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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF PUBLIC WORKS, TENDERS, ADVANCE INFORMATION AND MUNICIPAL PROGRESS EVERY SATURDAY

Vol. 3. Toronto and Montreal, Canada, August 20, 1892. No. 28

THE CANADIAN CONTRACT RECORD,
PUBLISHED EVERY SATURDAY
An Intermediate Edition of the "Canadian Architect and Builder."

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Information collected from any part of the Dominion regarding contracts open to tender.

ADVERTISING RATES ON APPLICATION.

At its Convention held in Toronto, Nov. 20 and 21, 1889, the Ontario Association of Architects signified its approval of the CANADIAN CONTRACT RECORD, and pledged its members to use this journal as their medium of communication with contractors with respect to advertisements for Tenders.

The following resolution was unanimously adopted at the First Annual Meeting of the Province of Quebec Association of Architects, held in Montreal, Oct. 10th and 11th, 1890: "Moved by M. Perrault, seconded by A. F. Dunlop, that we the Architects of the Province of Quebec now assembled in Convention being notified that the CANADIAN CONTRACT RECORD affords us a direct communication with the Contractor, resolved, that we pledge our support to it by using its columns when calling for Tenders."

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publisher of any irregularity in delivery of paper.

TENDERS

will be received until noon of SATURDAY, THE 27TH INST., for the erection of a Warehouse in Bay Street.

CHAS. I. GIBSON, Architect,
93 Adelaide St. East, Toronto.



NOTICE TO CONTRACTORS.

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to Eleven o'clock a.m. on THURSDAY, AUGUST 25TH, 1892, for the construction of the following work.

SEWERS:

Cumming Street, from DeGrassi street to Wardell street. Markham street, from Olive avenue to Vermont street.

Specifications and forms of tender may be obtained on and after August 18th, 1892, at the office of the City Engineer.

A deposit in the form of a marked cheque payable to the order of the City Treasurer, for the sum of Five per cent, on the value of the work tendered for under \$1,000, and 2 1/2 per cent, for the value of the work tendered for over that amount, must accompany each and every tender otherwise it will not be entertained.

All tenders must bear the bona fide signatures of the contractor and his sureties (see specifications), or they will be ruled out as informal.

The committee do not bind themselves to accept the lowest or any tender.

JOHN SHAW,
Chairman of Committee on Works,
Committee Room, Toronto, Aug. 12, 1892.

TENDERS

Will be received at our office until noon, SATURDAY, AUGUST 27TH, for the various works required in the erection of a

DWELLING HOUSE AND STABLE

on Avenue Road, Toronto. The lowest or any tender not necessarily accepted.

SIRIK KLAND & SYMONS, Architects,
18 Toronto Street, Toronto.

TENDERS WANTED

FOR

PLUMBING & STEAM HEATING

(together or separate) in warehouses on Richmond St. West. Specifications and all information from GEO. CLATWORTHY, 60 Adelaide Street West. No tender necessarily accepted.

N. B.—Preference will be given to firm renting premises, 58 Adelgade Street West.

SEALED TENDERS

will be received by the Corporation of the County of Bruce at the County Clerk's office, Walkerton, until noon on WEDNESDAY, THE 30TH INST., for the

Construction of a Sewer

from the County Gaol to Durham street in said town, a distance of about twelve hundred feet. Parties may tender separately for the excavation, and furnishing and laying of sewer-pipe.

Plans and specifications may be seen at the office of the undersigned.

The Committee do not bind themselves to accept the lowest or any tender.

GEORGE GOULD,

Clerk County Bruce.

Walkerton, 1st August, 1892.

SEALED TENDERS

For the various works required in the erection of a new Building for the Liederkranz Society, Toronto, will be received by the undersigned up to 5 p.m. on

Tuesday, August 30th.

Plans and specifications may be seen at my office.

The lowest or any tender will not necessarily be accepted.

CHAS. F. WAGNER, Architect,
No. 1 Toronto Street, Toronto

A novel method of excavating for foundations in damp ground is mentioned by *Indian Engineering*. A hole is bored about 1 1/2 ins. diameter and 10 to 12 ft. deep, and charged with cartridges. These, when exploded, excavate a hole about 3 ft. in diameter, and drive the water out of the earth surrounding the hole to such a distance that it does not filter back for more than an hour, during which time the excavation is filled with quick setting concrete. By the time the moisture returns, the concrete is sufficiently hardened to resist the water.

CONTRACTS OPEN.

SUDBURY, Ont.—A new brick station is to be erected here.

PRESCOTT, Ont.—It is probable that a system of sewerage will be constructed.

STRATHROY, Ont.—The Town Council has decided to purchase 300 feet of fire hose.

ALEXANDRIA BAY, Ont.—The sum of \$4,000 has been subscribed towards the proposed Roman Catholic church.

PERTH, Ont.—A monument is to be erected here to the memory of the late Dennis McNamara, of Arnprior, to cost \$1,800.

WARTON, Ont.—The ratepayers have carried a by-law authorizing the expenditure of \$2,000 to extend the waterworks.

LEANSBURG, N.S.—E. H. Solomon, Clerk will receive proposals until the 17th of September for the purchase of \$32,700 worth of debentures.

LONDON, Ont.—The City Engineer will receive tenders until Thursday, the 25th inst. for the construction of a tile drain on Sydenham and Wellington streets.

WELLAND, Ont.—Mr. Wm. Bown will receive tenders until the 24th inst. for the construction of a draw-span in the highway bridge across the Welland river at Montrose.

HAMILTON, Ont.—Tenders will be received by Mr. Thos. Weston, Secretary-Treasurer, until Wednesday, the 24th inst., for the erection of a roadhouse for the Central Fair Agricultural and Industrial Company.

St. JOHN, N.B.—Mr. S. Adams, of the Public Works Department, Ottawa, is in the city to superintend the work of repairing the Custom house. A metallic roof will be put on. Girders of steel will be put in, and brick work will take the place which wood had in the old building.

NANAIMO, B.C.—The Town Council invites competitive plans from architects up to the 3rd of September for a two-story brick building to be used as a fire hall, the cost not to exceed \$7,000. The successful architect to have the superintendence of the building.—Proposals will also be received by the Council until the 5th proximo for the purchase of \$20,000 worth of debentures.

PITON, Ont.—Mr. W. J. Porte, Chairman Building Committee, will receive tenders until Saturday, October 1st., for the rebuilding of the First Methodist church at this place. Plans may be seen before the 1st of September at the store of W. J. Porte, of this town, and from the 1st to the 20th of said month will be on view at office of G. M. Miller, architect, corner Queen and Yonge streets, Toronto.

OTTAWA, Ont.—E. J. E. Roy, Secretary Department of Public Works, will receive tenders until Friday, the 9th of September, for the construction of a wharf at D'Escoisse, Richemont County, N.S.—The Government has approved of the plans for the Canadian building at the World's Fair, Chicago, and they will now be submitted to the director-general of the exhibition. The cost of construction is not to exceed \$15,000.

KINGSTON, Ont.—Application has been made to the Ontario Government for permission to build a new bridge across the St. Lawrence river between Pitts Ferry and Howe Island. Mr. Ayls

worth, Inspector of bridges, recently inspected the location, and will report on the project. Messrs. Power & Son, architects, will receive tenders until to-day (Saturday), for the erection of a morgue for Kingston General Hospital.

GUELPH, Ont.—The Waterworks Committee has recommended to Council, that a by-law be submitted to the ratepayers to raise the sum of \$15,000 for waterworks extension, to be expended as follows: New main, \$6,000, Grange St. \$2,000, Sydenham, \$700, Arthur St. \$300, Durham, \$300, Charles St. \$400. Other streets, likely to be petitioned for, \$5,000—total, \$15,000.—The City Engineer has recommended the construction of a cement concrete pavement, 12 feet wide, on the east side of Lower Wyndham street, between Macdonnell and Quebec streets, and on the south side of Quebec street, 6 feet wide from Wyndham street to the westerly side of the archway. The cost of the work is estimated at \$1,435.

VANCOUVER, B.C.—The city Council has decided to submit a by-law to the ratepayers authorizing a bonus of \$300,000 to a company to build a railroad to connect the Northern Pacific railway with Vancouver.—Messrs. Frupp & Wilks have completed plans for a brick and stone block to be erected on Homer street by the British Columbia Land and Investment Company. Mr. J. Rogers is about to erect a brick and stone block on Hastings street, near the Brunswick hotel. The building will be two stories high, and will be fitted up for a store and dwelling.—Mr. Rattenbury architect, is preparing plans for a new building to be erected on Hastings street for Messrs. Rausay Bros. & Co. He is also preparing plans for the proposed Provincial Government buildings at Victoria.

WINNIPEG, MAN.—Mr. George Patterson, Chairman Finance Committee, will receive tenders until the 12th of September for the purchase of \$50,000 worth of school debentures.—The Committee on Works have recommended that tenders be called for the construction of sewers on 3rd Avenue south and on first Avenue north, also for artificial stone sidewalks on 3rd Street south, and 9th Avenue.—J. W. Cockburn, Chairman Committee on Works, will receive tenders until the 22nd inst. for the supply of from 200,000 to 500,000 feet of pine plank.—Plans are now being prepared by Mr. George Browne, architect, for a substantial building to be erected on the east side of Main street, between Portage avenue and Lombard streets.—The Hudson Bay company have also had plans prepared for the erection of a frame store with stone foundation at Keewatin. The cost will be between \$3,000 and \$4,000.—The Toronto Hide Company, whose building was destroyed by fire recently, will erect a branch warehouse at once.—Mr. Brown is preparing the plans for a large brick warehouse, to be erected on Princess street, for Ald. John Hallam, of Toronto.

MONTREAL, QUE.—Messrs. J. W. & F. C. Hopkins, architects, are preparing plans for alterations and additions to St. James Club. It is proposed to build an addition to the rear of the building, extending along Dorchester street, to contain a billiard room and lavatories, and increased accommodation for members dining at the club. The sum of \$50,000 will be expended.—The Electric Street Railway Company will

erect two power houses, one in the east end and another in the west.—Jos. Haynes, architect, is preparing plans for stores and dwellings to be erected on the cor. of St. Hubert & King sts. for Mr. C. N. Catelli. Tenders will be called next week.—J. A. P. Hulman, architect is preparing plans for a house on Milton St. to cost \$8,000, and one on St. Denis St., cost \$9,000, also plans for small house at Cote St. Antoine.—A. C. Hutchison, architect, is calling for tenders for the erection of a new curling rink.—J. R. Gardner, architect, is preparing plans for a cottage for Mr. Darling, to be erected at St. Rose.—The C. P. R. Co. will make alterations to the store lately occupied by Kenneth Campbell in St. Lawrence Hall block for a city ticket office.

TORONTO, ONT.—The City Council has given notice of its intention to construct the following works: Cedar block roadways on Royce avenue from the C. P. R. tracks to Symington avenue, estimated cost, \$5,250; Herwick street from Bathurst street to Lippincott street, cost \$860; Perth avenue, from Bloor street to Royce avenue, cost \$9,720; Sussex avenue, from Robert street to Borden street, cost \$2,000; High Park avenue, from Roncesvalles avenue to the eastern limit of High Park, cost \$18,000.—An order has been issued for the construction of a sewer on Dupont street, from St. George to Huron street.—Building permits have been granted as follows: Mrs. H. A. Rice, 40 Victoria crescent, detached two story bk. dwelling, 17 Starr ave. cost \$3,300; R. M. Scott, 308 Dovercourt road, two det. 2 story and attic bk. dwelling w. side Dowling ave., opposite Leopold st., cost \$14,000; P. Roach, det. bk. dwelling, 527 Givens st., cost \$1,800; corporation of City of Toronto, 2 story and attic bk. isolation hospital, n.s. Gerrard st., cost \$23,000; W. J. McCleary and Jas. McConnell, bk. bay windows and bk. foundation to dwellings, 127 & 129 Baldwin st., cost \$1,000; Churchwardens St. John the Evangelist, bk. church, corner of Portland and Stewart streets, cost \$15,000.

FIRES.

The Methodist parsonage at St. John, N. B., was burned on Tuesday last.—A new house at Niagara Falls, Ont., belonging to Mr. John Gray was destroyed by fire on the 17th inst. The loss is estimated at \$1,000, on which there is no insurance.—Connor's furniture store and Martin's taxidermist store at Edmonton, N. W. T., were destroyed by fire on Thursday last. Loss, \$11,000; insurance \$4,500.—Mr. Joseph Buck's residence at Orillia was burned on the 18th inst. The loss is covered by insurance.

CONTRACTS AWARDED.

ADOLPHUSTOWN, ONT.—Mr. Alfred Rendell has secured the contract for the erection of the new English church.

CATARAQUI, ONT.—Messrs. Leonard & Smith, of Collinsby, have secured the contract to build the Methodist parsonage here.

SELKIRK, MAN.—The contract for the erection of an addition to the Selkirk asylum has been awarded to John Shaw & Co., at \$5,294.

NANAIMO, B.C.—Mr. J. A. Bittancourt's tender has been accepted by the School Board for the erection of the proposed school house in the South Ward. His tender was \$2,311.

VANCOUVER, B.C.—The contract for laying down oak asphalt pavements on Cordova and other streets has been awarded to Mr. Dan McGillivray. The total cost will be \$90,478.

GUELPH, ONT.—The tender of Mr. D. Keleher for the construction of a stone arched bridge on Edinburgh road, has been accepted by the council. The contract price is \$1,397.

OWEN SOUND, ONT.—The contract for dredging the harbor at this place has been awarded to Mr. David Potter, of Warton, Ont. The Government voted the sum of \$15,000 for this work at its last session.

WALKERVILLE, ONT.—The Globe Furniture Company of this town, have recently secured contracts for seating the following churches: English churches at Ilderton and Merriton, Methodist churches at Walkerville, Ont., and Shawville, Que.; Presbyterian church at Ratho, and Baptist church at Walmer road.

QUÉBEC, QUE.—Mr. David Ouellet, architect, has awarded to Mr. Richard Manger, a contract to build a wooden church in the Parish of Paspebiac, (Baie des Chaleurs.) The said church will be 120 ft. long by 55 ft. wide, stone foundations and clapboard outside. The steeple is to be 177 ft. from the ground, covered with galvanized iron. Estimated cost, \$16,000.

WINNIPEG, MAN.—The Committee on Works have recommended the acceptance of the following tenders for the construction of sewers: on 4th street south, from 1st avenue south to 4th avenue south, and on 6th street to the north line of the north half of lot 152, Dobson & Jackson, \$579; on 6th avenue south, and 14th street south from Colony street to Cornish street, Kelly Bros & Co., \$88,985; on 17th avenue north, Robertson & Ross, \$27,000.—Messrs. Thompson & Grey have been awarded the contract for the erection of a new mission church in connection with Knox church, to be erected on the corner of Portage avenue and Carey streets.

MONTREAL, QUE. It is said the Royal Electric Company has closed a contract with the Poison Iron Works Company of Toronto, to supply a thousand horse power engine for use in the street railway service.—At a meeting of the Turnpike trust held last week, the contract for the rebuilding of Grece bridge, on the Longue Pointe road, was awarded to Messrs. Cote & Bernard.—A. Gendron, architect, has let the contracts for two cottages for Peter Gillespie, Esq., as follows: stone work, Geo. Beaucage; brick work, J. Morache; wood work D. Cyr; J. R. Gardner, architect, has awarded the contract for Mr. Took's summer residence to T. Brunet, Pointe Claire.—Also for Mr. W. McMaster's cottage at Thompson's point, to A. Legault, of this city.—A meeting of the Road Committee of the City Council was held on Thursday last, when the following contracts for sewers were awarded: St. Antoine street, Charrier & Robert, \$6.24 a yard, rock \$3.80 additional; St. Catherine street, Harbor to Levis, Robert Parker, \$6 and \$4; Coleraine street, H. Laporte, \$4 and \$3; Dorchester, from Cadieux to German, Downey, \$6.24 and \$3.50; Fortier street, from Cadieux to German, H. Laporte, \$6.75 and \$4; German street, Crnig to Dorchester, Downey, \$6.24 and \$3.80; Moreau street, Sheridan & Heffernan, \$5.25 and \$4; Ryde street, from Charlevoix to Boulter, H. Laporte, \$3.75 and \$3; Shearer street, H. Laporte, \$6 and \$4. The tenders for supplies of lumber, etc., were referred to the City Surveyor for report.

ESTIMATING BY CUBING.

The cost per cube foot of a building depends mainly upon the divisional internal walls and floors; the more numerous the rooms into which the space is divided the greater the cost. Height is certainly a factor of cost, as a high building requires thicker walls; scaffolding and labor become expensive. But if we take two buildings, one twice the superficial area of the other, but the same height, the difference per foot would entirely depend on the interior divisions and elaboration of plan. But to say that the cubing of a bigger and higher building is pro rata higher than for a smaller and lower one is a proposition that does not always hold. It is so only when the rooms are about the same dimensions in both cases. It would for instance, be absurd to cube a large public hall with the usual rooms at a higher ratio than a small villa residence because it was larger and higher. In plain English, the greater the internal space and vacuities the less charge must be placed on the cube foot.

With regard to ornamental facades of wrought stone, a considerable addition per foot must be made upon the cost of a plain brick front. To cube both at the same figure would be wrong. The evidence is the report, for instance, goes to

show that a considerable saving in cost would be effected in carrying out the first design for the Admiralty if the towers were cut off and the engaged and separate colonus of the facades were dispensed with, though at a maternal sacrifice of architectural character and dignity. A plain gurged brick front with stone dressings like that of the old building is estimated to cost about 2s 5d per foot superficial, though the difference between such a facing and the stone front would make a decrease per foot cube of only 1d. The Home and Foreign Offices cost, it is stated, 1s and one-twelfth of a penny per foot cube, or practically is a foot. Other rates are given that are of value. The General Post Office new building cost 8½d per foot, the Bow Street Police Court 11d, the Mayle Police Court 9d, all by Mr. Taylor; St. Thomas Hospital cost 9d, the Royal Exchange is said to have cost 11d. The Houses of Parliament cost as much as 2s 6d per foot cube, the British Museum is 6d, and the recent additions under Mr. Taylor to; the 8d in addition to the original cost of the latter is made up for by the expensive colonnade. Those who know these public buildings will see how materially the cubic space tends to reduce the unit of cost per foot cube.

In speaking of estimating by the cubing system it must not be understood that we really think it prudent to calculate the cost of buildings in this way, but only for the sake of comparison, and as a very useful and often safely approximate guide. Government architects and surveyors have generally adopted the system, and in the department of the public service there are excellent opportunities for making comparisons, and tabulating results.

HOW TO MAKE A GOOD SOLDERED JOINT.

Many times in making soldered joints it is difficult to get the surfaces sufficiently clean so the solder will flow readily, and without this it is impossible to make a joint sufficiently tight for most purposes. To solder iron to iron or iron to other metals is a very difficult matter, unless a person understands the little knack of getting good results. One of the simplest and most convenient way of doing this, is first, get the seam or joint as clean as possible without wasting too much time on it, and then before applying the solder make the metal hot enough to boil the acid or soldering fluid when applied. If the fluid is then applied while the metal is hot, it will clean the surface and the solder can then be applied and will be found to flow freely and combine readily with the metal, and a strong and absolutely tight joint can be easily produced in this way. Sufficient heat appears to be the greatest requisite when making soldered joints and it is surprising how the solder can be made to flow freely and combine with the surface of the metal, even when a small amount of corrosion, dirt or grease is present, if the soldering tool is hot enough and large enough to hold the heat, for some time. In soldering electric wires, no particular difficulty is experienced in making the solder attach itself firmly to the copper, for there is a strong affinity between the metals, and the alcohol lamp or blow pipe commonly used, produces sufficient heat to decompose any oxide that may be present.

To solder iron is not so simple a matter, although it is quite easy when the requirements are once understood and complied with. It is necessary to have the iron clean where the soldering is to be done, but it is not necessary to spend any great length of time in preparing the surface, for if it be heated to such a temperature as to cause the soldering fluid to boil, when applied, this will clean the surface even though it is covered with rust, so that the solder will easily and quickly combine with the iron under the influence of the soldering tool, or if the iron is sufficiently heated to fuse the solder a better joint can in many cases be made in this way, than by the use of the soldering tool. There is no use of trying to make a good soldered joint if the article to be soldered contains water, for the water will convey away the heat so rapidly as to prevent obtaining sufficient temperature to cause the solder to combine, although it may be made to stick slightly and any desired amount of solder can be piled on in this way, but it is impracticable to make a tight joint so long as the water is present. Ammonia pipes are often soldered in the manner explained above where the pipe is heated to a higher temperature than the boiling point of water, the soldering fluid and this immediately followed with the solder. A little practice with the soldering materials, just to see how they work, will serve a better purpose in teaching a person how to do good work, than would be obtained from practice on regular work during the same length of work.—*The Heating Engineer.*

A CHECK IS NOT CASH PAYMENT.

The Supreme Court of Minnesota has lately rendered a decision of much interest to the business community in declaring that bank checks are not cash, and do not possess legal value as money until cashed. In other words, the giving of a check on a bank is not a payment when passed between debtor and creditor, but only becomes so when the money is received on it.

The court holds that in accepting a check from a debtor there is no legal presumption that the creditor takes it in absolute payment, but only conditionally, or as a written acknowledgment of the debt. Where goods are sold for cash on delivery, and the purchaser tenders payment in a check or draft on his banker, such payment is only conditional; and the delivery of the goods, if made, is also conditional. If the check is dishonored on presentation, the seller may retake the goods for the purchase money, even from the possession of a third or innocent party, unless it can be shown that the seller has been guilty of such negligence as would stop him from recovering in equity.

This decision is among the first rendered by higher courts that is so far-reaching, and if supported by other tribunals, will settle a mooted question in commercial circles. The same principle has been applied to unpaid notes by one or two courts, which have held that the seller does not lose his lien for purchase money, no goods sold, until he receives the actual cash, and may retake at any time prior thereto if the indebtedness be not met at maturity.

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

MUNICIPAL DEPARTMENT.

MUNICIPAL ENGINEERING.

My remarks to-day will be confined to the advantages of our association, the relationship of the members to it, and to the authorities they serve; the duties and responsibilities of a municipal engineer to the community, and the duty of the representatives and the community towards the engineers. Pass to the importance of the duties and responsibilities of the sanitary engineer, these, if carried out aught, have a beneficial bearing upon the health and prosperity of the people. The demolition of insanitary property, the cleansing of slums, the removal of refuse from the vicinity of the dwellings, the introduction of pure air into our dwellings and workshops, the erection of baths and wash-houses; the provision of libraries, museums, art galleries, and places of public recreation all tend to the improvement of the community both physically and morally; and notwithstanding increased expenditure, improved pavements, new and better means of communication, improved methods of lighting, heating, and ventilating; the cheapening of the production of mechanical power, increasing the supply of fresh water, bring in their wake increased prosperity and means of happiness. To competently discharge the duties of his office, the engineer must have a suitable training. It is unnecessary to emphasize the claims of theoretical or technical instruction. The country is alive to the needs, and has met the want. At school or college, our younger men have only to desire and they gain the knowledge they seek; but a training essential to an engineer must be acquired after leaving school or college. No amount of lecturing will make the student proficient in filing and chipping; no correct knowledge of the nature of materials can be gained otherwise than by handling them. The knowledge of the component parts and arrangements of a steam engine, a boiler, a pump, a dynamo, or any other product of mechanism, is more completely acquired by one careful inspection of the article than by 50 lectures on its construction. No written description of concrete, mixing of puddle, preparation of foundation, whether in trench, tunnel, or excavation, of roadmaking or house refuse disposal is of half as much avail as an inspection during operation. The municipal engineer must also comprehend mind as well as matter, although the country is coming to the opinion that there is need of sanitary reform; still he will find prejudices to subdue, obstructions to surmount, and difficulties to overcome. There are members of sanitary authorities who are elected and accept the office for the sole purpose of reducing or "keeping down" the rates, and woe to the peace of mind of the engineer who is called upon to serve an authority composed of such men; men who, regardless of the health and comfort of the inhabitants, and unmindful of their duties as judicial expensors, seek by an ostentatious display of false economy to pose as the people's best friends. Such authorities as these are generally imbued with the sentiment that they have little or no need of a skilled engineer. Their principal ambition is but to evade the law and not to conform to it, by doing as little work and paying as little in salaries as possible. This idea, I am thankful to see, is weakening. Sanitary bodies are gradually recognising the force of the penny wise and pound foolish problem, and trained engineers of practical experience, of sound education and common sense, are increasing in demand. It is for us as an association to assist in fitting our younger engineers to meet this new order of things. Like Mr. Gilbert's policeman, the life of the surveyor to an

average sanitary authority cannot be called "a happy one"; the number and differences of temperament, the constant change of his board or council, renders his position oftentimes one of difficulty, doubt, and anxiety. It is said that the proper study of mankind is man. The sentiment I commend to the municipal and county engineer, who though he has all knowledge besides and does not know his fellowman is not likely to succeed. Passing now from the engineer to the authority and the community. We may have competent engineers able and willing to devote their energies to the carrying out of sanitary reforms, but if the community and their representatives do not truly understand their duties, the efforts of the engineer will be minimised, if not altogether lost. Why does a sanitary authority exist at all? Simply because by the springing up of the community the individual can no longer control his surroundings. Could he do this, he would in self defence look to the sanitary conditions about him, but since it is impossible that he can purify the atmosphere, or the river, or efficiently dispose of large quantities of sewerage and refuse, or carry out the thousand needs demanded where there is an aggregation of people, the Legislature has wisely determined that where this condition comes in the community collectively shall do what the individual cannot do—hence the formation of an "authority." It is conclusively established, though there are differences of climate, of habits, and surroundings that militate against the comfort of one district as compared with another, that the advancement of medical and sanitary science is such as to make it possible to have an increased health rate and a reduced death-rate.

(To be continued.)

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*Abstract of inaugural address of the president of the Association of Municipal and County Engineers, England.

