at present being discussed in the legislature of that province. When the people so lose interest in municipal affairs their franchise is of little use to them.—*Mail.*

QUESTION DRAWER

SUBSCRIBERS only are entitled to opinions through the paper on all questions submitted if they pertain to municipal matters. Write each question on a separate paper on one side only. When submitting questions, state as briefly as possible all the facts, as many received do not contain sufficient information to enable us to give a satisfactory answer.—ED.

J. H.—A butcher who lives in Amherstburg, but uses a slaughter house in Malden township, put a number of sheep in the house over night for the purpose of slaughtering them next day. That night unknown dogs killed the sheep. Is the butcher entitled to the two-third value of his sheep from Malden township?

Yes. See sec. 18, of chap. 214, R.S.O.

A lives in ward No. 1, B in ward No. 2, C in ward No. 3. B proposes A for a councillor for ward No. 1, and C seconded the motion. Neither B nor C had any property qualification in ward No 1, and were not on the voters' list for that ward. Can a voter nominate a person for whom he has no vote?

Yes.

W. B. S.—An assessor, in making his roll, assesses a ratepayer for a dog. In the interval between the assessment and the Court of Revision the person concludes to kill the dog. Has the Court of Revision any right by statute on the appeal of the party assessed to strike off the dog? As the Act reads, the court can only deal with the errors or omissions in the assessment roll. My contention is that they have no right to strike the dog off, as it is neither an error or omission on the part of the assessor, and that the person should be held reponsible for the rate on the dog. A great many persons will kill one dog, and then get another when the Court of Revision is over.

We think that the Court of Revision can properly consider the complaint of a ratepayer who has killed his dog after assessment. To provide for the collection of tax on dogs brought into the municipality after assessment is made, a by-law may be passed, under the authority of section 489, sub-section 15, Municipal Act.

M. E.—Our municipality is not divided into wards, is divided into polling subdivisions. If elections for school trustees are ordered to be held (by the trustees) in the manner of elections of municipal councillors. 1. Can the nomination of school trustees be legally held at the annual school meeting? 2. When and where should such nominations take place? 3. Can a clerk of a municipality legally fill the position of deputy-returning officer in a municipality divided into polling subdivisions or wards?

1. No.

2. At the same time and place as the municipal nominations. See section 103, sub-section 3, Public Schools Act.

3. Yes.

J. H. L.—Has the mayor, being an ex-officio member of the different committees, a vote at the said comittees' respective meetings?

Yes.

W. H. M.—After nomination held and parties resign, not leaving sufficient number, can the gaps be filled up without holding another nomination?

No. See section 184, Consolidated Municipal Act.

OFFICE SEEKER.—Can the township clerk legally obtain the office of assessor from the township council? i. e. Is a township clerk eligible for the office of assessor in the township of which he is clerk?

No. See declaration required by section 271, Consolidated Municipal Act.

AN ELECTOR.—Is it legal for a returning officer at a municipal election to run it without a poll clerk or scrutineers?

Yes.

INQUIRER.—When a councillor resigns, after being elected, what course should be pursued to fill his place, or is it legal for council to proceed without it?

Sections 181 and 184 of the Consolidated Municipal Act provide for new election. The council may organize and proceed with business, provided a quorum of the council, as legally constituted, is present. See section 184.

T. W. T.—1. Is there any particular time wherein members elected as councillors and reeve in a township municipality should take declaration of office?

2. Is it necessary for persons re-elected to take said declaration?

3. Is a treasurer of a School Board within a township municipality disqualified from acting as councillor?

4 Is there any law by which the corporation of a township municipality can force a School Board within said municipality to accept as their treasurer the treasurer of the said municipality?

1. Yes; within twenty days. See section 277, Consolidated Municipal Act.

2. Yes.

3. No

4. No.

C. P.—The secretary-treasurer of a school section requires a member of a council to bring him the amount of money raised for said section for school purposes, sending his receipt therefor. The municipal treasurer refused to send the money unless an order, signed by two trustees and receipted by secretary-treasurer was given. Who is correct, secretary treasurer or municipal treasurer? See section 125, page 2421, C. S., 1887, vol. 2.

Too much care cannot be exercised in the disbursement of public money. The township treasurer was right in requiring an order under seal, signed by two trustees, before paying moneys on order of secretary-treasurer. The regulations of the Education Department provide that the legislative and municipal school grants in townships are to be paid by the township treasurer on the order of the board of trustees. The trustees order is more necessary in the case in question as the amounts annually raised on the requisition of school trustees in townships is always larger than the grants.

P. R.—In a union school section, composed of portions of two townships, the trustees asked for a certain amount to be raised by a levy on the whole section. The clerk of the township in which the school house was situated, found that the portion of the other township was entitled to raise by levy fifty dollars, but, by a mistake, notified the clerk of the latter township to raise by levy forty dollars, being ten dollars short of the amount said portion should contribute to the funds of the school.

1. Can the deficiency be collected along with the school rates of the said portion of the section for next year by notifying the clerk of the said township to make a levy for the amount?

2. Would such action require a by-law to be passed by the council of township in which the school house is situated?

3. If the above are not the proper steps to take can you suggest any way of collecting the said deficiency?

1. There is no objection to raising next year the amount omitted to be raised this year. We do not think that the clerk should decide the proportions to be paid by the different parts of a union school section, and to avoid dispute in the future, the assessors should equalize the sections, as provided in the Public School Act, and file a copy of their report with the clerk of each township. The trustees, in making their annual requisition should notify each township of the full amount to be raised. It is then the clerk's duty to raise in the union section in his township the proportion as shown by the assessors' award. The trustees should have no objection to the correction of an error such as that referred to by our correspondent.

2. In passing a by-law, levying trustees' rates for 1896, it would be as well to add the ten dollars in addition to amount actually required.

I. B.—Can the council of a town or village, after the tax has been paid in to the treasurer, remit or pay the amount back to aid a manufacturing firm without submitting a by-law to the rateyayers?

No. This would be tantamount to granting a bonus to the manufacturing firm which cannot now be done by a municipal corporation.

LAXTON.—Is the surety of a treasurer null and void because at first meeting, the council neglect to look into the suretyship of treasurer when all is right no deaths and no notice of resignation sent to the clerk or reeve?

No. If the sureties remain *compos mentis*, and the bond is regular in form.

LAXTON.—To disqualify a municipal councilman has it to be on the day of nomination or the first day of meeting after elected, and if disqualified for not being assessed at $400, or $800 for tenant and surety for treasurer or collector, would it have to be at nomination day or at any other time?

The election commences on nomination day and in order to qualify, the candidate must then possess the necessary qualifications, and be free of all the disabilities mentioned in the Municipal Act.

V. A. N.—About six years ago the corportion passed a by-law granting a bonus of $4,500 and exemption of taxes to manufacturing firm. Debentures were issued after being duly passed by a vote of the ratepayers. The parties failed to carry out the conditions of contract and the mortgage was foreclosed. Subsequently the corporation sold said premises to another party for $3,000—about four years ago. Now said party is about forming a joint stock company and wishes the corporation to cancel all former arrangements and to discharge mortgage on their paying $1,000 cash. There is $2,500 due on the mortgage. Can the corporation legally do this without submitting the same to the vote of the people?

No. The discharge of the mortgage would, in effect, be granting a bonus to the company, which cannot be done. A municipal corporation cannot now grant a bonus promoting any manufacture, and what it cannot do directly it will not be allowed to do indirectly.

J. S.—Is a village corporation liable for damages for taking down a hill in front of a village lot occupied by citizen? The taking down of hill left a bank in front of lot from three to four feet high. The front of lot is about fifty feet wide.

The owner wants damages to the amount of $100 What advice or action should the council take in the matter?

It is a question of fact as to whether injury was done to citizen's property or not. If the corporation validly exercised its powers, the citizen must seek compensation (if he is entitled to any) under the arbitration clauses of the Municipal Act. See Consolidated Municipal Act, 1892, chapter 42, section 483, et al.

J. B.—In one of our sections the trustees employ two teachers—one to teach on the ground floor, and the other to teach in the upper part of the same school house. The trustees claim that they have two separate and distinct schools, and are entitled to the municipal grant of $200; other persons think that the trustees are only entitled to $150. (See section 109, Ontario Statutes, 1891, chapter 55.) What is your opinion?

The trustees are only entitled to $150. There is only one school.

F. J. C.—Is a public school trustee IN A TOWN qualified to act as auditor of the municipal, high and public school accounts? The municipal auditors audit the public school account. See subsection 11, section 107, Public School Act, 1891.

No.

J. S.—Would you recommend gravel for sidewalk for cheapness and durability for back streets and long walks. Plain gravel without cement, and what would be the best kind of material to hold the gravel in its place at the sides?

Plain gravel without cement for sidewalks are very uncomfortable to the pedestrian and are either covered with loose stones and dust in dry weather or with a light slime of mud in the wet season. If carefully made" however they answer the purpose of very light travel in suburban districts, for if the travel is even that of the average side street they wear quickly into depressions which holds the water and is very disagreeable after a rain, and as the surface has been hardened it is difficult to repair them without breaking the whole section in order to obtain a united mass. When finished the walk should have a inclination of one inch to one hundred feet towards a watercourse and the surface of the walk should be crowned with a raise of one half an inch to each foot in width. The gravel should be at least five inches in depth and the ground along the edge of the trench made to conform to the grade of the walk. Wherever this depth can be obtained in excavation, the walks will be sufficiently protected by the earth at the sides, but where the depth cannot be obtained, curbing and filing will have to be resorted to, to keep the gravel in its place. If curbing is used it should be two inch cedar plank fastened to cedar posts four inches in diameter, sunk two feet below the bottom of the trench and placed about eight feet centres. Before placing the gravel, the bottom of the trench should be thoroughly rammed in order to secure a firm foundation, preserve uniformity of the grade and prevent dislocation of the material after becoming thoroughly set. The main principle to be observed in the construction of these walks is to see that the bottom of the trench is thoroughly drained. Three or four inch common field tile placed in the bottom of the trench and discharging into the watercourses wherever a proper outlet can be had is as good a plan as can be adopted. Four inches of gravel should first be placed in the bottom of the trench and thoroughly bonded, then the remaining five inches and the amount allowed for the curvature of the surface should be put on and the whole thoroughly rammed and made to conform to the required curve. It is advisable to have the surface of all sidewalks about one foot above the bottom of the gutters of a properly improved roadbed, if the road is not improved the grade should be of sufficient height above the road to prevent the water flowing over the walk. Care should be taken in selecting the gravel for this work. There are two kinds of gravel—one which will pack under travel, and clean rounded stones which will not. This is due to the small proportion of clayey or earthy matter contained in the former, which unites and combines the material together, and on which the travel forms a smooth and hard surface. Seaside or river-side gravel consists almost entirely of water-worn pebbles of all sizes which usually move and slide on each other and is unsuitable for this purpose, unless other material be mixed with it, and this is difficult to do in order to secure good bond. Generally pit-gravel contains too much earthy matter. The gravel for the top layer, at least, should be hard and tough so that wear will not pulverize it and convert it into dust and mud. Proper attention should be given to the work for some time after its completion in order to see that it is packed uniformly, and that under travel it secures uniform surface and grade.

Gravel walks properly constructed and maintained are more durable, safer and less expensive than plank walks for the district referred to, but with a view to permanency and economy artificial stone walks made of proper materials are most advisable to construct.

A SUBSCRIBER.—1. Is a person that is assessed for a stock in a store only, entitled to a municipal vote, and will it apply to both male and female voters? How should they be entered in the assessment roll and voters' list.

2. Have the sons of a person assessed as owner of real estate, say $8,000, a municipal vote, the son having no claim on the property, only living and working with the father?

3. Are owner's sons entitled to a municipal vote the same as farmer's sons?

(This is village assessment.)

1. No.

2. Not unless they are assessed, and the property is not less in quantity than twenty acres.

3. No.

W. H. M.—A nomination was held in our township on Monday, the 24th day of December, for the purpose of electing a reeve and four councillors to fill the respective offices for the ensuing year—held pursuant to notice, at which meeting two candidates were nominated for reeve and eight for councillors, on the following day one of the candidates for reeve resigned, and five of the councillors sent in their resignations leaving only one reeve and three councillors remaining. At the expiration of one hour, as there was likely to be a contest and election, I adjourned the meeting (a poll having been demanded) until the 1st Monday in January for an election. In consequence of the subsequent resignation of the candidates and one more candidate required to fill up the vacancy in the council, I am at a loss how to proceed, as I don't see any precedent for such a case in the statutes. Therefore I would be obliged if you can solve the difficulty and give your advise how we are to act. I may state our township is not divided into wards, and in consequence of our situation and a difficulty having occurred in not being able to procure ballot papers on short notice, the county council passed a by-law some years back allowing us to hold our nomination a week ahead of the ordinary time. Would it be lawful now for the council of 1894 to appoint a person to fill the vacancy? Or could the new council elect a member? Or if neither of these proposals are lawful how are we to act?

The vacancy occasioned by the filing of such resignation, will have to be filled by a new election in the manner provided for in section 181 of the said Consolidated Municipal Act, 1892.

S.—The owner of a lot, upon getting it surveyed, finds that it takes nearly the width of the sideroad to give him his quantity of land. He claims the full width of his lot, and has moved his fence on to the road, thereby stopping travel (the road has been travelled about six years), and considerable funds expended upon it. Should the council get a re-survey before they take any action, or what is the best way to pursue in the matter?

We think a survey unnecessary, as the public user of the road and the expenditure of money thereon make it a public highway. The most advisable course to pursue, would be to indict the owner for obstructing the road.

S.—On surveying a blind line it was found necessary to deviate a little round the point of a lake, thereby, taking a small quantity of land from an adjoining lot. The owner now has notified the council that he intends to make his fence straight, along the front of his lot, which would run the road into the lake. Cannot the council hold the road by statute of limitation, although no agreement of gift or purchase can be shown, the road being a travelled highway, under the control of the municipality for over thirty years?

Yes, the public user of the road amounts to a dedication.

No Quality so Useful as Discretion.

There are many shining qualities in the mind of man; but none so useful as discretion. It is this which gives a value to all the rest, and sets them at work in their proper places, and turns them to the advantage of their possessor. Without it, learning is pedantry, with impertinence; virtue itself looks like weakness, and the best parts only qualify a man to be more sprightly in errors, and active in his own prejudice. Though a man has all other perfections and wants discretion, he will be of no great consequence in this world: but if he has this single talent in perfection, and but a common share of others, he may do what he pleases in his station of life.

"I find THE WORLD a great help, and would not like to be without it."

N. E. L., Port Elgin.

Municipal Insurance.

During the past year many municipal councils and boards of trade considered the question of fire insurance.

In most cases it was thought advisable to petition the legislature at its approaching session, for an act to allow municipal corporations to insure all property within its limits, and thereby save to the ratepayers, the large sums that now go to make up the dividends of Fire Insurance Companies. We are strongly in favor of this agitation and believe, that the municipalities should make a united effort to secure the necessary legislation.

The idea of a municipality conducting its own fire insurance is not new.

The Fire Insurance Companies have been of great assistance in the past. The growth of their business has been gradual, and the present generation has been so educated that insurance of property against fire is almost universal. Until the recent agitation, no one has been particularly interested in pushing the proposal. The representatives of the various companies, although in possession of the necessary information, could not be expected to advocate the change, as there business interests will be effected thereby.

That municipal insurance would be popular in townships may be judged by the success that has attended the establishment of local mutual companies.

The importance of the movement will be better understood when reliable data is presented.

How to procure this is a question for every council to consider.

We can suggest no better plan than that the assessor be at once instructed to ascertain from the ratepayers the amount of insurance in force and premiums paid, as well as the losses sustained by fire during the past year. This will cost but a small amount. Councils would then know the extent to which they are interested, and should act accordingly.

The present municipal machinery is quite sufficient; an additional officer to be inspector of risks might be required, but in the smaller municipalities the assessor could perform these duties.

Opposition must be overcome, and to this end united action in the part of municipalities is necessary.

The *Monetary Times*, an insurance chronicle, considers the question in the following extract from that paper, and calls the movement a "game of bluff";

"It must not be overlooked that the notion of towns and cities doing their own fire insurance has found lodgement in the minds of various town councillors in the province of Ontario. We do not believe that all the councillors who speak in favor of municipal insurance believe in it—some of them are two intelligent for that. They use the scheme, however, as a "bluff" to frighten the Fire Underwriters' Association when it makes demands upon municipalities for better fire protection. Guelph and St. Thomas, Ottawa and London, have each been debating the scheme in council chamber, and not a few other places besides. Since we last wrote upon this subject we found it made matter of discussion in St. Thomas. The council of that city appointed a committe to consider the matter. This committee reported last week that inasmuch as only $2,694 had been lost by fire in St. Thomas last year, and less than $3,000 per annum for several years, the citzens could save $60,000 or $65,000 a year (which they now pay to insurance companies) by doing their own insurance. Fortified by arguments used by promoters of like schemes in other cities, notably Toronto and Guelph, the committee considered that "the profits reaped by the companies through fire risks here were ample without necessitating the extra expenditure of putting in an electric alarm system," as the Board of Underwriters asked the corporation to do.

Here is the way in which an old country authority, *The London Review*, laughs at these dangerous schemes: The good people of Toronto intend to establish a municipal bureau of fire insurance. The corporation claims that about £150,000, roughly speaking, is taken out of the city of Toronto annually by those wicked institutions, fire offices. Now, therefore, do they propose to have a municipal fire office. We would very much like to see this done once. It has really become necessary that an object lesson should be given of "how not to do it" in the shape of a city managing its own fire insurance. It is curious how these ideas crop up from time to time—how wise they are in theory, and how utterly ridiculous they would turn out to be in actual practice."

Rules and Regulations for the Government of Common Gaols.

(Continued from November, 1894.)

PRISON OFFENCES AND PUNISHMENTS.

No punishments or deprivations of any kind shall be awarded to any prisoner except by the gaoler, who shall have power to order punishments or deprivations for the following offences, namely:

(1) Disobedience of the rules and regulations of the gaol;
(2) Common assaults by one prisoner on another;
(3) Cursing or using profane language;
(4) Indecent behaviour or language;
(5) Insulting, threatening, or violent language towards another prisoner or any officer of the gaol, or towards a visitor to the gaol regularly admitted thereto;
(6) Idleness or negligence at work on the part of a prisoner sentenced to hard labor;
(7) Refusal or neglect to keep his or her cell in order;
(8) Wilfully destroying or defacing the gaol property.

For the foregoing offences the gaoler may award any of the following punishments or deprivations in his discretion, according to the heinousness of the offence:

(1) The hard bed, that is, by removal of the straw tick from the bedstead for an indefinite period, sufficient covering, however, to be left;
(2) Bread and water diet for a period not exceeding five consecutive days;
(3) Confinement in the dark cell, with bread and water diet, for a period not exceeding three days, during which period the prisoner must be visited not less than twice in twenty-four hours.

It is only the first cost and the apparent increased expense that keep cities from cremating their garbage. In some countries, especially where there is a high temperature, it is important to dispose of the garbage that such refuse may not be exposed to the great tropical heat and spread disease by decomposition. In Calcutta, India, where the refuse food and garbage is principally vegetable and much more difficult of incineration and yet where garbage cremation is almost necessary, a special kind of furnace is in use which totally destroys all refuse, including the smoke and gas. If such a thing can be done in that country it will be much easier to do the same thing in this climate and region where the refuse is animal and vegetable. There are several furnaces which do the work well and even if they are not perfect in every detail they dispose of waste much more effectually and rapidly than nature and with much less menace to the public.

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We take much pleasure in directing the attention of municipal councils to the card of Messrs. Robinson, Lennox and McLeod, Barristers, of Toronto and Aurora, which appears in another column. Mr. Robinson has had an extensive experience in municipal law, and has been solicitor for the county of York, and other municipalities for many years.

Councillors will consult their best interest by availing themselves of Mr. Robinson's, experience whenever necessary.

* * *

To know that the WORLD is appreciated by municipal officials throughout the province is most satisfactory. The following are a few extracts from subscribers letters.

"Send on the paper, I could not keep house without it."

J. B., Osnabruck Centre.

"I find it of great value in my work as as clerk of council."

A. McF., Otterville.

"I believe no member of a municipal corporation ought to be without it."

F. H., Zurich.

Infectious Diseases.

All infectious diseases are dangerous not only on account of the large mortality which they cause but because of the sickness and suffering which is entailed thereby. Therefore in the attempt to restrict, cut short and prevent these diseases some system of notification and restriction should be formed. The difficulty in the way of notification in many communities is that it is left to the physician, whose duty it plainly is not. If a physician finds a case of small-pox in a house he should promptly report the disease to the board of health. If the public could only see that the golden rule is particularly applicable here, they would perhaps be more prompt at notification.

If the proper sanitary authorities are notified of a dangerous disease, they can not only protect those in the immediate neighborhood, but by keeping the children of that house from school or from playing or runing about with other children, can keep the disease within reasonable bounds or, as the most skeptical will admit, they can do more than can be done without notification. As it is so often through the schools that infectious diseases are spread so it is through them that practical, preventative steps may be taken. The health officer of York, Pennsylvania, has devised the following plan for tracing contagious diseases, which he thus explains:

In the beginning of the year each teacher is furnished with a blank sheet; it is headed with the teacher's name and grade of the school—for instance, John Jones, city, primary, No. 1. Then we have a place for each pupil's name, to be placed there in alphabetical order; opposite thereto, the pupil's age, the parent's name, and place of residence. The sheet is filled out by each teacher in the beginning of the school term. It is forwarded to the superintendent's office and is bound. This constitutes our directory. The health officer reports to the city superintendent daily all cases of contagious diseases. The directory is consulted, and all of the teachers who have schools in that section of the city are notified. First, however, the directory is examined, and the pupils from any of those families are speedily located, so the superintendent knows just what schools they attend. The teachers are informed, and it becomes then the duty of two people to see that those regulations are complied with—the superintendent and the particular teacher.

We are pleased to announce that Messrs. Hart & Riddell, the well-known municipal publishers and wholesale stationers, have recovered from the effects of the fire, which partially destroyed their premises and stock, and are now prepared to fill orders for municipal supplies the same as formerly. Address No. 3 Wellington Street, Toronto.

Publications Received

Minutes and Proceedings of Council, 1894, Town of Sullivan.—A. STEPHEN, Clerk.

Proceedings of council, 1894, City of London.—C. A. KINGSTON, City Clerk.

The London council held forty-one meetings during the year the proceedings occupy 331 pages. This will give our readers some idea of the work attached to the position of aldermen in cities

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Any trade maintained by a bonus must be a losing trade. The necessity of a bonus is a proof of the unprofitable nature of it. The outlay must be greater than the returns. The bonus merely distributes the loss among the whole people.

..CULVERT PIPE..

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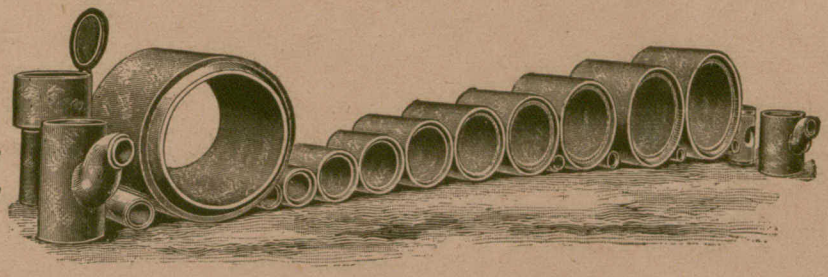
Water-trap Street Gully
Double-trap Street Gully



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To Municipal Councillors and the Public Generally:

PORTLAND CEMENT, CONCRETE, STONE, CULVERT AND SEWER PIPE ARE WANTED IN EVERY CITY, TOWN AND TOWNSHIP AND IN EVERY PART OF THE DOMINION OF CANADA, WHEREVER SEWERS, CULVERTS, GULLEYS AND DRAINS ARE NEEDED.

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Concrete Culvert and Sewer Pipe can be manufactured in any part of the Dominion of Canada wherever the raw materials are suitable in the locality. Patent rights for sale, apply to E. NORTH, London, Ontario.

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Thomas Duffin,	Ex-Warden, County of Middlesex	Robert Ironside,	Assistant City Engineer, London
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