

PAGES

MISSING

THE MUNICIPAL WORLD

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ST. THOMAS, ONTARIO, NOVEMBER, 1896.

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The Municipal World,
ST. THOMAS.

Calendar for November and December, 1896.

Legal, Educational, Municipal and Other Appointments.

NOVEMBER.

1. Last day for transmission by local clerks to County Treasurer of taxes on lands of non-residents.—Assessment Act, section 121.
- Last day for transmission of Tree Inspector's Report to Provincial Treasurer.—Tree Planting Act, section 6.
- Last day for Collector to demand taxes on lands omitted from the Roll.—Assessment Act, section 154.
15. Day for closing Court of Revision in cities, towns and incorporated villages when assessment taken between 1st July and 30th September.—Assessment Act, sec. 52.
- On and after this date councils of townships, cities, towns or villages may enter on lands and erect snow fences.—Snow Fences Act, section 3.
- Report of Medical Health Officer due to Local Board of Health.—Public Health Act, schedule A, section 1.
30. Last day for municipality to pass by-laws withdrawing from Union Health District.—Public Health Act, section 41.

DECEMBER.

1. Chairman of Board of Health to report to the Council on or before this date.—Public Health Act, schedule A, section 3.
- Last day for appointment of School Auditors by Public and Separate School Trustees.—Public School Act, section 21 (1); Separate Schools Act, section 28 (5).
- Municipal Clerk to transmit to County Inspector statement showing whether or not any county rate for public school purposes has been placed upon Collector's Roll against any separate school supporter.—Public School Act, section 68; Separate School Act, section 50.
- Last day for councils to hear and determine appeals where persons added to Collector's Roll by Clerk of Municipality.—Assessment Act, section 154.
8. Last day for Public and Separate School Trustees to fix places for nomination of Trustees.—Public School Act, section 57 (2); Separate School Act, section 31 (5).
- Returning Officers to be named by resolution of the Public School Board (before second Wednesday in December).—Public School Act, section 57 (2).
14. Last day for payment of taxes by voters in local municipalities passing by-laws for that purpose.—Municipal Act, section 489.
- Last day for Collectors to return their rolls and pay over proceeds, unless later time appointed by council.—Assessment Act, section 132.
- County Treasurer to pay Township Treasurer rates collected in Township.—Public School Act, section 122 (3).
- Local Assessment to be paid Separate School Trustees.—Separate School Act, sec. 55.
- Municipal Council to pay Secretary-Treasurer Public School Boards all sums levied and collected in township.—Public School Act, section 67.
- County Councils to pay Treasurer High School.—High School Act, section 30.
15. Councils of towns, villages and townships hold meeting.—Municipal Act, sec. 263 (3).

The County Councils Act, 1896—List of Forms Required by County Clerks

Nominating Officers Appointment.—Section 7 (1).	
Copy for Nominating Officer's Advertisement or Poster.—Section 7 (a).	
Nominating Officer's Certificate to County Clerk of Nominations Received.—Section 8.	
Nominating Officer's Statement of Expenses.—Section 22.	
Form of Ballot for making Printer's Copy.—Section 10.	
Ballot Paper Account.	
Envelopes A to G.	
Statement of Votes, Deputy-Returning Officer to Municipal Clerk.	
Statement of Votes, Municipal Clerk to County Clerk.—Section 15.	
Statement of Votes by County Clerk, showing candidates elected in each District, for posting up.—Section 16.	
Statement of Expenses where no Election in Local Municipality.—Sections 11-22.	
Extract County Councils Act, sections 5 to 27.	
Municipal Ballot Act.	
Packets complete for Nominating Officers, each	30 cents
“ “ “ Municipal Clerks, “ “ “ “	10 “
“ “ “ Polling Subdivisions, “ “ “ “	20 “
“ “ “ County Clerks, “ “ “ “	40 “

We are also prepared to supply Municipal Clerks with Voters' List Paper for Poll-Books and Directions to Voters, as required by sections 25 and 26 of said Act.

Address all orders for election supplies to

THE MUNICIPAL WORLD, ST. THOMAS

The Municipal World

PUBLISHED MONTHLY

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

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A. W. CAMPBELL, C. E.

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Associate
Editors

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Box 1252, St. Thomas, Ont.

ST. THOMAS NOVEMBER 1, 1896.

The numerous actions for damages, caused by highways being out of repair, and the excessive verdicts, which in some instances have been secured against municipal corporations, has led to a change in the law, whereby they may be tried by a judge without a jury. Whether this will have the desired effect or not, time will show.

Accidents are often caused by contributory negligence on the part of the plaintiff, and in many instances the actions are entered at the instance of solicitors or their agents.

While there is reason for complaint on the part of municipal councils, a great many accidents would not happen if the highway was in repair, or properly protected. No one is in a better position to judge of this fact, than members of the councils, who, rather than admit this neglect by making a settlement, instruct their solicitor to put in a defence, and thereby transferring the responsibility to the judge or jury, at the expense of the ratepayers, whose taxes are used to pay verdicts and costs.

* * *

The county council of Huron, at its June session, passed a by-law in accordance with the Municipal Act, section 113, which provides for the holding of nominations for reeve, deputy-reeves and councillors on the last Monday but one in December, the same day the county council nominations will be held.

In districts composed of more than one municipality this will be inconvenient, as it will divide the electors and prevent many who desire to attend both meetings from doing so. We would suggest that this year at least it would be advisable to have the nomination meetings on separate days. The Municipal Act does not state

that by-laws passed in accordance with section 113 are to remain in force for a specified time or that they may not be repealed at any session of the council.

County councils, where by-laws have been passed changing the nomination day, should consider this matter at the November session with a view to having the nominations on separate days.

* * *

In determining the number of ballots required by the various polling subdivisions in the different municipalities of a county, clerks should refer to the Voters' Lists in the office of the sheriff or the clerk of the peace. In every instance a record should be kept of the number of ballots sent out.

Ottawa vs. Carleton.

SETTLEMENT OF ADMINISTRATION OF JUSTICE, EXPENSES TO BE PAID BY THE CITY.

Municipal bodies in Ontario will be interested in the arbitration just concluded to determine the amount to be paid for the next five years, under the Municipal Act, by the city of Ottawa, to the county of Carleton, on account of jail and court house expenses. For the five years up to 1890, the city paid the annual sum of \$5,800. Then in 1890 the city was coaxed into increasing this amount to \$9,750 per annum. This year the county wanted \$10,800, which the city refused to pay, but offered the county \$10,000. The county declined to accept the sum, and an arbitration was decided upon. Judge Deacon of Pembroke was the county arbitrator, Taylor McVeity, the city representative, while Judge Bell of Chatham was appointed third arbitrator by the Lieut.-Governor of Ontario. The city's case was vigorously fought by city solicitor McTavish, with the result that the award, on which all the arbitrators are in accord, gives the county a net annual payment of \$8,104, or \$1,900 less yearly than they were offered. The arbitrators disallowed the county's claim for compensation for common use with the county by the city of the court house and jail. The decisions in County of Kent vs. Chatham, and County of Lincoln vs. St. Catharines had an important bearing on the award.

The condition of the streets in London, England, which are now in the possession of the pavers, sappers and miners, is beyond the power of precedent or magistrates. Repairs are in progress simultaneously in all the thoroughfares, and blocks are constant, especially at midnight, when the theatres are emptying their audiences into streets where cabs cannot approach. If 12,000 cab-drivers go on strike next week, of which there is a good prospect, another and more serious complication will arise.

The Development of the County Council in Ontario.

From 1792 up to the year 1834 the justices in Court of Quarter Sessions managed all local matters, and in that year an act was passed which provided that at the annual township meetings, Fenceviewers might be appointed.

In 1835 a further change was made, which was authorized at the annual meeting, to appoint a clerk, three commissioners, assessor and collector and any number of overseers of highways and poundkeepers.

The most important change was the appointment of commissioners, to whom they transferred many of the powers respecting the maintenance of roads and bridges, previously held and exercised by the Justices in Quarter Sessions. The commissioners were required to meet three times at the place in which the annual meeting was held, and to hold as many other meetings as they thought necessary at any place within the municipality.

The Quarter Sessions still retained the authority they formerly held in reference to the administration of justice and alteration of highways and other matters general to the district. This was the municipal system in vogue at the time of the rebellion, after which, in 1839, the township commissioners were named wardens, and while this system does not seem to have been much in the direction of popular self-government, as the officers were not intrusted with the powers necessary for efficient municipal government; any act that took from the nominative magistracy any of the powers they exercised was appreciated. This system was continued up to the year 1841, when the province was divided into districts, and an act passed which provided for district councils to be composed of one or two members to be elected at the regular meeting in each township, and to hold office for three years, retiring in rotation. The council was required to meet four times a year. The warden, treasurer and clerk were appointed by the governor of the province.

Every by-law passed had to be approved of by the provincial authorities. The governor had the power to dissolve the councils at any time.

To the district councils were transferred the powers of the Quarter Sessions, in reference to municipal affairs. This system was continued until 1849, when an act establishing municipal and county councils similar to those of the present day was passed.

The township council was to consist of five members elected by a general township vote or by wards. The councillors were to elect one of themselves reeve and a deputy for each 500 freeholders on the collector's list. This was afterwards changed to the present system, whereby the reeve is elected by the direct vote of the electors.

The Drainage Act.

PAPER READ BY JAMES ANDERSON, CLERK OF EAST ZORRA, AT A MEETING OF THE CLERKS' ASSOCIATION, COUNTY OF OXFORD.

In making a few observations on the operation of the Drainage Act, I will confine my remarks chiefly to those sections which refer more particularly to the work and responsibility of the clerk, in connection therewith, and some of my own experience in its application. I find it advisable to keep all documents in connection with each drain in one parcel, and for that purpose find the large legal envelope secured with a tape the most convenient. See that the petition is in proper form, and especially, that it correctly describes the whole of the area proposed to be drained, as nearly as possible, and by reference to the assessment roll, that the parties signing are assessed as owners. This is important, in view of the fact, that the description of the area determines whether those assessed for outlet and injuring liability, are entitled to be counted on the petition, and in some instances, a farmer and one or two sons will be found jointly assessed for property, when the sons are in no sense actual owners, but should have been entered as farmers' sons. Then see that the engineer employed makes and files the oath prescribed before proceeding with the survey; this under the Drainage Act, having to be done in the case of each particular drain. Upon reception of the engineer's report the amendment of 1896, makes it necessary for the clerk to notify all persons assessed for the work, whether within the area described or not. In notifying the owner as to the meeting for consideration of the report, it is just as well to give all the assessments, as human curiosity is very strong, and the next thing every person wants to know, after leaving his own assessment is, to find out that of his neighbors. In getting up the by-law, see that each parcel of property assessed is properly described, as all engineers are not infallible in this respect, and some lands are cut up in very curious shape. In the preparation and service of the by-law, it will be found much better to have it printed, and served in accordance with section 22 of the Act, as it is almost impossible to have it printed in correct form as advertising matter in a newspaper, and very few publishers care to have so much of their space taken up for four consecutive weeks, for remuneration usually allowed in the estimate, and by serving personally, the clerk can be sure that each person has been notified, beyond doubt. The proceedings in the court of revision are so similar to those of the ordinary court on the assessment roll, as to require little comment, but the clerk in recording the proceeding, will usually have to ignore a quantity of irrelevant matter in the evidence. A verbatim report of the evidence

sometimes given, would furnish amusing reading. A strict attention to dates and services of notices is, however, very important. In issuing debentures under the act, it is advisable to include the interest in the amount, as is provided in section 53, and to divide the amount into equal annual payments of principal and interest, thus simplifying the work of entering in the collector's roll each year. In section 62, the time specified (four months) for payment of proportion by the municipality, served under section 61, is too short, and should be extended to six months. Sub-section 3, of section 66, if strictly carried out in all cases, would furnish clerks with a lot of extra work. The estimates prepared by competent engineers, usually come very near to the actual cost of the work, and if there should be a small deficiency, it might be advanced by the municipality, until such time as the work requires repair—usually a short time—and the whole raised under one by-law. Similarly in the case of a small surplus, it might be retained by the municipality for repair, or paid over at once *pro rata* to the parties assessed. There is also a possible complication in regard to those who pay over their assessment, as provided by section 54, as they have no part in the payment of the debentures, but are entitled to a share of any surplus. The agreements with railway companies, provided for in section 85 are of such an onerous nature, that very few councils will care about entering into them, and legislation is urgently needed to compel their modification. In the meantime, the duty of the clerk is clear, as to having filed with him the consent of a majority of the owners, before the council acts in the matter. In conclusion, every step in connection with any work under this act should be taken carefully, and as though sure of an appeal or reference at any time. Note the date of filing on every document concerning each drain, and in a separate book, keep an account of each drain, the lands assessed therefor, yearly rate on each parcel, date of passing of by-law, date of issue of debentures, date of first levy, which will be found very useful in making out returns, and in preparing the yearly collector's roll.

Collector Johns, of Stratford, after serving the city for twenty-three years, has tendered his resignation to the council.

We have received a copy of the Voters' List, for the township Nepean, F. W. Harmer, clerk, which includes a summary showing the number of voters in each part of the various polling sub-divisions, and the number of persons qualified to serve as jurors in each. To use Mr. Harmer's own words, "this is unauthorized, but very useful." We noticed a somewhat similar statement in other lists at the end of each polling subdivision.

Macadam, the Scotch engineer who invented a favorite system of road-making, began his labors in 1818.

The New County Councils Act.

The Cardwell *Sentinel* referring to the new County Councils Act, states that in the judgement of a great many the tendency of the new system is to create a new class of professional politicians, a species much over-propagated and already far too numerous. The professional politician is "of all men most miserable," and equally contemptible. This Act will convert a large class of amateur politicians into a semi-professional class. The reeves and deputy-reeves of our municipality transact the affairs of their respective corporations economically and efficiently and as a recompense for their gratuitous services receive the calumny, abuse and vituperation caused by local jealousies and frustrated designs. Well might they exclaim with the orator of antiquity: "O tempora, O mores." "O the times, O the customs," were it not that by way of compensation they receive the support and renewed confidence of the better classes of the community and look forward to a session at the county council where, in addition to obtaining relief from the monotonous round of carping criticism, they expect to form pleasant and profitable acquaintances and associations and to accumulate an extensive knowledge of law, business and business principles from which the corporations which they represent receive a large and direct benefit.

Taxes on Improvements.

The town of Walkerville has an exemption by-law which worked so well for the stated term of years which it had been in existence that it has been re-enacted. The by-law, to encourage building, provides that houses worth not less than \$700, erected for the use of the owner, shall for the next six years be exempt from all taxation excepting school tax, and that on the assessed value of the land. This is an adaptation of the Henry George system for raising public revenues, though it is said that the originators of the scheme were not students of the works of that political economist. They took the common sense ground that a tax on improvements is a discouragement to promoting the erection of buildings or of making additions to those already in existence, and thereby a discouragement to the employment of labor. The practical men of Walkerville have managed to keep the taxes down to seven mills, whereas in the neighboring city of Windsor the rate is 24 mills.—London Advertiser.

The Alexandria Fire Brigade, will receive a course of instruction in fire fighting. The council having made arrangements with the fire department of Montreal, to send a competent instructor.

ENGINEERING DEPARTMENT.

A. W. CAMPBELL,
O.L.S., C.E., M.C.S., C.E.
EDITOR

Quebec Follows.

The Commissioner of Agriculture for Quebec, Hon. L. Beaubien, in a speech at Nicolet on October 4th announced that a branch of roadmaking had been established in connection with the Department of Agriculture. In reference to this he said: "An inspector has been appointed whose duty will be to visit different localities and give lectures on road management, to decide on roads to be made or alterations to be carried out, and to explain the mode of using the various machines, of which the Department has several, and will get more if more are required. There is a stonebreaker, a roller, and machines to shape the roadbed, making the ditches at the same time as the rounding of the bed. Each of these machines is entrusted to a foreman who is under the direction of the Department. The management furnishes the machines as well as the foreman, the municipalities or individuals having to supply the horses and the laborers that may be required. This plan has been decided upon during the last month or so. The municipalities that derive the benefit from it having only to make an application and, in their turn, they can take advantage of what we offer to them. Since we inaugurated the system of coming to the assistance of the municipalities, I am happy to say that more than one of them has hastened to buy one of the machines, whose excellent work they are in a position to prove. In Denmark farmers have to furnish broken stone along that part of the road they have to keep up. During the long winter months they break the stones, and, in the summer, the municipalities, after having rounded up the roads with the machines, lay the stone on them. In this province the municipalities, after having prepared the roadbed, have a right to demand from the taxpayers that a certain quantity of them be placed alongside the road in proper place then the steam crusher and roller which we possess will come and break the stones, the only thing remaining to be done to them being spreading on the roadbed.

The township of Southwold, Elgin County, has to pay into court the sum of \$700 damages, in consequence of an accident caused by a dangerously graded roadway.

The city of St. Thomas, will next year repave its leading business thoroughfare, Talbot street, on which cedar block is now used. In anticipation of this, the council is experimenting with vitrified brick, crossings of this material being laid. The brick is obtained from Ohio at a cost of \$14.10 per thousand.

Electric Light for Villages.

A country village with a population of only 600, and with no more than the usual number of factories, churches, stores etc., and which has an electric plant owned by the municipality, furnishing light for street lamps and for private residence, is rather notable, and may be an incentive to some municipalities in Ontario. This is the village of Johnson, located in Vermont and only about thirty miles South of the Canadian border. Within the village there has been for several years an abandoned mill-dam which at one time furnished power to a saw-mill, but with the exhaustion of the timber, the saw-mill was dismantled and the water-power from the small mountain stream left unused.

The residents of Johnson are with a few exceptions, people of very modest incomes, who live simply and plainly. Up to the time when the electric light plant we are about to describe was installed, coal oil was the only illuminant. Dark streets and dimly lighted houses, while water power ran to waste close by, was an anomaly which at last attracted the attention of some of the more enterprising citizens and after a careful consideration of ways and means, a village corporation was organized and the work of installing an electric light plant was begun. The abandoned mill-dam and mill site was purchased for a small sum; the dam was substantially rebuilt, and a small wooden building was erected for a power house.

The power house machinery and electric apparatus is very simple. An old turbine which had formerly run the saw-mill was purchased with the mill-site. The total cost of water power, mill site, water wheel, power house, dynamo, switch board, wiring, poles, converters, etc., all ready for operation was in round numbers \$5,600. Of this the cost of the dynamo was \$1,175; other electrical apparatus \$1,850; water power privilege, dam and turbine, \$1,150.

The lighting of the street is extremely satisfactory and is obtained by incandescent lamps. Popular ideas regarding the use of arc and incandescent lamps are often at variance, but single arc lamps at street intersections, with long spaces of total darkness between, do no give so useful a light as twice the number of incandescent lamps equally distributed. The dynamo is started in the afternoon as soon as lights may be needed for private residences, sometimes before sundown if the day is cloudy, and runs until eleven p. m.; also during the winter from five a. m. until daylight. The street circuit is not turned on until the lights are actually needed and on very bright moonlight nights it is not operated.

The annual cost of operation is very small. Insurance, oil, waste, lamps for street lighting amounting in all to about \$100 are the chief items of expense, with the exception of the salary of one engineer, \$425 per year. Interest charges are

\$244. Depreciation on \$4000 or that portion of the plant subject to wear at a rate which would replace it in twenty years, amounts to \$133, so that the entire annual cost is \$902.

The schedule rates for lighting private residences is per year:

First light in each living-room or hall	...\$3 00
Each extra light in each living room or hall	1 50
Each light in cellar	1 00
First light in each sleeping room, bath room and pantry extra	1 50
Each extra light in sleeping room, bath room, and pantry	1 00
Each light in barn or shed	1 00

Stores, public halls, hotels etc., are charged at slightly different rates but the receipts from private lighting during the last financial year was in round numbers \$1,000.

This is supplemented by a grant of \$200 from the township, on the basis that the street lights are as much of a benefit to those living outside the village, who use its streets when they drive to town, as to dwellers of the village. Also because residents of the townships outside the village may use the lights at a very slightly increased rate. The revenue amounts in all to about \$1,200 from which if we subtract the cost of operation there is a yearly balance in favor of the village of almost exactly \$300.

There are some lessons in the experience with this Johnson plant which numerous communities in Ontario might be able to profit by. There are very many country villages which if they have not unused water-power at their doors, could develop it within a distance not so great as to be prohibitory, and could thus have well lit streets and houses in place of the present darkness and coal oil lamps, and, as in the village of Johnson, at rates which read like a romance.

Narrower Carriageways.

The report of the city engineer of Toronto, recently issued, is a very complete and interesting volume. Among other matters dealt with, the question of narrower roadways is nicely stated. The report says: The narrower the carriageway the better opportunity there is for wide boulevards and handsome shade trees, which always improve the appearance of a thoroughfare when properly cared for. When a larger portion of a street than is necessary is taken up by the pavement, it entails a continuous expense to keep the surface in proper order, to sweep and water it. The first cost of such a pavement is also greater, and when it becomes necessary to relay or repave is a heavy burden on the taxpayers, whilst with a narrower carriageway, if it is subsequently found that the amount of travel or business upon the street has so increased as to warrant widening it, this can be easily accomplished by moving the curbs back and adding such additional width as may be considered necessary.

Highway Bridges and the Manufacturer.

The manufacturer's connection with a bridge begins with the consummation of a contract for its construction. This written document contains a more or less explicitly detailed plan of the intended structure, together with the usual phraseology supposed to legally bind one party to follow the aforesaid plans and the other party to pay a certain amount on completion of the work. Not infrequently the plans accompanying and forming part of the contract consist simply of a diagram or "skeleton," showing the form of truss, on which are marked the strains in the main members, and also the sizes of such pieces of iron as are to extend throughout the length of main members. Occasionally a show is made of specifying more in detail, but often this will be found to stop with the addition of sizes of pins and requirements with respect to number and batten plates and the lattice bars. Not all contracts for ordinary highway bridges are incomplete, but it is safe to say that by far the larger number stop short of specifying in detail all items referring to size of connecting plates, number of rivets, and many other things understood by engineers to be proper subjects of requirement, and hence proper subjects for specification. No working drawings, of the kind commonly understood by the term, accompany the majority of contracts for such bridges. It is to be kept in mind that we are dealing with ordinary iron highway bridges, those whose construction is primarily in the hands of the county councils, whose length of span seldom exceeds 200 feet, and of which there are very many erected in this country every year.

When a contract, such as has been described, of average completeness arrives at the office of the bridge company it is first referred to the engineering staff for checking. A careful examination of the plans is made to discover any possible error, the main purpose being probably to establish the value of the contract as a business venture. Any slight errors in the plans are noted for correction in the office; more important ones are referred to the agent, or whoever may be responsible for them. Properly checked, the contract passes to the business office, where it figures purely as a matter of bargain and sale. A number, however, is here given to the contract, and from this time the number is its main designation. All documents, orders, drawings and the shop lists connected with the bridge in progress of construction bear its number. So, also, does every finished member when it leaves the shop.

A want above mentioned is now supplied. The drafting room receives the plans, and from them prepares the working drawings, or a substitute for them, which, of course, must be complete in every detail. While it is not true, as some suppose, that highway bridges are cut off

by the yard, as it might be, from a continuous stock piece, neither is it to be supposed that any great elaboration of detail drawings is considered a necessary preliminary to the building of one. In trusses of moderate dimensions the general form of upper chord members, posts, eye-bars for diagonals and lower chords, etc., are made to conform closely to well-known standard shapes. Given an intelligent patternmaker and foreman of the shop, and these need not be drawn to scale. Written dimensions always outweigh scaled ones; indeed, working drawings should leave no dimensions to be scaled. It is, therefore, not surprising to find that the drafting-room is supplied with printed forms, which, by the simple addition of the proper dimensions, become substitutes for working drawings, fulfilling every purpose of the latter and effecting a considerable economy of time.

There is no more critical time for the bridge than during this period in the drafting-room. There is always danger of a conflict between ample full sized pieces on the one hand, and the manufacturer's idea of economy and profit on the other. Were all contracts made complete before signing and inspection of the finished structure provided, no such difficulty would arise.

In the case of contracts accompanied by fully detailed plans and specifications, the progress of construction beyond the drafting room is the same as for others, and the routine outlined below applies to all.

In passing, it may be remarked that the builder has a horror of plans emanating from the purely theoretical man. If the designs of one whose knowledge of constructive engineering has not been supplemented by a rather extensive acquaintance with the details of practice the builder looks for and usually finds few or many instances in which good theory appears poor practice. The simple detail evolved in years of practice, may not be well known to the designer. From his perfect theory he may work out a detail perfect in that it fulfils its function and is of necessary strength. But a substitution of the practical detail, might effect a lessening of cost at no sacrifice of strength. When connections and other details of any particular form multiplies, as is likely to be the case in the modern symmetrical structures, a cheapening of a one of them, by however small an amount, becomes in the aggregate of no slight significance, and calls for notice in the engineering economy of the structure.

When the working drawings for a bridge are completed, a bill of iron and steel needed for the structure is prepared. Some of this material may be kept in stock, but in general, the larger part must be ordered direct from the rolling mills. The progress of construction of the bridge must rest until the arrival of the iron. Here lies not infrequently the explanation of those delays,

vexations alike to manufacturer and buyer, which require an extension of the time limit specified in the contract, for the erection of the bridge.

The production of structural iron is a business entirely separate from the branches of engineering employing that iron in construction. The bridge builder has at hand for his work a limited number of shapes, supplied by the rolling mills, and showed in their hand books. A list including rectangular and circular sections, brams, channels and angles, embraces the materials to which he confines his selection, and it is indeed surprising how seldom he goes beyond these limits. Even within them there are laid certain restrictions. The hand-books of the iron companies set forth that a beam or angle of certain linear dimensions may be given a thickness of web or flange varying between stated maxima or minima. There being no statement to the contrary, the natural inference is that within these limits any size can be obtained with equal facility. But experience proves such a conclusion to be far from correct. Certain sizes have acquired a commercial importance much beyond other sizes in the scale of variability. Often no good reason for such preference can be found, but the fact remains. In obedience of the law of demand governing supply, the rolling mill will be prepared to furnish a quantity of eight-inch channels, twelve pounds per foot, with less uncertainty than of sixteen-pound channels having the same height; and so for other sizes and sections. The successful designer must be an encyclopedia of such and all other matters that can by any possibility affect the time necessary to complete the structure or the cost of it.

Upon the arrival at the factory of the iron ordered the shop work of construction is ready to begin. In the drafting-room have been prepared lists of pieces required, designated "rivet list," "hammer list," and "forge list," according to the character of the work necessary to fashion the parts. These lists are sent to the foremen of the several departments along with the material needed. For compression members, which are usually columns built of plates, angles and channels riveted together, patterns must be prepared. They are made of wood strips or frames, in which are bored holes at such distances apart as the drawings show for the rivets. The work is laid out by applying the pattern to the proper piece of iron and marking through the hole with a steel tool, the exact centre of each rivet hole to be made in the piece. The rivet holes are then punched out, and the parts of which the strut is to be built up are assembled and held in place by being temporarily bolted. One by one the bolts are removed, as their places are supplied by rivets pressed to place, while hot, by hydraulic or compressed air riveting machines. The ends of struts that are to abut directly against others are then

milled to true surfaces, and the pinholes are bored with exactness. The upper chord members, inclined end posts and vertical posts pass through all the processes of patternmaking, punching, riveting, milling and boring. Floor beams, if built up of plates and angles, require patterns, punching and riveting, as do overhead struts and portal braces. The same may be said of tension members when they are built in strut form for stiffness.

In general, however, members are of the simplest cross section with provision for end attachment in the shape of loops or circular openings. The most common form is perhaps the well-known eye-bar, which is used almost exclusively for lower chords and main diagonals.

The eyes of bars used in highway work are usually made by piling sufficient metal at the end of the bar, heating and then forcing the end into eye-shape in a die, under the action of a heavy steam hammer. The eyes are then bored truly to size of pins, and the bar is finished except for painting. Loop rods of iron or square iron for counters, or wind bracing find a place in the forge list. When made in two pieces, to admit of adjustment of length by means of a turn-buckle, the loop is first forged on each piece, then the other end of the bar is upset, and a thread is cut on the upset portion. The round portion of the loop is then bored for pin bearing. Most of the wind laterals are made in one piece, and provided for adjustment by a nut on the upset screw-thread end.

Yokes for supporting the floor beams require ending, upsetting and the cutting of threads on the upset ends. With the lathe work on pins, the list of shop operations is finished, but not all the smaller pieces forming part of the bridge have been mentioned.

When the time comes for the shipping to the site of the bridge, there must be included from the well stored stock room a number of extras, namely, sleeve nuts, shoe nuts, lateral bolts, wood screws, pipe for railing, pipe sockets and caps, bolts of several kinds, fillers, spikes and nails, and paint. The main members usually receive one coat of paint or oil before leaving the works, and another coat is given the finished structure after erection. All material is weighed before shipping, for comparison with the estimate made before building the bridge.

The only point worthy of notice in the erection of the bridge is, the ease with which a gang of common laborers, under the supervision of one man of some experience will put the parts together. A false work consisting of a few trestle bents resting on the bed of the stream, furnishes the base of operations. An improvised traveling crane is needed for high truss bridges. A few days' work suffices for the erection of a considerable span, complete with the joists and floor for travel.

Mention has been made in several places above, of the general incompleteness attending matters of detail, both

pointing to the necessity for greatest care, and considerable knowledge of bridge engineering on the part of the purchaser of a bridge. The necessary details often omitted in contracts, may amount to ten per cent. of the whole bridge weight, and represent a considerably greater part of the whole cost.

To insure satisfaction in details, complete working drawings should form part of every contract, which should conform to safe standards, and the finished bridge should always be subject to tests, with observations for deflection.

When business interests, and engineering interest, business interests are likely to come out ahead if there is no law to prevent. In the usual order of things, from the contract to the finished structure, the bridge manufacturer is a law unto himself, and the inference is plain. Under such circumstances, perhaps the best advice that can be given to the buyer, who is wholly ignorant of the laws of mechanics and strength of materials is, that he be sure to pay a high price for the bridge. In case of competition, let him take the highest bid. Not always does danger arise from an overpowering desire for profit. Carelessness or negligence may make improper arrangement of materials, which if properly disposed, would meet all the demands of strength and safety.

Railroad bridges are usually built under the supervision of more than ordinary engineering ability. Yet when, in 1890, the railroad commissioners of New York state, made a critical examination of the bridge structures existing on the railroad lines of that state, they found a surprising condition of affairs. The result of the inspection was the mandatory reinforcement of fully one-fourth the whole number of bridge structures, because of their failure to come up to proper standards. The belief is shared by many, that a similar examination of highway bridges would be not less fruitful, and might be as properly undertaken.

A Road Bulletin.

A new bulletin has just been issued by the Provincial Road Commissioner, in which is briefly discussed the statute labor system, as it is usually operated in townships; the practical side of road construction, surface draining, tile draining, forming the roadway, metalling, crowning, rolling, etc. Among other matters dealt with are construction of culverts, bridges, snow fences and improvements on town streets. The bulletin is illustrated with several photo-engravings of streets and roads. Any person desiring a copy of this pamphlet, should send his name and address on a post card, to A. W. Campbell, C. E., Provincial Road Commissioner, Parliament Buildings, Toronto.

Traces of a road on each side of the Nile for 1,200 miles north and south have been discovered by explorers.

Street and Road Paving in Germany.

In Germany and France far more attention is paid to both the roadbed and to the road covering than with us. This is partly an inheritance from the Romans, whose roads, built two thousand years ago, are still good and usually better than our best of the present century; partly by reason of the greater cost of horseflesh, hence the necessity of using single teams where we would use double, and lastly, but not least, for military reasons. No one knows to-day what country road may have to bear the weight of artillery, nor what influence the passable or impassable condition of highway or byway may have upon the political geography of a continent. The sunken road at Waterloo, what hopes it dashed, what plans it changed!

I will, in this article, indicate in a general way, what methods are adopted for covering the roads once the profiles are established and the cuts and fills made. Where I say "roads" I mean "streets" and visa versa; for in Germany not only is the word "strasse" almost always usable for both, but the roads are practically the same as the streets.

Roads here are classified into

- (1) Gravel and clay.
- (2) Broken stone.
- (3) Sand and gravel.
- (4) Stone paved.
- (5) Brick paved.

And I shall take these up in the order named.

(1) GRAVEL AND CLAY ROADS.

Country roads and cross-roads are covered at low cost with a layer of clay from two or three inches thick, for sandy districts, or of gravel or coarse sand where the foundation is clay. Slag and stone spalls are also used. As clay is easily cut up in bad weather, when the road width is sufficient for two or more tracks, only half is covered with this facing.

(2) BROKEN STONE ROADS.

These are usually covered with one layer of coarse stone, and one or two layers of medium and small stone, or only with one or more layers of stone spalls. In either case there is first prepared a layer of earth as wide as the covered strip is to be, or will be after rolling. For very heavily travelled roads the stone covering is made thicker in the centre than at the sides; in this case the earth layer is not proportionately thick in the centre.

Formerly, before putting on the stone covering, the road was bordered with stones eight to ten inches long and wide and six to eight inches high, to prevent spreading of the surface material, but as the advantage gained by this does not seem to balance the extra cost, this method has been largely abandoned.

Of course due regard is paid, in selecting the proper thickness of the stone covering, to the nature not only of the traffic, but of the underlying material.

For streets the thickness of the stone

covering (after rolling) is eight to ten inches where there is no first layer of coarse stone, and, say, eight and a half to nine and a half inches where there is such under layer.

The under layer (Packlage) for streets, consists of pyramidal stones, from three and a half to 6 and a half inches, laid with bases down, close together, and well pressed in.

On this under layer comes either stones or the stone spalls, with a thickness of from three and a half to four and three-quarter inches, where there is but one layer above the under one, and four and three-quarters to six and one half inches where there are two layers. The spalls are for strong sharp stone not over one and three-quarters to one and five-eighth inches in diameter; for weaker material not over one and five-eighths to two inches.

The underlayers are rolled with light rollers, the upper layer with heavy; each layer, of course, separately. For good stone-paved highways the rollers are loaded with water or otherwise, and weigh, unloaded, five to six net tons; loaded, eight to ten tons. The rolling is done first along the edges of the road, clear to the border stones, if there are any, and at each passage comes nearer to the centre by the entire width of the rollers.

In dry weather the resistance offered to rolling by the friction of the stones upon each other, is lessened by sprinkling, care being taken not to soften the material so much as to alter the profile.

In order to prevent the passage of surface water through the roadface, which would thus damage the roadbed and alter the road profile, each layer is filled, as laid, with a water-tight bridging material. Up to certain limits the fine chips of the broken stone will serve this purpose. When they are not sufficient, resort is preferably had to iron sandstone and coarse sand. The binding material is applied after repeated rolling of the layers has brought them to a firm condition. The best practice in England and France, however, condemns the use of a "binder."

A well-rolled stone covering reduces one-fourth to one-sixth its volume of broken stone. As 0.8 cubic yard of quarry stone yields on an average 1 cubic yard of broken stone there is needed of quarry stone 1.1 to 1.3 times the required volume of road covering.

When stone is very dear the cost is kept down by the use of very coarse gravel, instead of the middle and upper stone layers. In this case the gravel layer should be 0.4 to 0.6, the thickness of the entire road covering.

(3) SAND AND GRAVEL ROADS.

In districts where stone is scarce and dear, and gravel is found in plenty, these are used alone with great success for high roads. The same general principles are applied as in the use of stone as a road-covering, but each layer is from one-

fourth to one-third thicker than for stone.

Where the gravel is not sharp, but round, a firm covering can be made only by the use of a binding material, owing to the extremely hard quality of the gravel. When there is no such material found with the gravel clay is resorted to. After the gravel and clay have been well mixed by rakes and harrows the road is rolled.

(4) STONE-PAVED ROADS.

Such roads consist of the bed proper and paving. For the latter there is usually chosen the material which by its hardness and durability and capability of being broken or cut into regular blocks, and this is granite stones, as basalt, which soon wear slippery, especially where the traffic is great.

According to the shape of the paving-stones such roads are divided into:

(a) Rubble or common stones as found, without any preparation.—This paving is only used in village streets, and the like. The stones are sorted, according to size, and laid in strips, all of a size together, and as closely as possible. Preferably all the large stones are placed in the centre of the street and the small ones on the sides. In any case, stones of a size are put together, so that there is not produced that effect, so common in America, of unevenness caused by the small stones sinking in farther than the large ones, and thus making the street look like a relief map of the Himalaya region.

(b) Ordinary quarry stone, or stones of which at least one side, the upper face, is hewn.—Here also the stones are sorted according to size, and laid as closely as possible in parallel strips (in which all stones are of a size), crosswise the street, care being taken to break joint in the direction of the street's length. The interstices are filled with gravel or sand.

(c) Hewn stone.—The value and cost of this pavement are in proportion to the number of faces that are hewed, and to the care in their working.

The bed for all paved stone roads is gravel or sand, sharp and free from clay, marl and vegetable material. The thickness of the bed depends upon the amount and character of traffic, and on the excellence of the facing. The most usual thickness is six inches. According to the impenetrability and thickness of the bed paving is laid from $1\frac{5}{8}$ to $1\frac{7}{8}$ inches higher than called for by the surveyor's plans, and then, after due sprinklings and rammings, brought to the required level. The paving is then strewn from one-half to one-fourth of an inch thick with gravel, and this is well swept and washed deep into the interstices.

(5) BRICK.

In such districts as East Friesland and Oldenburg, where stone is very dear, the roads are paved with extra hard burned bricks (called klinkers) which are smaller than those used for building.

The klinkers are set on edge, on a sand

bed 12 to 16 inches thick, in parallel rows running crosswise of the street, as closely as possible, then rolled or rammed, and the joints well filled with sand by sweeping and washing. Special care is taken with the bed, in order that the street, when finished, shall present an even profile and surface, and be in accordance with the surveyor's plans. Glazed, bent, twisted or blistered klinkers are not employed.

A study of the methods adopted in the various countries, especially those of the Old World, is interesting and instructive. It is strange, however, to find that even in a country like Germany the practice of using clay and sand in their gravel and broken stone roads is so tenaciously adhered to, in spite of the fact that experience in England and France, and on this continent, has shown the use of these to be highly injurious.

Rolling.

Rolling a road is especially beneficial in three ways: (1) By affording better surface drainage. (2) By making a more durable road. (3) By making the road at once fit for travel.

A road should be so smooth and compact on the surface as to shed the water readily to the side gutters. If the gravel or other road metal is dropped from the wagon loosely on a soft earth foundation, water is at once absorbed. Wheels passing over the road when in such a condition at once sink into and rut not only the gravel, but the earth beneath. Water is held in the ruts and each succeeding vehicle renders their condition worse.

The road is less durable, since the gravel, being mixed with the earth beneath, obtains when finally consolidated, a dusty, easily worn surface, rough in dry weather and muddy in wet, and its life is very much shortened.

The loose material placed on the road at midsummer is avoided by vehicles until forced by the autumn rains to leave the dirt side road.

Not only is such a driveway useless for supporting heavy loads, but, it is needless to say, is very disagreeable for light travel. For a portion of the year, in fall and spring, the farming community of the province is practically cut off from the markets, from business and social life; needlessly so, for the roads are during this period destroyed to such an extent as to render their more careful construction a most profitable investment. Badly built roads are always expensive to maintain. Two years' statute labor and road expenditure are laid out, when with proper tools for doing the work one should suffice.

Road rollers are not for city streets only. Wherever roads are made rollers should be used. Dirt, gravel and macadam roads are all benefited by rolling.

When the best material is used there is more need, of course, that every precaution should be taken for its preservation.

The weight of roller used must depend

upon various circumstances—the amount of work it will be required to do, the quantity of road metal used, the strength of the bridges and culverts over which it must pass.

A steam roller costs much more than a horse roller, but when it can be kept constantly employed does so much better and faster work that it is the more economical. For this reason when several municipalities can join together in the purchase of a steam roller it should be had. A weight of ten tons does satisfactory work, and is not too heavy for the majority of bridges.

Gravel and limestone bind more easily than the better varieties of granite and trap, and a lighter roller may be used with good effect.

If the bridges are old-time wooden structures, if the road mileage on which work is to be done is not very great, if the material used is not trap or similarly hard metal, a horse roller of from five to eight tons may be used.

The work of a horse roller, however, is not so perfect as that of a steam roller. The feet of the horses disturb the metal, and the lesser weight requires that the rolling shall be continued very much longer.

Rolling should commence at the side of the road, approaching the centre gradually. If the roller is first passed over the centre, the loose metal is crowded out and the shape of the crown destroyed. It is best to roll the earth foundation in dry weather, and each succeeding layer up to the top dressing. When the latter is put on, the rolling should be continued in wet weather, or the metal thoroughly soaked with an ordinary watering cart. When finished the road should be thoroughly compact and solid, able to resist without displacement the heaviest load passing over it. Extra labor and expense in the first construction of gravel or macadam roads is more than made up by the decreased cost of maintenance. Bad roads are expensive.

The paving of city streets was referred to in a paper on "Highway Legislation," by Prof. Francis Wayland, of Yale. For cities he advocated compelling the street car corporations to pay for keeping a certain space on each side of, as well as between the tracks, in good order. This is only equitable, because by diminishing the amount of room which can be used by vehicles they add greatly to the wear and tear of the remainder. It was, moreover, suggested that a tax should be levied on vehicles in proportion to the amount of injury which they were capable of doing in their daily use. There seemed to be an injustice in calling on abutters to pay a considerable part of the expense of repairing a street which would have needed almost no repair but for the damage caused by heavy carts. If the amount of this wagon tax were used exclusively for street repairs it would go far toward a reasonable solution of the problem.

Warming of Public Buildings.

BY B. SCHREINER.

In planning heating systems for public buildings (or private buildings for that matter) we find that each case presents its own peculiarities and requires to be studied separately. In general, however, the scope available for the designing of an efficient service for warming a building depends on whether in making the plans for the building, proper care has been taken to secure ventilation and the best warming device, or whether the building has been planned regardless of warming and ventilation. But as the results desired are the same in either case, and only the ways and means to be applied to secure those results differ, I will view this question of warming public buildings, first as, to the result desired, and second, as to the means to apply to secure those results.

1. The object of warming any building is to protect its occupants, not only against the inclemency of atmospheric disturbances and rigid temperatures, but to insure and maintain such temperatures in any part of the building, as will be required for the well being of the same.

As pure air in passing through the lungs becomes charged with carbonic acid, becomes unsuitable for breathing, it is essential that the vitiated air be quickly removed, and pure air be continually supplied. As the occupation of the people inhabiting those buildings may vary, requiring air of a different degree of temperature, and as some of the rooms are usually more exposed to the outside atmospheric changes than others, means must be provided to maintain at all times such temperature in each room as is conducive to the well being of the occupants.

Warming a building, expressed in other words is, to supply the occupants of a building with pure air, delivered in sufficient quantity, and at such temperature as will create the feeling of comfort and well being.

2. To obtain the best results for the warming of a building is to provide for the same when the plan for such building is under way. The selection of a particular system of heating, whether steam heating direct or indirect; or if hot water plant; or if hot air arrangement is to be selected, may often depend upon the money available, or other local conditions. But whatever system is selected, never forget that a thorough ventilation is an important part of the heating plant.

As I am speaking more particularly of warming public buildings—of building larger size—and when sufficient funds for the installation of the best are available, I would say that experience surely directs to the adoption of the indirect steam heating system as the most serviceable device. In basements sufficient room can always be secured for the placing of the required heating surface, for boilers and diverse necessary heating machinery, for the placing of the required devices for purifying the air supply and exhaust machinery.

The heating surface should be calculated amply to supply any quantity of warmed pure air with low boiler pressure. The cross-section of the hot ducts and exhaust channels, should be calculated large to insure a complete change of air in any room, in the shortest required time, without causing draft or violent moving of the air in the rooms.

The time required for a complete renewal of air must be ascertained from the size of the rooms, and the largest number of people who occupy the room. The volume of pure air, required by a pair of full grown lungs, the required humidity of the air, the proper temperature of air reaching the lungs, etc., is now taught in every common school.

To secure efficient exhaust of foul air, we can use exhaust fans, heated air shafts, or both; or we may elect to force the warmed pure air into the rooms, and thereby force out the vitiated air. Whether to apply the exhaust system or the pressure plan, or both combined, will often depend on local conditions; i. e., on the arrangement of the rooms in the building.

To secure a slow, uniform movement of the air, and a uniform temperature throughout the room, place the warm air inlet near the ceiling, and the exhaust (foul air) opening in the floor near the coolest side of the room. A slow (nearly imperceptible) downward movement to exhaust channels is sufficient.

To secure the health of the occupants of a building, it will always be necessary to provide ample appliances for the purification of the air supply, and for the mixture of the proper degree of humidity. Such appliances should work automatically.

As already stated, it is not so very difficult to design an efficient device for warming (and ventilation) of a building, when done in connection with the designing of the plans for the building. But the construction of a well working heating plant, for building already constructed, without any attention to heating and ventilating, is always extremely difficult, and often impossible without involving extra heavy expenses.

The designing of a satisfactory heating plant requires considerable thought, calculations, and a thoroughly practical knowledge of the subject and its details; and I would advise designers of public buildings, if not themselves fully competent, to employ the services of one who knows, and that even architects and Engineers who are pretty well versed in such work, will do well to consult some engineer, known as a specialist in the line of heating large buildings.

Since the visit of the Provincial Road Commissioner to Galt, in September, that town has purchased a rock-crusher and is advertising for tenders on a steam road-roller.

LEGAL DEPARTMENT.

JAMES MORRISON GLENN, LL. B.,
Of Osgoode Hall, Barrister-at-Law,
EDITOR.

Snow and Ice on Streets.

Stewart vs. Woodstock & Huron Plank and Gravel Road Co. was an action brought in 1858 by the lessee of a toll-gate against the Woodstock & Huron Plank and Gravel Road Co., to recover damages for neglect of duty on the part of the company in allowing the road near the gate to be encumbered and blocked up with snow so that it became impassable, and the plaintiff thereby lost the profits from the tolls for two months. The Court of Queen's Bench held that he could not recover. Robinson, C. J., who delivered the judgment of the court, said: "Letting snow lie on a macadamized road does not, in our opinion, come under the notion of suffering the road to go out of repair." If it was intended by the court to lay down the doctrine that the existence of snow or ice upon a highway in such quantities or condition as to render it dangerous to travellers does not constitute want of repair, it has not been followed in subsequent cases. But when the language used by the learned judge is considered in connection with the facts of the case and the nature of the action, we do not think it is an authority that municipalities cannot render themselves liable for allowing highways to remain unsafe for public travel by reason of an accumulation of snow or ice. In Caswell vs. St. Marys, etc., Road Co., a similar case, the defendants were held liable. The law is laid down thus:

"If snow collects at a spot, and by the thawing and freezing the travel upon it becomes specially dangerous, and if this special difficulty can be conveniently corrected by removing the snow or ice, or by other reasonable means, there must be the duty on the person or body on whom the care of reparation rests to make such place fit and safe for travel. * * * It must be a question of fact altogether for the jury to say whether the place alleged to have been out of order was dangerous, and if so, from what cause? and if from natural cause or process whether the persons liable to repair the road could reasonably and conveniently, as regarded expenditure and labor, have made it safe for use. If the obstruction or danger could properly and reasonably have been removed, then the persons on whom the burden lay to keep the road in order should be held to the fulfilment of their duty to make it safe and useful for the public at whatever season of the year or from whatever cause the impediment or difficulty may have happened."

Again, in Ringland vs. Toronto, Gwynne, J., says:

"It is obvious that what is 'repair' and 'want of repair' must depend on various considerations—the nature of the ob-

struction causing the alleged disrepairs, whether it be caused by the elements or by the wrongful act of some individual, the season of the year, the severity and inclemency of the weather at the time, if it be severe and inclement for the season. And with reference to these and such like surrounding circumstances the question must be, whether or not the road or sidewalk was in reasonable repair for the use to which it applied. The question must be one having relation to what is reasonable, having regard to the surrounding circumstances.

In a recent case, Dreman vs. Kingston, the evidence was that snow had accumulated on a certain street crossing in the city of Kingston, partly from being shoveled there from the sidewalks and partly from the action of passing sleighs, so that there was a descent of some inches from the crossing to the sidewalk, and the plaintiff slipped on this descent and was injured. The case was tried before Meredith, C. J., and a jury, and the jury found that the defendants had been negligent and gave the plaintiff \$1,500. On appeal the Common Pleas Divisional Court affirmed the verdict, and on an appeal to the Court of Appeal, the judges, being equally divided, the appeal was dismissed. The chief justice distinguished the case of Derochie vs. Cornwall from this case upon the ground that the sidewalk there, from bad construction or age, had sunk down so as to allow water to accumulate, and in consequence ice formed and caused the accident. Upon reference to the judgment of the Supreme Court, we do not find that the decision of that court is put upon the ground of improper construction alone. Taschereau, J., cites Caswell vs. St. Marys Road Co., with approval. It is a statutory duty cast upon municipalities to keep the highways reasonably safe for public travel, and we cannot see how it can make any difference whether a highway is dangerous by reason of some structural defect, the accumulation of ice, the formation of a hole or gutter, or an obstruction, which renders it unsafe for public travel. In an English case, McGriffin vs. Palmer's Shipbuilding, etc., Co., says: "The case has been put of a way perfectly well constructed, but upon which on a frosty morning water falls, so that it gets into a dangerous state. I cannot help thinking that that would be a defect in the condition of the way, because the way is the thing which the people walk upon, and the thing itself is altered." That a municipality may be liable for any injury caused by the accumulation of ice or snow appears to have been recognized by the Legislature in the Act of 1894 (section 13, chapter 50), which reduces their liability by declaring them liable only for gross negligence for accidents arising from persons falling owing to snow or ice upon the sidewalks. The Act of 1894 gave further protection to municipalities by providing that no action should be brought to enforce a

claim for damages under subsection 1 of section 531, Consolidated Municipal Act, 1892, unless notice in writing of the accident and the cause thereof has been served upon or mailed through the post office to the head of the corporation or to the clerk of the municipality within thirty days after the happening of the accident. By section 20, chapter 51, 1896, the notice must be given in cities, towns or villages within 7 days, and the judge has now no discretion. Under the Act of 1894 the trial judge might allow the trial to proceed if there was reasonable excuse for the want of the notice and the defendants were not prejudiced by its not having been given. It was held in Dreman vs. Kingston that a street crossing in the line of and joining parts of a sidewalk was not a sidewalk within the meaning of the amendment of 1894, so that it was not necessary in that case to consider the meaning of "gross negligence" in reference to the conduct of the corporation or its officers. We are not to be understood by anything which we have stated that the mere accumulation of ice or snow on a highway, rendering it dangerous, is sufficient to make the corporation liable. Where the accumulation of ice or snow takes place without any fault of the corporation or its officers, it is necessary to prove negligence on the part of the corporation in not repairing the highway, as Patterson, J. A., puts it in Lucas vs. Moore: "The corporation is liable not merely because the road is impassable or dangerous, for that state of things may exist without blame to the corporation, but because there has been neglect of the duty to keep the road in such a state of repair as is reasonably safe and sufficient for the ordinary travel of the locality."

A Township Clerk's Vote.

ARMSTRONG VS. PEARSON.

Stratford Herald.

An interesting case was tried before Robertson, J., at Perth Assizes, in Stratford, a few days ago. Mr. Osler, plaintiff's solicitor, in opening the case, stated that at the last municipal election the plaintiff, Armstrong, was a candidate for reeve of the township, and was defeated by about 100 majority. The defendant, John Pearson, was clerk of the township, and at the last election spoke and worked against Armstrong. Perhaps it was on this account that Armstrong was defeated. As township clerk, Mr. Pearson was returning officer, and the law says he has no right to vote, excepting in the case of a tie, and the law also provides that when a man wilfully contravenes the act the aggrieved person may sue for a penalty of \$400 imposed for such offences. He must do such act wilfully to be responsible, and he expected to be able to show that the defendant did wilfully vote. Mr. Osler then asked for the facilitation of business that the defence admit that the defendant was

township clerk, that there was a contest for deputy-reeve, that the plaintiff was a duly qualified candidate, that he was not elected, that he was duly nominated, that the poll was opened, that there are no wards in the township, that the defendant acted as deputy-returning officer at poll No. 1, that he initialled a ballot and voted himself. Everything was conceded up to the point of the defendant having voted, at which point Mr. Nesbitt, for the defendant, objected and asked proof.

Proceeding further, Mr. Nesbitt admitted that the plaintiff was defeated at the election by 104.

The poll-book for division No. 1 was then produced and Pascal Pigeon was called to prove the book. He was present at the last election in No. 1 division and saw Mr. Pearson there acting as deputy-returning officer. Witness voted at this division, defendant giving him the ballot. Witness saw defendant take a ballot himself. Witness was fixing the fire at the time, and Mr. Pearson asked him to keep an eye on the table while he voted. Defendant then initialled the ballot paper, retired to the place provided for the purpose, came out again and deposited the ballot in the box. He remarked at the time that he might better vote then than afterwards when he might be busier. Witness said he saw Mr. Pearson write in the poll-book, and identified the name of Mr. Pearson ticked off as having voted. Proceeding, witness said the plaintiff and defendant had not been on good terms for a number of years, and that they usually made an exhibition of their ill-will toward each other on nomination day. Witness had heard Mr. Pearson say Mr. Armstrong was an enemy to the township, and call Armstrong a liar more than once at nomination meetings. Mr. Pearson had also said that Mr. Armstrong was a stumbling-block to the progress of the township in the matter of drainage, etc. Mr. Pearson had been township clerk as long as witness could remember. Besides being township clerk, Mr. Pearson was post-master at Sebringville, the owner of a sawmill there, and was a conveyancer.

To Mr. Nesbitt Mr. Pigeon said that, as in other townships, people were divided in their opinions as to the merits of the candidates. The feeling between Mr. Armstrong and Mr. Pearson was one of politics—municipal and otherwise. Mr. Pearson was a highly respected man. Witness was quite sure Mr. Pearson had voted. Everything was done openly and above board. A vote was taken on the same day for the erection of a house of refuge. This was not the vote to which he referred, however. Witness saw Mr. Pearson vote on the poor house also. Witness did not think Mr. Pearson would do anything dishonest. Mr. Brickman was present in the polling booth at the same time, as was Mr. McCaffrey. These people would probably see what he had described.

The plaintiff himself, Robert Armstrong, was called, and swore that he had been elected councillor in 1883 and 1884, and that in 1894 and 1895 he was deputy-reeve. He was a candidate at the last election, and was defeated by 104 votes. He said that at every nomination he ever attended the defendant, although chairman, interrupted him. At the late nomination Mr. Pearson denounced him as a stumbling-block and a bull-dozer. Witness had objected to defendant getting paid for the drawing of four by-laws in connection with the Corcoran drain, contending that one would have answered the purpose, and this was the bone of contention between him and Mr. Pearson. Witness told Mr. Nesbitt that he had no personal spite against Mr. Pearson. Mr. Armstrong also said it was not because he was hard up that he had brought the action, and that there was no personal feeling on his part against Mr. Pearson.

This concluded the examination of witnesses, and Mr. Nesbitt proceeded to argue with his lordship the legal phases of the case. He quoted section 157, subsection 3, in support of contention that Mr. Pearson had a right to vote as deputy-returning officer, the clause cited being calculated only to prohibit a clerk from voting. As clerk he would have a right to vote only in case of a tie, but as deputy-returning officer he had a perfect right to vote. Mr. Nesbitt next contended that there was no evidence to show that the alleged wrongful act was wilfully done.

His lordship interrupted to say it was useless to discuss this phase of the case. Mr. Pearson was no ignoramus.

Mr. Nesbitt quoted voluminously to show that the wrongful act must be perverse and malicious. It had been shown that Mr. Pearson voted openly, assuming that he had a right to vote. Another point raised by Mr. Nesbitt was that the plaintiff, Mr. Armstrong, was not a person aggrieved, and the statutes provided that only a person aggrieved was entitled to claim the penalty imposed for wrongful voting. On these grounds, Mr. Nesbitt held that there was no reason why a defence should be put in. The plaintiff had made out no case.

Mr. Osler, in reply, quoted sections to support a contention that the act as committed by the defendant was wilful. The learned Queen's counsel also argued to show that Mr. Pearson had no right as returning officer to vote. In this case Mr. Osler denied that the defendant had a right to act as deputy-returning officer, because by the statute he was returning officer. He could not be both chief and deputy. Section 108 was quoted to show that the clerk shall be returning officer at the nomination meeting. The action of the defendant at the nomination meeting in opposing the plaintiff threw a flood of light on the subsequent action in the polling booth. Section 157 gives the returning officer the casting vote. But sub-sec-

tion 3 shows who have the right to vote. There was clearly, therefore, no vote in this defendant, and he should have known it. On the point as to whether the plaintiff was one aggrieved Mr. Osler argued that Mr. Armstrong was a candidate, that the defendant spoke against him and the vote was cast against him. The plaintiff was therefore an aggrieved person. Mr. Osler also quoted a section to show that a defeated candidate was a person aggrieved. Mr. Osler concluded there was nothing for the jury to decide, and again submitted to his lordship that the case should be taken from the jury.

Mr. Nesbitt pressed for a jury trial, and said his lordship would be called upon to say whether the plaintiff was aggrieved, and whether the defendant had a right to vote. The jury would be left to decide whether the act was malicious and perverse.

Mr. Osler contended this latter was a question of law, and his lordship assumed the same view and discharged the jury.

Mr. Nesbitt afterwards argued in rebuttal that Mr. Pearson was not returning officer by virtue of his position as clerk, as argued by Mr. Osler, but that he was appointed deputy-returning officer by by-law of the council. The section quoted by Mr. Osler did not apply where there were polling subdivisions. Among other things, Mr. Nesbitt argued on the point that the plaintiff was an aggrieved person, that it was not to be assumed by the plaintiff that defendant had voted against him. The plaintiff could have put the defendant in the box and made him tell for whom he voted. He had not done so. Aside from this, Mr. Nesbitt held the plaintiff had suffered no more legal grievance than any other ratepayer. Then there was no evidence that the ballot was marked.

His lordship interposed that on the evidence he would have to assume that the defendant had voted.

"Yes; but for whom?" asked Mr. Nesbitt. "He may have voted only for councillors," added the learned lawyer.

Mr. Osler closed the argument by stating that the appointment of a clerk as deputy-returning officer by by-law did not remove his disability to vote imposed by the statute.

In the course of his argument, Mr. Osler, acting for Mr. Armstrong, offered to withdraw the action provided the defence would pay the costs.

His lordship reserved judgment.

The common measure of road distance in France is the kilometer, or 1,000 meters, a little over three-quarters of a mile.

The first regular road in the northern half of Scotland—that is the portion north of the Firth of Forth—was in 1745.

The word "mile" comes from the Latin "mille" a thousand. A thousand paces of a marching soldier made a Roman mile.

QUESTION DRAWER.

Subscribers are entitled to answers to all questions submitted, if they pertain to Municipal matters. It is particularly requested that all facts and circumstances of each case submitted for an opinion should be stated as clearly and explicitly as possible. Unless this request is complied with it is impossible to give adequate advice.

Questions to insure insertion in the following issue of paper should be received at office of publication on or before the 20th of the month.

Communications requiring immediate attention will be answered free by post, on receipt of a stamped addressed envelope. All questions answered will be published.

Statute Labor—How Determined.

296.—W. W. D.—I find on looking over our statute labor lists, that quite a number have not performed their work. Am told that it is because they expect by computing for it they will be the gainers, for example.

One lot is valued at \$300, given 2 days.			
Another " " 500, " 3 "			
" " 575, " 4 "			
" " 700, " 5 "			
" " 875, " 6 "			
	\$2,950	20	

\$2,950 valuation gives thirteen days, subdivided as above, twenty days. Please state which is correct?

As the number of acres in each lot is not stated, we cannot give definite answer.

The statute labor entered on collector's roll, should be calculated according to sub section 2 of section 100, Consolidated Assessment Act. The number of days is to be determined by section 93, if no by-law has been passed, fixing other ratio of service.

Arrears must be Properly Returned—Lien Note—Second Seizure for Taxes.

297.—CLERK.—1. Can arrears of taxes, from roll of 1895, be carried on to roll of 1896 without authorization of county treasurer?

2. Is it imperative for arrears of taxes to be returned to county in April or may they be returned at a later date?

3. Can a municipal council accept a lien note on cattle or other stock, when, for instance, the seizure for arrears of taxes has been made, and there is no one to buy the same?

4. Would the acceptance of a lien note by the council, if illegal, prevent a second seizure if necessary to obtain the taxes?

Quote authorities on above.

1. No.

2. Yes. See section 145, Consolidated Assessment Act, and section 2, "The Debentures Act" chapter 1, the Revised Statutes Ontario, 1887.

3. No, we cannot find any authority for the acceptance of lien notes for taxes.

4. The rule is, that a second seizure cannot be made, except under special circumstances. The mistake in this case, would not constitute such special circumstances.

Remuneration of Councillors in Towns.

298.—JUSTICE.—Have councils of towns in Ontario power to vote themselves, as well as the mayor, a salary and mileage, either or both?

The council of a town, may determine the remuneration to be paid to the head of the council, but there is no authority

for voting any remuneration to a member of the council as such. See section 232, Consolidated Municipal Act, 1892.

Reeve - Commissioner - Disqualified - Successor.

299.—E. G.—1. A Reeve is commissioned by council to let job for building bridge and to sell a pine tree standing on roadside. Reeve gave highest bid and secured the tree for himself. Would that disqualify him?

2. Two reeves are nominated, the one elected is qualified; should the other one take his seat or should there be another election?

3. If a reeve receives pay for doing business or work for the township, other than for attending council meetings, does it mean a contract, and would he be disqualified?

1. If the reeve had any authority at all from the council, it was not to buy but to sell the tree, and therefore, what he did, does not constitute a contract with the council, so that there was no disqualification. See sections 77 and 431, Consolidated Municipal Act, 1892. See also sub-section 6, of section 550, which authorizes the council to pass by-laws for selling timber, trees, etc.

2. If the candidate who is disqualified disclaims, pursuant to section 203, Consolidated Municipal Act, the other candidate therefore becomes entitled to the seat, or the judge may, under section 198, declare the other elected, or may order a new election.

3. Yes, unless it is some business for doing, which there is express authority to remunerate him, and such contract would disqualify him. Attending council meetings is not the only business which may be legally paid for. A member may be paid for acting as an overseer. See sub-section 2, section 479, of Consolidated Municipal Act, 1892.

Crossing over Road Ditch, Who Liable for?

300.—R. P. H.—When it is necessary for a pathmaster to open a ditch on the side of the road in front of the roadway leading into the owner's or tenant's premises, is the owner or tenant obliged to make his own bridge over the ditch, or is it the duty of the council to make the bridge?

The owner or tenant must provide his own crossing, or do without one.

Assessment Government Land and Occupant—Residence Qualification County Councillor.

301.—L. S. B.—1. Is Government land liable to be assessed when it is cultivated by any person?

2. Is said person liable for the taxes of Government land, when he is assessed for it and cultivates the same?

3. A owns property in a township and cultivates it where he re-ides through the day; his family lives in a city, where he sleeps and gets his meals. Can he qualify for a county councillor in the district his property is in, under the County Councils Act of 1896?

1. No, see sub-sections 1 and 2, of section 7, Consolidated Assessment Act, 1892.

2. Yes, under sub-section 2, of section 7, a person occupying such land, otherwise than in an official capacity, is liable to assessment, though the property is not liable.

3. Yes, if he resides within two miles of the municipality in which the property,

on which he proposes to qualify is situated. See section 73, Consolidated Municipal Act.

Reeve or County Councillor or Both—Election School Trustees.

302.—M. E.—1. (a) Can a person be a candidate for reeve or municipal councillor and also for member of the county council? (b) and if elected can he act in both capacities?

2. Can an election for school trustees be legally held at the same time and manner as an election for municipal councillors, no notice to do so having been received by the clerk to do so this year? The election last year was same as for municipal councillors.

1. (a) Yes. (b) No.

2. No, unless notice previously given, as provided by section 58, Public Schools Act, 1896.

Committees Should Report—Minutes Should be Confirmed.

303.—COUNCILLOR.—Our council set apart a sum to be expended on our streets this year. The street committee claim they have the right to expend that amount just where they think it is most necessary, without consulting with the rest of the council at all.

1. Should they not make a report and submit it to the council for them to act on it or not as they see fit?

2. There was a motion passed at the council meeting before last. At the next regular meeting, when the minutes were read, some of the council wished to adopt the minutes with the exception of the motion in question. The motion in question was worded right and passed by the full board. There was no question of any error, only this motion which they wished to strike out before adopting the minutes. Must not the minutes of any meeting be adopted as they occurred and are so recorded by the clerk?

3. Would it not be the right way to adopt the minutes, and then move to rescind any part of them that were not satisfactory?

1. Yes.

2 and 3. If the minutes are correct, nothing further is required. If there is any error in them, this ought to be corrected, and confirmed as the correct minutes of the proceedings of that meeting.

Bicycle By-Law.

304.—M. T.—Various village municipal councils have enacted by-laws inflicting a penalty on persons riding bicycles on the sidewalks. I cannot find a statute authorizing such a by-law in any municipality with a population under 100,000 or more. See Municipal Amendment Act, 1895, section 24.

The Consolidated Municipal Act of 1892, section 489, authorizes "the council of every township, city, town or incorporated village to pass by laws regulating public morals, etc. By what authority do county councils enact similar by-laws, and can such county council by-law be successfully enforced?"

I admit that riding on bicycles on the sidewalks of a village is a nuisance, for which a remedy ought to be provided, but I cannot find that the statute gives authority to village councils to pass a by-law "for regulating and governing persons using bicycles and other vehicles not drawn by horses." In my opinion, by-laws passed by village or county councils, unless authorized by statute, cannot be legally enforced.

1. Sub-section 27, of section 496, Consolidated Municipal Act, 1892, empowers village councils to pass such by-laws.

In the case of Regina vs. Justin, it was

held "a bicycle is a vehicle," and riding it on the sidewalk is "encumbering," the street within the meaning of sub-section 27, of section 496, of the Consolidated Municipal Act, and of a by-law of the Municipality, passed under it.

2. County councils have no power to pass by-laws, such as those authorized under section 489.

3. We quite agree, that by-laws not authorized by the statute, cannot be enforced.

Public School Debenture Rates—Separate School Tenants.

305.—J. B.—In our village, a few years ago, we built a public school, to pay for which debentures were issued. A piece of property was then and is still owned by a public school supporter, but this year the tenant is a separate school supporter, and the property is assessed to the separate school.

1. Is that property liable for debenture tax? Another property is owned by a separate school supporter, and this year the tenant is a public school supporter.

2. Is that property liable for public school debenture tax?

1. Yes. 2. No.

Time for Moving to Quash Drainage By-Law.

306.—J. A. T.—Please advise at your earliest convenience if the notice required by section 352 of the Consolidated Municipal Act of 1892 must be published in accordance with section 354 of the said act. There seems to be some contradiction with the meaning of this notice, as far as the time given for motion to party assessed given in the by-law as to motion to quash in accordance with section 21, Drainage Act, 1894.

The provisions of section 351 and following sections of the Consolidated Municipal Act, 1892, are imperative, and notwithstanding the fact that the period for moving to quash is not the same as under the Drainage Act, must be complied with.

Discount or Additional Percentage on Taxes.

307.—TOWN COUNCILLOR.—A large number of the municipalities in the province have adopted the plan of allowing a discount for prompt payment of annual taxes, and also of adding a percentage to those who are behind in their payments. And in order to provide funds for the discounts an extra rate, say, of $\frac{1}{2}$ to 1 mill is added to the rate. Will you kindly point out the section of the statute that makes provision for these plans?

Section 53, Consolidated Municipal Act, 1892, sub-sections 1 to 4.

General Public School Rate and Township and Village Union Sections.

308.—R. B. W.—A small portion of our township forms a union school section with the corporation of the Village of Colborne and they pay 11 per cent. school tax in the corporation. They are taxed this year \$245, or 6 3-10 mills, and in addition to this they have been paying $1\frac{1}{2}$ mills special school tax in the township. Under the new law this year the special rate was raised to 2 $\frac{1}{2}$ mills. Now they object to paying the special school rate, they have the benefit of a high school. A lawyer tells them they have no right to pay only the 11 per cent. Does this special rate apply to them the same as township unions, they have no special school rate in the corporation? I think so. Our council meets on Friday when this matter will come up for discussion. We allow them or our ratepayers 11 per cent. on one teacher and three assistants in the corporation, under the new law amounts to \$40, and a fraction out of or deducted from the amount they have to pay

to the corporation, but the 2 $\frac{1}{2}$ mills on their assessment would amount to about \$80. Special school rate over the township, which goes to help the difference, \$40, to poor school sections. Now, have they a right to pay the whole special school tax in the township or only 11 per cent. or not any? They will ask for a rebate ever since the law came in force if they can substantiate their claim.

The Public Schools Act of 1891, section 109, did not make any apparent difference between union school sections composed of part of a township and an incorporated village and the other sections of the township, but in 1892 it was enacted, that, to remove doubts, sec. 109 of the Public Schools Act 1891 shall not be construed to mean that union school sections composed of part of a township and any incorporated village or town shall not be included within the provisions of said section 109. Section 66 of the Public Schools Act passed this year takes the place of section 109 in the old Act, and it is therein stated that this section shall not apply to union schools formed between townships and urban municipalities; by the word "urban" is meant villages, towns and cities.

We therefore say that since the 14th. day of April 1892 the township portion of the union section has had no right to pay any portion of the special rate for general public school purposes levied in accordance with section 109 now section 66 of the Public Schools Act.

Where Rain Causes Water to Overflow Land.

309.—A. B. C.—The water runs in opposite directions by the side of the highway for a distance of forty rods each way to a point where it meets. It then runs from the highway into A's farm where it overflows two or three acres of land. The overflowing of A's land only occurs during heavy rains as there are no springs on the highway. The road has not been drained beyond the ordinary grading of roads. There has been no water carried from its natural course, nor has there been a culvert put in the road to carry the water to A's property from the opposite side of the road. The natural and only outlet for said water when accumulated is through A's farm. A threatens legal action against municipal council, if they do not take water away.

1. Can a compel council to take water away?
2. Have the council any legal or just right to spend the township's money in making a drain on A's land, for the purpose of taking away said water?

The Council should take advantage of the provisions of the Ditches and Watercourses Act, and have the drain properly constructed to a sufficient outlet.

Publications Received.

By-laws of the township of Hay, Fred. Hess, Sr., Clerk.—This is a handy little volume, and includes the following, among other by-laws recently passed:

1. For establishing rules of order, and governing proceedings of the council.

The dignity of the council is hereby maintained, and no persons not members of the council or salaried officers of the township, are allowed within the bar of the council, except by permission.

Another regulation, which we think is a good one is, that the clerk is required to duly record in a book without note or comment, all minutes of the council, and to enter at length all accepted reports.

2. To empower the corporation to enter upon lands, to take material necessary for making and keeping roads in repair.

We do not think this sufficient, as in every instance where it is found necessary to appropriate material for road maintenance, a separate by-law should be passed specifying particulars of the case.

3. For regulating the riding and driving of bicycles, horses and cattle on highways.

The only regulation in reference to bicycles is, that no person is allowed to ride on the sidewalk within the municipality.

4. To retain and punish vagrants and other disorderly persons, and to preserve the public morals.

5. To prevent persons from throwing filth, carcasses of animals, dirt or rubbish, on any road, street or highway.

This by-law is passed in accordance with section 481, sub-section 23, of the Municipal Act, and is a most necessary one in the neighborhood of towns and villages, where no dumping ground for refuse is provided. It also makes it unlawful for any person to take gravel, stone, sand, earth, sod, timber or any material from off the highways, or to dig or make any pit on the roads of the township, without permission of the council.

6. To prevent cruelty to animals.

7. To provide for aiding indigent persons and charities.

The second clause of the by-law provides, that when any reeve or other member of the council is notified of the death of a destitute person, they are authorized to issue their orders for a sum not to exceed twelve dollars, to defray funeral expenses.

The provisions of the Anatomy Act, chapter 199, R. S. O., amended by 52 Vic., chapter 24, requiring notice to be sent to the Inspector of Anatomy in certain cases appears to have been overlooked.

8. To regulate the height of fences.

9. To prevent the obstruction of streams, creeks and watercourses.

10. To regulate statute labor, and define pathmasters duties.

This by-law provides for the commutation of statute labor at ninety cents per day, if paid on or before the first day of July.

Pathmasters on or before the fifteenth day of September in every year, are required to furnish the clerk of the township, with a statement in detail, showing number of loads of gravel, and number of feet of timber used in his division.

11. To regulate the mode of collecting taxes, and defining collectors duties.

12. For the prevention of animals running at large.

At the close of the volume, the clerks duties are set forth as follows:

It shall be the duty of the township clerk to attend all meetings of the council and the meetings of the Board of Health, and to keep a record of their proceedings in the manner required by law, as also to keep all books, papers and documents, required to be kept and preserved, and generally do all that the laws of the Province of Ontario, and of the Dominion of Canada, the by-laws of the township and resolutions of the council require him to do and perform. It shall also be his duty to exercise a general supervision over all the other officials of the township, and to act with and assist the reeve in carrying on the business of the corporation in the intervals between the sittings of the council, and he shall also lay before the council at its first meeting after he receives them, any communication or correspondence in which the interests of the corporation are involved, and also to report to the council from time to time, when he deems it necessary or whenever the council may require him to do so, on any matter or thing affecting the interest of the corporation.

PAGES

MISSING