

ON THE CONSTRUCTION OF HIGHWAYS. No. 3.

It is desirable that Supervisors of Great Roads were a ware of a fact well known to mathematicians, that the canvas for the solution of plane triangles (now of such extensive use) were all derived from the discoveries arising from the investigation of spherical trigonometry. In the same way, the laws which direct the proper construction of highways have been established from the results of scientific inquiry into the best modes of constructing Rail Roads. And as the young geometer must investigate right-lined trigonometry before he proceeds to spheres, so in the student of road-making begin with compass highways to enable him to comprehend the requisites for Railways. A great many points to be considered in the formation of common roads apply equally well to Rail Roads; and the subjects to which we now address ourselves, namely, excavation and embankment, are the same in respect to all roads.

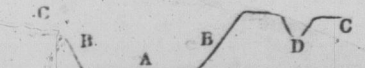
When the solid contents of excavations exactly furnish the quantity of material necessary for an embankment, the operations balance each other at a minimum of cost; but this can rarely occur, yet the fact should be constantly kept in mind, for the nearer it is approached the less will be the labour, and consequently the less the outlay. Trials must be made by altering the axis of the road and ascertaining the new gradients. The leading line should be divided at prominent stations into several portions, and each of these separately examined, and if possible equalized, instead of attempting a general operation over the whole line at once. In the calculation of solid contents the usual methods of measurement by geometrical forms are superseded by practical processes much simpler and sufficiently near the truth for the purposes in view. Equidistant profiles are taken, and by a simple rule their separate contents are cast up, similar to offsets in common surveying. Different kinds of earth are of a different bulk, when displaced, than that which they occupied in their natural bed. Light sandy earth displaces the least, clay decompacts, and rocks augment in bulk when reposed.

A preliminary operation being completed, detailed maps of the line decided on are prepared, giving the longitudinal and cross sections of the natural ground, and of the excavations and embankments, with the horizontal and vertical measurements; in addition to which, separate drawings are made of the masonry and carpentry of bridges, piling, culverts, &c.

The Supervisor now marks out, on the ground, the road to be constructed by placing stakes in the direction of the axis, and numbering them in reference to the map, or marking them by width of way, side slopes, and cross profiles.

The great deficiency of road-makers in this Province, as evidenced by almost all our highways being either destitute of proper drainage, or by having inadequate drains erroneously constructed. As this subject is of the utmost importance and is immediately connected with the formation of the side slopes, we shall advert to it as fully as the limits of these papers will allow.

In this country the side of roads are generally left in that mouldered, loose condition, to which they are exposed by a mere slope being made from the top or brow of the bank to the hollow between the base of the bank and the side of the road, and this irregular angular hollow is dignified by the name of a drain! In a very short time the face of the slope crumbles into this drain, and if the upper surface be held together by interwoven long-fibred roots, and knotty grass, still the base will yield to the lower moisture and the slope be changed into a concave recess, beautifully curtained and fringed by the weeds and vines, and fibrous roots, and little water falls that descend from the brow! Alas! the immense sums which this Province has expended (nominally) on the great roads, were quite sufficient to have these roads finished in the best manner of modern art; yet where do we find one of them, to which due attention has been given to the side slopes, or where spongy masses have been dried, or where judicious culture effecting, unseen, an almost magic power on the compact road, have ever been thought of? To explain these things thoroughly would require outline diagrams to speak to the eye, without which a writer finds it very difficult to make himself understood. Perhaps you might construct one for general reference, shewing a cross section of a road under process of formation: a few dashes, with letters of reference, would answer every purpose: for instance,



Explained thus: A, the surface of the road. B, B', the side slopes. C, C', the top surface. D, the drain on the top of the bank above the slope on the upper side of the road.

The surface of the road should be rounded up from the bottom of the slope to the centre of the axis, and the height or flatness of the curve must be in accordance with the nature of the soil, which experience and judgment alone can direct. The side slopes depend on similar circumstances. Common soils of a mixture of clay and sand, and of compact stony stratum, may have a slope of two parts for the base to one for the height. Sand and gravel should have a greater slope. If the excavated bank be steep the proportion of the base should be increased. Slopes when practicable should be covered with sods, or if the soil is favourable they should be sown with grass seeds. The drain, as at D, should at

ways be made at the higher side, and above the slope, that the upper moisture may be carried off without affecting the slope or the road.

When the excavations are very deep and the soil inclined to slips, the side is cut into two or more slopes with a flat space between them and a drain on the flat. In excavations through solid rock, which might be left perpendicular, it is better to give them a convenient inclination in order to admit the square and also keep the road dry and in good order. Slaty rocks which slunge off by the action of moisture and frost must be formed into several slopes and flats in the manner of steps, by which their disintegration will be prevented from accumulating at the angle of the road and side slope.

It is often difficult to counteract the effects of springs which appear above the excavations below the top surface and extend in the direction of the road. The efficient remedy is to carry the drain high enough above the foot of the side slope to tap all the sources, and to sink it sufficiently below the surface of the roadway. The surface drains on the upper side should convey the water to the most convenient natural courses; but the side slope on the lower side, being slightly affected by surface water, may have a small drain on the side of the road to carry off its own moisture and the wash from rains.

As it is beyond the scope of these papers to embrace the almost endless particulars attending the formation of roads, whether from the nature of soil, the ascending, descending, or sideling position of the line, the quality of the materials, and numerous unforeseen accidents of nature; we think it proper to mention that to give the general leading, and approved principles of modern practice is all that is aimed at.

UNITED STATES.

Arrival of Sir Henry Bulwer, the British Minister, Family and Suite.—Washington, Dec. 21, P. M.—The British steam sloop of war Hecata, with Sir Henry Bulwer, British Minister, and suite, has arrived at Washington. The Minister, family and suite have all arrived in good health.

Bounty.—There will be paid out by the collector of this port, on the 1st of next month between \$52,000 and \$54,000 for bounties to fishermen. (Portland Umpire.)

Death of Wm. Miller, the Prophet.—Mr. Miller, of Low Hampton, N. Y., somewhat celebrated for his views respecting the nearness of the advent, died at his house on Thursday, the 20th inst. in his 68th year.

THE PRESIDENT'S MESSAGE.

The Message of the President of the United States was delivered on Monday last and we subjoin a summary of its leading features.

The President congratulates the country that they are at peace, with all nations, and that they have been greatly blessed by Providence. The relations with Great Britain are friendly, and the character of the recent alterations in the Navigation Laws by Great Britain and reciprocated in by the United States is likely to prove materially advantageous. A slight interruption in the diplomatic relations with France, has been terminated, the American minister received, and one appointed to the United States Government.

The suppression of the expedition against Cuba and the demand for the restitution of Rey are slightly alluded to. The President announces that although the crime charged of the supposed abduction of Rey is justly indignant, there is no law for punishing such an offence.

The executive studiously avoided interference during the conflict between Austria and Hungary, but he stood prepared, in case of success on the part of the Hungarians, to welcome them among the family of nations. The President recommends the cultivation of friendly relations with Mexico, and the faithful observance of treaties.

He recommends close relations of friendship with South America, and states bordering on the Pacific. A convention had been negotiated with Brazil providing for the settlement of American claims. He calls attention to existing laws relating to the African slave trade, with a view to effect a more effectual and faithful execution of them.

A contract having been made with Nicaragua by a company composed of Americans for the purpose of a ship canal, he had directed the negotiation of a treaty with Nicaragua, pledging both governments to protect those who shall engage in the work. Nicaragua had invited other nations to enter into the same negotiations. He thinks the canal may be made the basis of peace. He thinks the Isthmus and Tehuantepec routes worthy of consideration, and though Mexico did not concede the right to us, yet he will not renew the proposition to purchase it as it ought to be open to all nations. He calls attention to the position of the Sandwich Islands, and desires that the may maintain their independence and that other nations should concur, and cannot be indifferent to their passing under the dominion of any other power.

The receipts into the treasury for the fiscal year ending 30th June, were 48 millions; treasury notes founded, 10 millions; making 57 millions. The expenditures have been 48 millions, says the treasurer's report, which will show a deficiency in July next of five millions and on 1st July, 1851, of 10 millions, making an aggregate of 15 millions caused by the extraordinary expenses of the Mexican war. The President recommends that authority be given to borrow the necessary amount to meet the deficiency. He recommends a revision of the existing tariff on a basis that may augment the revenue—he does not doubt the right of congress to encourage domestic industry, and thinks

specific duties best adopted to prevent frauds—recommends duties high enough to protect home industry—thinks of the salt treasury continued, it would require important modifications. He recommends an agricultural bureau.

He recommends the application of California for admission to the favorable consideration of congress. A Coast survey had been ordered for California and Oregon, to fit up a branch mint in California—recommends a commission to examine land titles in California—also recommends geological survey—recommends a reconnaissance of the most feasible route for Pacific railroad—recommends early appropriations for improvement in rivers and harbors—on account of Indian troubles and the extension of territory recommends increased military force.

He speaks well of the navy. It is favorable to the reduction of postage except by sea steamers. Alludes to foreign postal treaties indulges in general reflections, and advises all recommends love of Union in every American heart—dissolution the worst of all calamities—its preservation the surest means of prosperity and happiness. Whatever dangers may threaten it, he shall stand by it, and maintain it in its integrity, to the full extent of the obligations imposed and the power conferred upon him by the constitution.

Fire in New York.—On Saturday last, Woolsey's extensive sugar refinery was destroyed by a fire in the 5th story of the building used as a drying house. Mr. Platt, the conductor of the establishment, seized the water hose and played on the flames until his hands and face were so dreadfully burnt that he fell insensible. He was dragged away, and his life was saved. The flames owing to the inflammable nature of the building and materials spread so rapidly, that though the tanks were all cut, and a flood of water poured on the fire, it was of no avail. Capt. Croft, of the New York Volunteers, narrowly escaped death from one of the falling pillars.

The walls of the building, one by one, fell in, causing great alarm to the bystanders. The books of the concern in the sale were rescued. The fire is still smoldering.

About \$1,000 worth of sugar was saved. The loss on the sugar is \$20,000; on the machinery \$300,000; on the buildings \$50,000 and materials spread so rapidly, that though the tanks were all cut, and a flood of water poured on the fire it was of no avail. Capt. Croft, of the New York Volunteers, narrowly escaped death from one of the falling pillars.

The walls of the building, one by one, fell in, causing great alarm to the bystanders. The books of the concern in the sale were rescued. The fire is still smoldering.

About \$4,000 worth of sugar was saved. The loss on the sugar is \$20,000; on the machinery \$300,000; on the buildings \$50,000—total, as estimated, \$600,000, only a small portion of which was insured, as the company had lately let a policy of \$250,000 on the property run out. Nearly five hundred hands are thrown out of employment by this calamity.

GREAT FALL.—Almost the entire ceiling of Dr. Bethune's church in Brooklyn, N. Y., fell in on Sunday evening, making a noise like an earthquake, smashing the galleries and crushing many pews. The cause was attributed to the fracture of a girder.

THE INDIAN WAR AT THE LAKE SUPERIOR MINES.—This talk of war turns out to be quite a peaceable affair. The Indians have not committed a single act of violence, and after taking quiet possession of the mines the Indians offered to withdraw and allow operations to be resumed if Mr. Bonnet would only guarantee to them a settlement of their claims in the Spring, or would acknowledge their rights to the territory. The Toronto Colonist refers the difficulty and animadverts severely on the conduct of the Government in seizing some of the Chiefs and bringing them some 600 or 800 miles from home to Toronto, for incarceration, and trial. The Government has treated the Indians with neither courtesy nor kindness. The Colonist thus describes the parties arrested.

On Monday last, Chinewawkong, an old Indian Chief, of the age of 78, who served throughout the last American war, and bearing upon his breast two silver medals, one of them given him by George H. R. for his belief, the battle of Queenston, and the other one struck in 1848, and presented to him only the other day, by the British Government; Nebengoging, the son-in-law of Chinewawkong, and who had carried the medal which he had taken from the breast of his father, who he killed at Leamy's Lane together with two half breeds, of the name of Lesage and Boyer, and Mr. Allen Macdonell, all of whom had voluntarily surrendered themselves at the Sault St. Marie, on the arrival of the troops, were brought up from the jail of this District, in the custody of the sheriff, on Monday evening last, before the Justice, at his own residence, for the purpose of putting in bail to answer a charge preferred against them for taking forcible possession of the Quebec Mining Company's location at Mica Bay.

SUICIDE.—A private of the 1st Royal Regiment, named Metzger, committed suicide yesterday morning, at the Barracks, about 2 o'clock, by blowing his brains out with a musket. It seems that he had been confined to the Barracks, & orders, for a week, and not being able to get out on Christmas day, he took it to heart that it was his last day, and it resulted in temporary insanity, which led to the awful catastrophe. He had always borne an unblemished character. (Morning News.)

Accounts are received from Santa Fe to the 30th of October, and from Chihuahua to the 30th of Sept. At the latter place the cholera was raging fearfully, principally among the Mexicans.

Merid, Yucatan, papers of the 16th of Nov. announce that the war was continued between the Indians and the Yucatecos.

Our Subscribers will oblige us by paying our Collector, who will call upon them with their accounts for the last year.

THE STANDARD.

ST. ANDREWS, WEDNESDAY, JAN. 2, 1850.

St. Andrew's County Bank.
Hon. HARRIS HATCH, President.
T. B. WILSON, Esq., Solicitor.

Discount Days.—TUESDAY.
Hours of Business, from 10 to 2.

Bills and Notes for Discount must be lodged with the Cashier, on or before Friday, otherwise they must lie over until next week.

Alms and Relief Bazaar.
Committee.—H. H. Hatch, A. T. Paul, Floss, Sampson, John Irwin, D. Bragley.

St. Andrews.
Steady Mills and Manufacturing Company.
R. M. ANDREWS, Esq., President.

Saint Stephens Bank.
Wm. Todd, Esq., President.

Discount Day.—SATURDAY.
Hours of business, from 10 to 1.

Bills and Notes for Discount must be lodged with the Cashier, on or before Friday, otherwise they must remain in his hands until the following discount day.

Arrival of the Steamship



Cambria.

The R. M. Steamship Cambria, arrived at Halifax on Friday morning last. The St. John papers state, that the fact of the steamship's arrival was not known in that city for upwards of four hours afterwards. Much dissatisfaction is expressed at the delay of the transmission of the news. We give below a synopsis of the intelligence copied from our exchanges.

The Queen Dowager died on the 23 ult. at Stannmore Priory.

Parliament will meet about the middle of January, for the dispatch of business.

Commercial affairs continue in a quiet but steady position. The Produce Markets, both in Liverpool and London, have been freely supplied. Since the arrival of the steamer America at Liverpool, on Wednesday, the Cotton Market has been maintained.

The English Funds have been fluctuating, but are again higher. The quotation for consols is now ex divided, transfer books being closed. Consols have been specially transferred at 97 3/8 to 97 7/8.

There is nothing new from Ireland, and nothing of consequence in foreign news.

The election of the President of the French Republic has passed off in profound tranquillity, and with much satisfaction to the people.

A sinister report has been revived, that Russia insists on the removal of Bem, and the other Hungarian refugees, from the frontier. Specie continues to arrive at Liverpool, particularly gold, in large quantities. The Bank Stocks are on the increase, and money is very abundant, at somewhat easier rates even than heretofore. The Share market has worn a declining aspect.

The amount of Bullion in the Bank of England is over sixteen and a half millions. Orders have been issued for a Court and general mourning for Her late Majesty the Queen Dowager.

The new French plenipotentiary at Rome, General Baraguay d'Hilliers, seems bent on bringing the affairs of the Pope to a termination one way or other. He is said to have expressed himself to the effect, soon after his arrival at Rome, that if the Pope would not return to his capital, he would take the reins of government into his own hands.

The latest accounts from Turkey and Germany show that matters are far from being settled in either quarter. The impression is gaining ground in Constantinople, that Russia is intriguing to keep her quarrel with Turkey open all the spring, when she will assume the offensive. The reiterated and vexatious demands of the Czar give but too much countenance to this supposition.

No important changes have taken place in other European States. Austria still tyrannically denounces to the German Parliament at Erfurt; General Haynau continues to perpetrate his barbarities upon the Magyars. The wheels of all nations seem at present locked, and the mighty machine is brought to a stand still.

INDIA.—The express in advance of the Overland Mail from India, arrived on the 7th ult. Bombay does not go to the 31st Nov., and Calcutta to the 25th of Dec. The whole of India was peaceable. All the Sikh Chiefs implicated with Seer Singh, have been captured.

MARKETS.

Cotton has advanced 1-8d. per lb. on all descriptions.

Indian Corn advanced 1s. to 1s. 6d. per 480 lbs. White sells at 29s. to 30s. Yellow to 28s. to 29s. 6d.

Hold-ers of Grain firm.

American Western-Flour in good demand at 22s 6d to 24s. Canada sweet the same.

Corn Meal 14s at 14s 5d. Wheat 4s 6d to 6s 9d, with more enquiry.

Liverpool Timber Market.—Sales of 17 m. at 16 3/4d. 18 1/4d. at 17 3/8d. 19 1/8d. in at 18d. per foot, with a considerable allowance off. Birch 13d. Deals 4s at 4s 6d per standard. Spruce Deals 4s 2d to 4s 6d per standard. Lathwood 3s. per fashion.

Again kind Reader we are permitted to greet you on the commencement of another "new year,"—a fitting season to reflect upon the experience of the past, and compare it with our plans for the future. And here we would remark, that it is well to profit by experience. During the "year that's awa'" how many changes have taken place—how many of those who were near and dear to all of us, have "gone to that bourne from whence no traveller returns"—how many reverses of fortune—how many schemes have become "how many that were poor have become rich—how many that were in affluence did it leave in want; these and many more changes have taken place during the year, so lately departed. Do not suppose we are about to assume the office of monitor, we have no such intention, our object is to glance at the past. To profit by experience is one grand end for which man was endowed with reason. Progression has ruined many, and should therefore teach us diligence—"what thy hand findeth to do, do it with thy might," is one of those precepts which should govern us in our undertakings. A retrospective view of the past will show us whether it has been profitably spent. Alas! we fear few, very few, can congratulate themselves with an affirmative reply. Who among us can solemnly declare, that this is his happy lot. Have we not done things which we ought not to have done—and left undone things which we ought to have done. Let us then be admonished by the past, so to employ the present, that when another year shall have rolled over, those of us who are spared, may feel less regret, and more to gratify.

A kind Providence has blessed the labors of the agriculturist the past season, and the tradesman and merchant have likewise partaken in the general blessing. We have much to be thankful for—health, and sufficient for our wants. 'Tis true there are many poor among us, but it is a pleasure to know, that there is enough to supply their wants. Numbers are now employed on that great work, the St. Andrews and Quebec Railroad, which we are happy to state will be carried on with spirit during the next spring and summer, giving employment to hundreds of laborers, which will be the means of circulating large sums of money in this County.

We have said, that changes have been continually in progress around us. We have also participated on the smiles and frowns of the world, and other vicissitudes to which all are more or less subjected; but we trust we have shown no desire to relax our efforts to serve the public. We hope our labors have not been altogether unworthy of approval and patronage—trusting that these will be continued and increased, we will pursue the "even tenor of our way" with renewed activity and confidence. We heartily thank all who have given us their support, and wish our Patrons and the Public, a happy New Year.

On our first page we have given a notice of Professor Johnson's lecture on the agricultural capabilities of this Province. The celebrated lecturer certainly gave a very flattering account of our agricultural resources—Good they are, better they will be, and truer they must be on this continent, according to the Professor's calculations.

We learn from the New Brunswick, that Alderman Needham, the popular lecturer on Provincial misrule, will visit this town during the present week, and give one or two lectures. A correspondent says—"advise your people to go and hear him; he will state some facts that will astonish them, respecting the public men in this Province—aye, even in Charlotte County."

The brig Chaffey, which sailed from West Isles on Friday last, was struck by a sea on Saturday, which washed overboard the mate, Mr. Gus Chaffey, brother to the master. The captain, while throwing a line to his brother, was crushed by a water cask, in such a shocking manner, as to cause his immediate death. One of the seamen was also badly jammed. The vessel was put back, and is safe at Indian Island.

We beg leave to call the attention of our readers to Number 3, on Highways.

MAILS for the following days, at
Tuesday,
Wednesday,
Thursday,
Friday,
Saturday,
Sunday.

DEA
At the Cape of Good Hope, Dr. Deas, was sent to the Cape of Good Hope, and the inhabitants by his charity, his religious profession, and his urbanity to all who had acquaintance.

SHIPPING
PORT OF ST. ANDREWS
Dec. 27th.—Schr. Luc.
28th.—Packet Matilda, coal cargo.
29th.—Packet Prince, coal cargo.

NEWS BOY
TO THE PATRONS
JANUARY

Onward, still onward,
As he rushes unrepentant,
The old year has closed
In its whirl to eternity.

The vision's awa, the
The year's long scene,
Their dawning of a new

Dare we look at the
Ross, dear,
Our follies and woes
In the arms of men

True to this strain,
For months and less
Let us ring out a new
In praise of this life

A Printer came
In the wee an
When sorrowous
I woke in a

It was no horror
The look
It had no rail,
With ink—

I had an ink-b
With paper
Rising, it came
Here's a roll

Give us a snare
It matters no
A few Railway
Mid the ann

The Printer the
The Printer
And so without
Long life to

Meet be her,
Meet be her
Not so long
Her little Isle

Long may she
Despite the fact
Long in her di
Brunswick's S

Soothe and her
Old Europe's
Austria's que
Back'd by sea
right.

France still
Exhaustless
Old Rome is
Bogies her Po

British yet re
The seas of
Yet based on
She hears, b
Aye, and will
Till Ocean's

But now, ki
No longer
But mount m
And ply t

A radical ch
Reduction
From the Go
His pay—

Let the Law
As Billy
This Billy's
In speech

Dirful his w
Should be fr
By a drink
He'll lecture

All hail to a
Success to
Again, and
Success to
In wine or i

Success to
Our noble
Success to
Success to

Hurrah, for
The prosy
Will shine
A land o

The under
Stretching
To Canada
Crossing th
Filling the
These are