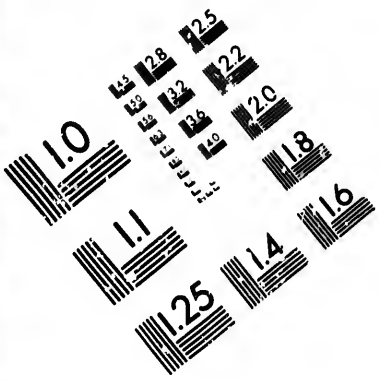

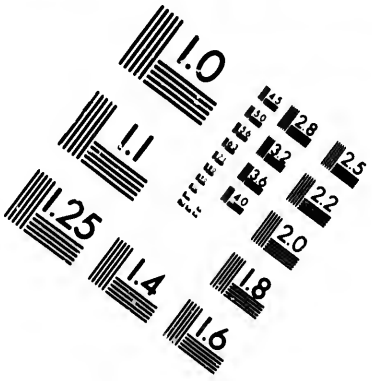

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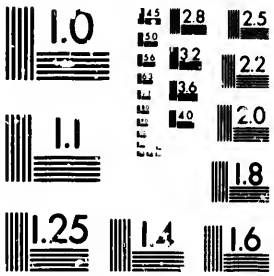

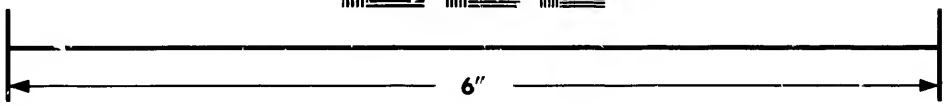

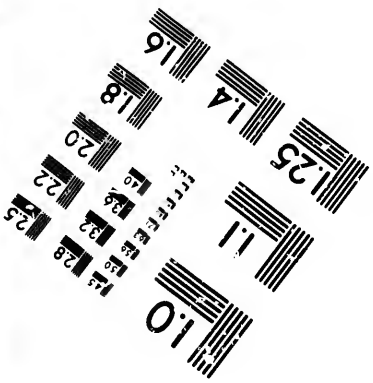

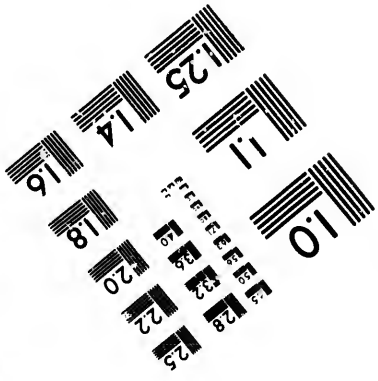

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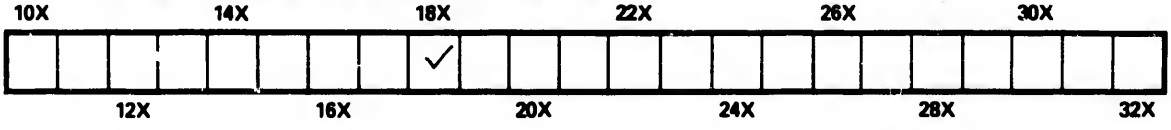

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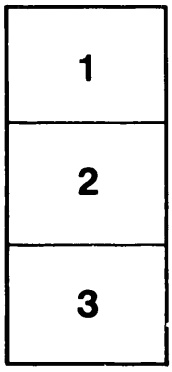

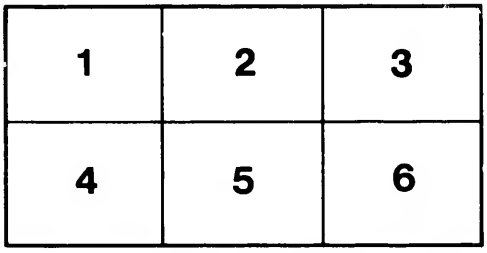

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ROADS.

A Popular Lecture delivered before the Athenaeum Institute, on March 26th, 1877.

By Alexander Murray, Esq., F.G.S., &c.

Mr. President, Ladies and Gentlemen:—

The subject upon which I am about to address you, may at first sight appear to be of a dry and tedious nature, and one about which, in this generation, so much is already known, that little has to be added to the general information. It may be said that every one knows all about what roads are, and no doubt every intelligent person knows more or less of their history, from early periods to the present time. Still, a condensed summary of the rise and progress of civilization from the earlier ages till now, through the instrumentality of ready communication, may be found instructive; and it may be interesting to reflect a little upon the crude beginnings with which our ancestors started in the race, impelled by the same causes which still apply, until in our own day intercourse with the whole world has culminated in the establishment of the steamboat and the iron horse. Progress is an inherent necessity; nay, more, it may truly be called a law of nature. It is a well-known fact that every successive epoch, all through the vast ages of geological time, has produced higher and higher developments of animal form, until reaching the superficial deposits which reveal the works and remains of our own species. But, throughout all those vast ages, the simpler and less complex forms of animal life persistently hold their own, if not specifically, they do generically, from epoch to epoch, from formation to formation, up to the present day. In like manner *man*, although of a single species (or provisionally so-called by ethnologists), is divided into many races, the higher types of which are in constant and unceasing agitation, inventing, improving, and laboring towards some hitherto unknown attainment; whereas the lower types of race, like the protozoa of geological periods, remain in stolid indifference, following the same course of life as pursued by their savage forefathers, constructing the same implements, and using the same description of weapons as are revealed to us to have existed contemporaneously with the earlist records of the existence of humanity on earth. The simple tools of stone manufactured by the hands of Palœolithic or Neolithic men, are so nearly identical with those made by savages of the present day in every respect as to be scarcely distinguishable: many examples of which I have at this moment in my possession, formed by the wild hordes who formerly roamed at large over the forests and marshes of Newfoundland. But, tenacious as most

low types of humanity may be as to primeval habits, there are instanced brought to light to show that even the wildest tribes made occasional spasmodic efforts to improve their condition, and even to attain a certain stage of civilization. As an illustrious example we might cite the grand and mysterious remains at Pelanki and other parts of Central America, which amply testify to a high state of progress in the arts on the part of the aboriginal inhabitants; but to go still further back in time, we find that primitive humanity, long anterior to any historic record, must have advanced in skill, and with such advancement we may safely infer they improved in condition. It has been shewn by certain distinguished antiquaries and naturalists—Danish and Swedish in particular—such as Nillson, Steinstrop, Forchammer, and others, that a chronological succession of periods can be established, which have been called the ages of stone, of bronze, and of iron, named from the material which have each in their turn served for the fabrication of implements. (*Lyell's Ant. of Man.*) Now, as bronze is an alloy of about nine parts of copper and one of tin; and seeing that although the former metal is often found in a native state, and ready, as it were, for immediate use; tin is not only a rare ore as such, but never occurs native, it must without hesitation be admitted that the bronze population had far advanced in art over the stone people, as, to get the combination required, they must have been skilled in the art of smelting. To detect the existence of the ore of tin, then disengage it from the matrix, and finally after blending it in due proportion with copper, to cast the fused mixture in a mould, allowing time for it to acquire hardness by cooling; all bespeaks no small skill in manipulation. The next stage of improvement is that manifested by the substitution of iron for bronze, indicating another stride in the progress of the arts. Except in meteoric stones, iron like tin is never found native, and to fuse it requires intense heat, not to be obtained without artificial appliances, such as pipes inflated by the human breath or bellows, or some other suitable machinery. These improvements, however, great as they may appear to be, were chiefly designed for the common purpose of attaining superiority over the less improevd races that still languished, in war or in the chase. No record has been left to shew that agriculture was pursued in any form, or that those primœval people ever arrived beyond a modification of original barbarism. The deposits in which the implements have been found are nearly destitute of domestic animals, with the exception of the dog, the constant faithful attendant of man through every stage of developement. Lyell remarks, however, that the domestic ox, the horse, and the sheep, are confined to that part of the Danish peat which grew in the ages of bronze and iron; but it appears probable enough that these animals, although found associated with other remains representive of those ages, were not actually domestic, in the proper sense of the word; but an aboriginal stock from whence domestic animals were subsequently derived.

But notwithstanding the natural instinct which so evidently points towards progression and improvement, there is nevertheless a tendency in

the higher as well as the lower races to retrograde, unless some strong stimulant, such as the ambition for conquest, the desire of gain, or distinction in arts or letters, is constantly employed, urging the more powerful or skilful to increased endeavours to maintain their place among individuals or nations; and emulating others, to strive to supplant them. The remains of Pelanki are now trod over unheeded by the modern savage as the place was by his aboriginal forefather long ere the first foundation was laid. Egypt, Syria, Greece, and the grand old Roman Empire, have degenerated from their once high and imperial standing, when each in turn held the world in awe or admiration, to the rank of provinces or of second-rate states. The wild Bedouin roams as of old over the deserts of Arabia, his habits or his garb much the same as they were in the days of Abraham, although Assyrian Nineveh and Jerusalem itself must have risen and crumbled away in the interval.

To follow up the analogy, a similar tendency has been pointed out by geologists in the development of organic life. It has already been said that a new and more highly organised state of existence, appears progressively throughout the whole geological sequence; but while such is the well known fact, it nevertheless is equally well established that the types most nearly approaching the earlier forms of life, which have existed from period to period, and exist to the present day, are but degenerate representatives of their prototypes of old. As, for example, among the very lowest of animal organisms, the modern foraminifera are but dwarfs as compared with the *eozoon canadense* of the lowest eozoic rocks; the gigantic orthocera, ammonites, and other splendid chambered shells of former periods, are now represented by the tiny nautilus; the alligator or crocodile of modern days represents the mighty monsters of the Wield—the megalosaurus and iguanadon; and the little insignificant existing sloth is all that is left to stand in the place of the elephantine form of the megatherium of the tertiarys. But to multiply examples would far exceed the limits to which the paper is entitled; and I shall proceed now more directly to the subject proper, viz.—ROADS.

From time immemorial, the histories of great nations now extinct to those of the present day, tell us that one of the first steps to be taken to establish civilization, has been, is, and ever will be, to procure ready means of communication. Man, like most of the inferior animals, is a social creature, and must have intercourse with his kind. But he is also, as well as his lower congeners, a quarrelsome animal, and hence it is that as his intercourse extends, the tendency to covet his neighbour's goods extends correspondingly. Individual fights, petty feuds, and national wars are the results; and finally, in accordance with Darwin's theory of natural selection by the fittest, the weaker go to the wall, while the stronger flourish more conspicuously than before. And yet these wars, horrible to contemplate as they are in their details, have not been altogether an unmixed evil. On the contrary, they have directly been the means of building up the greatest nations of the earth; of forcing the greatest intellects into their proper

place, of fostering energy and inventive genius in every form; and finally —paradoxical as it may appear—of encouraging science and the arts.

As an example illustrative of the advance of civilisation, to attain which communication with the outer world was found to be the primary necessity, while the maintenance of established roads required in the first instance the most perfect possible efficiency in their construction, let us take a glance at the stately tomes of Gibbon, in the Decline and Fall of the Roman Empire. He says "Three hundred African cities had once acknowledged the authority of Carthage, nor is it likely their numbers diminished under the administration of the emperors: Carthage itself rose with new splendor from its ashes; and that capital, as well as Capua and Cornith, soon recovered all the advantages which can be separated from independent sovereignty. The provinces of the east present the contrast of Roman magnificence with Turkish barbarism. The ruins of antiquity scattered over uncultivated fields, and ascribed by ignorance to the power of magic, scarcely afford a shelter to the oppressed peasant or wandering Arab. Under the reign of the Cæsars, the proper Asia alone contained five hundred populous cities enriched with all the gifts of nature, and adorned with all the refinements of art. Eleven cities of Asia had once disputed the honor of dedicating a temple to Tiberias, and their respective merits were examined by the senate. Four of them were immediately rejected as unequal to the burden; and among these was Laodicea, whose splendor is still displayed in its ruins. Laodicea collected a considerable revenue from its flocks of sheep, celebrated for the fineness of their wool, and had received, a little before the contest, a legacy of about four hundred thousand pounds by the testament of a generous citizen. If such was the poverty of Laodicea, what must have been the wealth of those cities, whose claim appeared favourable, and particularly of Pergamos, of Smyrna, and of Ephesus, who so long disputed with each other the titular primacy of Asia? The capitals of Syria and Egypt held a still superior rank in the empire; Antioch and Alexandria looked down with disdain on a crowd of dependent cities, and yielded, with reluctance to the majesty of Rome itself. * * * All of these cities were connected with each other, and with the capital, by the public highways, which, issuing from the Forum of Rome, traversed Italy, pervaded the provinces, and were terminated only by the frontiers of the empire. If we carefully trace the distance from the wall of Antoninus to Rome, and from thence to Jerusalem, it will be found that the great communications from the north-west to the south-east point of the empire, was drawn out to the length of four thousand and eighty Roman miles. The public roads were accurately divided by mile stones, and ran in a direct line from one city to another, with very little respect for the obstacles either of nature or private property. Mountains were perforated, and arches thrown over the broadest and most rapid streams. The middle part of the road was raised into a terrace which commanded the adjacent country, consisted of several strata of sand, gravel and cement, and was paved with large stones, or in some places near the capital with granite. Such was the construc-

tion of the Roman highways, whose firmness has not entirely yielded to the efforts of fifteen centuries. They united the subjects of the most distant provinces by an easy and familiar intercourse, &c."

Remains of these gigantic works for communication and martial purposes, are still distinctly traceable in Great Britain. The wall of Antoninus and of Lollius Urbicus across Scotland, have indeed disappeared, but there still remain traces of the wall of Hadrian between Newcastle and Carlisle; and the camps of Agricola are distinctly displayed at several places in Perthshire; while in some parts the Roman roads themselves, or in part at least, have been used as a sub-stratum for modern macadimized roads in the same country. It was within the first century of the Christian era that the conquest of Great Britain was effected by the Roman arms; they penetrated and held possession of the lowlands, but were abruptly stopped in their career at the foot of the Grampian Hills. Pomponius Mela, who wrote in the reign of Claudius, the emperor who initiated the war against Great Britain, is said to have expressed a hope that by the success of the Roman arms, the island and its savage inhabitants would soon be better known! These same savages, however, were possessed of attributes characteristic of their successors, or descendents blood of comingled with that of other races, in indomitable valor, and an intense love of freedom; and it may be that the spirit of enterprise and perseverance was even then latent which has now so strikingly been developed in the Anglo-Saxon race.

Smiles in his admirable work, "The lives of the Engineers," says:—Roads have, in all times, been among the most influential agencies of society; and the makers of roads, by enabling men readily to communicate with each other, have properly been regarded as among the most effective pioneers of civilization. Roads are literally the pathways not only of industry, but of social and national intercourse. Wherever a line of communication between men is found, it renders commerce practicable, and where commerce penetrates, it invariably creates civilization and leaves a history. Roads place the city and the town in connection with the village and the farm, open up markets for field produce, and provide outlets for manufactures. They enable the natural resources of a country to be developed, facilitate travelling and intercourse, break down local jealousies, and in all ways tend to bind together society, and bring out fully that healthy spirit of industry which is the life and soul of every great nation." * * "The road is so necessary an instrument of social well-being, that in every new colony it is one of the first things thought of." And again, I see in a quaint little book, entitled "Old Roads and New Roads," the following remark which few will be bold enough to gainsay,—"A history of roads is, in great measure, indeed, a history of civilization itself."

To shew the high regard that was entertained by the Romans for road contractors, the office of Curator Viarum, or Road Surveyor, was bestowed upon the most illustrious member of the Senate, and after the victory of Mantinea, Epanimondas was appointed chairman of scavengers at Thebes;

while Pliny the Younger was at one time commissioner of sewers on the Æmilian road.

But the fall of the Roman empire brought very different successors. The ideas of the Teutonic and Celtic races, who divided among themselves the patrimony of the Cæsars, were essentially different from those entertained by Greece and Rome. The individual rather than the corporate existence of man became the prevalent conception of the Church and of legislators; and nations sought rather to isolate themselves from one another than to coalesce and correspond. The Roman plan was eminently municipal. The city was the germ of each body politic, and the connection of roads with cities is obvious. But our Teutonic ancestors abhorred civic life. They generally shunned the towns, even when accident had placed them in the centre of their shires or marks, and when the proximity of great rivers or the convenience of walls and markets seemed to hold out every inducement to take possession of the vacant enclosures. . . In many cases the Roman cities were allowed to utterly decay; the forest resumed its rights; the feudal castle was constructed from the ruins of the Proconsul's palace and the Basilica; or if these edifices were too massive for demolition they were left standing in the waste—the mammoths and saurians of a bygone civilization. The great Viæ were for leagues overgrown with herbage, or concealed by wood and morass. In these Viæ any observer might remark the strong resemblance, in the right lines and colossal structure, to our modern railways. On the other hand, the drift-ways along the dykes of the Celts scarcely deserved the name of roads at all.

We must pass over the various stages of progress made under the successive conquests and partial occupation of Great Britain by the Danes, the Saxons and the Normans, to a more recent period in our history, where the adaptability of natural selection of the fittest, is displayed in the race which is now dominant over nearly one half of the whole world!—and I will now try to show that ready and rapid communication by sea and by land, has been the basis of that high degree of civilization to which the great nationality of which we form a part, has at length attained; and further, as regards the present and the future, that to hold back or hesitate in the march of progress is suicidal to the best interests of a people, and must eventually lead to their absorption by others more fitted for the great battle of life than themselves. The mixture of races of which the populations of Great Britain, her colonies, and the United States are the result, illustrate the adaptability of the combination; and while good and evil tendencies have been engendered through the blood of each of the various races, the general effect has been assuredly beneficial.—*The fittest holds the reins, and leads the way.*

We have already seen the opinion expressed by Pomponius Mela eighteen hundred years ago, and we can form some idea of what Scotland was at that time, when Antoninus Pius and Hadrian erected their walls of defence against the inroads of the wild but warlike Picts and Scots. All of us know, and peradventure many of us have seen, Scotland as it now is.

Less than one hundred years ago, however, it presented a very different aspect to what it does at the present time; and even in my own recollection, things were very different indeed to what they are this day. But long previous to even that early period, *roads of a kind* were admittedly an absolute necessity for the very existence of the inhabitants, commercial or agricultural. These so-called roads were probably looked upon at the time of their inception as models of constructive genius, and adaptable for all purposes. They were, however, simply execrable, even much later; and I can well remember, when I was a boy, of the demure look and remonstrative eloquence of a coachman, when informed that the carriage would be required to drive for four or five miles over them and back again. Our ancestors were much in the right to make their wills before encountering the perils of a ride across the moors, which were numerous; indeed, I have heard my own father say that such a proceeding was recommendable, when one was about to travel from Edinburgh to York! From the former to London was proportionally more difficult and dangerous, and took well on for a week to perform.* But about the year 1815 a better state of affairs began to dawn; and through the efforts of Telford and Macadam the art of road making upon scientific principles was about to revolutionise the whole system of communication, and to bring the most distant parts of the island into ready intercourse, by means of roads of unrivalled excellence. In a great degree, the principle Macadam followed for his construction, was precisely that of the Romans, the solid basements of whose structures may still be seen in many parts of Great Britain after a lapse of eighteen centuries.

A little egotistical digression will perhaps be pardoned, when I state that I feel a sort of title to expatiate upon Macadamized roads, as it so happened that some fifty or fifty-five years ago, a very near relative of mine, in consequence of his liberal and enthusiastic support of these constructions in Perthshire, went by the soubriquet of "The Colossus of Rhodes;" and my own father was his industrious and enterprising colleague. Both spent large sums out of their private means, of which the country generally derived far more advantage than they did individually; but the country prospered a it never had before; and has gone on prospering ever since.

In those by-gone days which I speak of, and to some extent remember, the easiest, safest, and in every way the best means of locomotion was either to use "Shanks's mare," or to straddle the back of a Shetland pony.

Mr. Smiles says about the state of Scotland, towards the close of the 18th century,—"We found a country without roads, fields lying uncultiva-

*Besides the dangers incident to ordinary travel, there were about this time *the gentlemen of the road* to encounter sometimes, who were not celebrated as being overscrupulous in regard to the laws of *meum* and *tuum*. There is, or was once, an amusing print, dated about the year 1769, in which the driver of an English stage coach is represented in the armed guise of Sir Hudibras. He carries a horse-pistol in his belt, and a *couteau de chasse* slung over his shoulder, while the guard is accoutred with no less than three pistols and a basket-hilted sword, besides having a carbine strapped to his seat behind the coach. One of the "insides," an ancient gentleman in a Ramillies wig, is seen through the capacious window of the coach affectionately hugging a carbine, and a yeoman on the roof is at once caressing a bull-dog, and supporting a bludgeon that might have served for Dandie Dinmont himself.

ted, mines unexplored, and all branches of industry languishing, in the midst of an idle, miserable and haggard population. Fifty years passed and the state of the Lowlands had become completely changed. Roads had been made, canals dug, coal mines opened up, iron-works established; manufactures were extending in all directions; and Scotch agriculture, instead of being the *worst*, was admitted to be the *best* in the inland." Smiles again tells us a little further on that between the years 1715 and 1745 the state of agriculture may be inferred from the fact that an instrument called the *cas-chrom*—literally the "crooked feet"—the use of which had been forgotten in every other country in Europe, was almost the only tool employed in tillage in those parts of the Highlands, which were separated by impassable roads from the rest of the United Kingdom. The cas-chrom was a rude combination of a lever for the removal rocks, a spade to cut the earth, and a foot-plough to turn it. Further we are told by Mr. Smiles, that after roads had been to a certain extent constructed, the Highlanders, in passing from one place to another, instead of following these roads, continued to travel by the old cattle tracks along the mountain sides.

The so-called roads in the lowlands were rutty, muddy quagmires at many parts, while the wretched bridle or foot-paths that led through the Highland glens, were on many occasions impassible altogether; and woe to the unfortunate traveller who might happen to be caught in a snow storm! In those days the weary traveller was fain to take rest in the first highland shieling he might happen to meet, to be regaled peradventure (very hospitably but very frugally) with braxy mutton and oatcake, washed down by an ever welcome draft of the real *mountain dew* from a "*sma' still, no unco far awa'*." Upon all this state of things Macadam made great inroads; the bridle paths became by degrees good substantial roads; the streams and torrents were bridged over; and where the solitary shieling once stood, a sprinkling of neat cottages stand instead. Such, we may say, was the first great stage in progress, by which, within my own time, the Highlands of Perthshire was brought directly into communication with the high civilization of the south. But what were these changes in comparison with the strides made in the same direction which have been accomplished since? The Stephensons and the steam locomotive have effected another and more perfect revolution over things as established by Macadam, than the latter did over the earlier state of affairs, when the dashing turn-out of coach and four superseded the services of the shaggy shetlander. Where the turf-roofed shieling and cottages stood, may now be seen a handsomely built shooting lodge or mansion, and the well-cared-for traveller will find all the comforts and conveniences of modern appliance in the gorgeous hotels which can be reached by easy stages. These changes shew the invincible march of progress in all material matters, and fully accord with the general natural law I have attempted to shew, must, by one means or by another, ultimately prevail. If a people is void of the necessary enterprise and energy to accomplish these changes within themselves, others will not be wanting who will readily take advantage of their effeteness, and who

feebler race and their inheritance [illegible] a Highlander, I can scarcely help looking back on the remote past without some degree of regret when I see so complete an obliteration of many things as they used to be, *lang syne*. It is not aggreeable to one who was "to the manor born," to see the "land of brown heath and shaggy wood" invaded by Cockney sportsmen and drawling tourists, together with a host of dyspeptic invalids or idlers, in pursuit of improved health, or to drive away *ennui*, whose appreciation of the stern beauties of Glen Almond or Glen Ogle is of the faintest; or who could drive through the lovely and romantic straths of the Tay and the Earn unmoved, or indifferent to all but creature comfort. When I think of these same scenes, as I knew them long ago, and view them as they now are, and observe the consequences, I feel inclined rather to accept the changes as the inevitable, than admire them for their own sake.

We must now bid farewell to Europe for a time, and see what has been done on the western side of the Atlantic within the last forty years. In the early part of the month of July, 1837, just forty years ago, I landed for the first time in Canada, at Montreal; whence after a protracted journey of about a week, by the course of the great St. Lawrence, and Lake Ontario, I got to the end of water communication and landed at Hamilton. Travelling, so far, had been done with comparative ease, except when "portages" had to be made over the rapids of the river, which were bad enough in all conscience. The hostelries, moreover, although wanting in many conveniences, were *passable* enough in most respects. But the perils of the road, from Hamilton westward, had not yet been encountered, and little indeed had I the remotest conception of the "Slough of Despond" I was to pass through, notoriously known as the Grand River Swamp. In a two-horse waggon, innocent of springs, after two mortal days of struggling through bottomless mud, and jolting and tumbling in and out of ruts, which gaped on every side, the village of Woodstock was reached; having thus accomplished with pain and grief a distance of fifty miles. But the land I had selected to occupy lay nine miles from Woodstock, to which I was informed there was a road; the same road (called so surely in irony), leading through the woods, being to my then inexperienced eye, almost or quite imperceptible. Bad as was the main highway, there was at least a wide open space without trees or stumps; but here the stumps stood firm and fast as they did before the axe had done its work; the swamps were bridged over, *corduroy* fashion, by the stems of the trees themselves; and the bridges across the streams had been engineered and constructed, in the primitive style and with the most primitive of instruments—viz. "an axe and an auger." And the dwellings those roads led to were as primitive as the roads themselves. Huts built of huge logs dovetailed at the four corners; in size generally about 20x15 feet; lathed and plastered inside, and the chinks between the logs stuffed with moss and chips without, constituted the dwellings of the landed proprietors. Such was the condition of things generally nearly over the whole surface of the

fair province of Ontario forty years ago. At that period, there were settlers still living, whose farms yielded them ample and independent support, whose first beginnings obliged them to carry their seed for the first crop upon their backs, from Little York (now Toronto), a distance of one hundred miles through the woods, by an Indian trail, known then as the Mohawk Road. Things were at this time, however, in a sort of transition state; immigration of people of social standing and considerable private means, as well as hosts of agricultural laborers and mechanics began to pour in to occupy the wild lands, and the prospects of future progress were as promising as could well be desired; when, in that same year, 1837, the unnatural and detestible rebellion broke out, which threw Canada back in the scale of advancement nearly twenty years. But in spite of all obstructions, nature was bound to maintain the supremacy of her laws; and it became clear enough to the inhabitants of Canada, that unless they chose to abandon the great inheritance bequeathed upon them in their birth as British subjects, they must advance in material condition with the genius of the age; or their country and themselves would inevitably be swallowed up by the stranger looking in at the window, whose energies are ever keeping pace with the fittest to fight the great battle of life.

The revolution that has taken place in the state of communication in Canada, and with that change the enormous advance in all matters connected with civilization, within the last twenty years, is perhaps as astounding as the world ever saw; and far surpasses in degree, comparatively, the results attained in Great Britain in the course of two centuries. But in Canada as well as in Scotland, the less intelligent classes were hard to move out of the old groove; and well do I remember, after good plank or macadamised roads were constructed, how these people clung like parasites to the old tracks; carrying half-loads, wearing and tearing both waggons and horses ruinously, rather than pay a sixpenny toll for easy, rapid and safe communication. In 1837 not one solitary iron rail was laid in Canada;—In 1864 there were about 2,000 miles of iron railroad complete and running, and at the present time there is little if anything less than 4,000 miles, inclusive of the Great Intercolonial, in perfect working order. This estimate is exclusive of the great Canada Pacific, and sundry other projected lines, now under the Engineership in Chief of my old friend, Mr. Sandford Fleming, who also constructed the Intercolonial; the latter being recognized as the finest structure of the kind on the continent of North America, and is allowed to rank among the best railroads in the world!

In 1853 I surveyed a section of country between Lake Huron and the Ottawa, by the valleys of the Muskoka and the Petewahweh, returning by the valleys of the Bonne Chere and Madawaska to Balsam Lake. At that time the whole extent of that vast region was a complete, unbroken, and unknown wilderness, with the exception of some lumbering localities near the mouths of the rivers falling into the Ottawa. Now, the whole country is intersected by roads; townships have been laid off; villages have sprung into existence; lumbering limits have extended to the shores of Lakes

Huron and Nipissing, and a railway is projected and partly laid to join the future Pacific road at or near the latter lake.

Other British colonies have kept pace with Canada in the great race of the age, and New Zealand perhaps is even a more remarkable instance of British enterprize, and determination to overcome all difficulties, than either Canada or Australia. But while all the world have been moving at this rapid rate, what has been done in the meantime by the oldest and nearest colony of Great Britain, towards the advancement of civilisation by means of roads. I fear it must be acknowledged that hitherto this province has displayed only the primitive or protozoac instincts, which sooner or later must give way to the inevitable law. Newfoundland still remains in the embryotic state, as regards the means of communication, if we except a few miles of road in the peninsula of Avalon, and around the shores of the southern bays. Into the great interior there is literally no access to be had of any kind whatever beyond that formerly used by the aboriginal savage. Now, I imagine that to a St. John's audience, I need hardly say that I, in the execution of my duties, have had opportunities of seeing and knowing the truth in regard to the nature of the interior of this great island, such as perhaps no white man ever had; and I hope it will be conceded that, as a disciple of science, I have been strictly guided in my opinions and expressions by facts. That experience has long convinced me that there is no reason or necessity for this, any more than other colonies, remaining in the back-ground, and her natural resources (which are manifold) can only be generally known or fully developed by means of good lines of road. It has often struck me as very remarkable that the people most difficult to persuade that anything good can come out of Newfoundland, are Newfoundlanders; and not that alone, but they generally are less informed as to its geography, topography, or peculiarities than many utter strangers, or casual visitors. How often, when I was engaged describing the nature of the interior, and advising a line of route to be followed by the engineers of the preliminary survey for a railrord, have I heard it remarked that the scheme was utopian, the route impracticable, and the whole idea a delusion? —but what proved to be the fact? Simply, that there were no insuperable difficulties at all, from St. John's to St. George's Bay, and that a large portion of the track was especially and exceptionally favorable. I must beg of you to bear in mind that I do not at present refer to financial difficulties, which may or may not exist now or hereafter; but simply to constructive obstacles, which, as already said, are by no means insuperable. What I am desirous to show is that we should, in order to keep pace with the rest of the world, have a constant and vigilant eye upon the future; and that when we commence to open up communication, it should be done in such a manner as will pave the way for a railroad, or a construction of the best kind of another sort hereafter. The plan I proposed to adopt was first expressed in a letter I had the honor to address to one of your honorable representatives upwards of a year ago; which letter with some further observations on the same subject were published in the *North Star* of the 15th

of November last. In that letter, I also gave a rough estimate of what a good carriage road would probably cost in the making; and shewed reason tobelieve that the line run by the engineers, with some modification, would be generally the most advant..geous, and through a country which would eventually, upon being developed, be favourable to the construction of a railway. At the conclusion of the letter alluded to I used these words,—"I am distinctly of opinion that the preliminary line run by the engineers, with a few slight modifications, will prove not only the best but by far the least expensive that can be found for construction, and I am not aware of any special difficulties in the way of connection with it by means of local roads. Brigus is probably more favourably situated in this respect than any of the other outports, as but a very short piece of road in continuation of the present existing one between "the Goulds" and Big Barren or Ocean pond on the Hodge Waters, would complete the connection. With regard to the expense of building an ordinary good road through the interior of the country, I believe that a contract would be readily taken at from $2,000 to $3,000 per mile, and I estimate the cost as follows."—

Clearing complete, say per mile.....	$150
Grubbing roots, &c. " "	180
Grading, " "	1000
Culverts, " "	100
Increase of expense advancing into the ininterior with commisariat, &c.,.....	300
	$1,730

The road to be sixty-six feet or one chain wide. Then, if we suppose the length of the road to be three hundred miles, and the contract taken at $2,000 per mile, the sum total for a complete thoroughfare, through the island would be $600,000 or £150,000 currency."

It is rather remarkable that at the very same time that I put my ideas on this subject into form, Mr. Sandford Fleming was contemplating a scheme of a precisely similar nature; so exactly identical as to occasion the remark from himself, when he saw my published letter, that they could not have more nearly corresponded had we put our heads together for the purpose.

I have already stated, that on the great lines of road constructed by the Romans, each mile was marked by a stone or pillar, on which, no doubt, there was inscribed the distances from Rome on the one hand, and from the next most important place or places on the other. I look upon it also as a certainty, that the initiatory step to these gigantic undertakings was to make a preliminary exploratory survey; and the next, after having resolved upon the line to be followed, to place the mile stones in their respective positions, as the preparatory work of clearing, grading and ditching went on. Now, this example, so well worthy of imitation, is exactly what I should wish to see done here, as an earnest that *our* preliminary survey was really and truly to be utilized with the view of eventually b...

coming a railroad. One or two pillars marked on one or other of Mr. Lynch's alignments out of this city, with the distance registered from St. John's on one side, and from St. George's Bay on the other, would go a long way in inspiring confidence, both at home and abroad, in the sincerity of the people of the province in their desire to commence a new epoch or era, by *mending their ways*.

But if our backwardness is in many respects deplorable, as contrasted with other colonies or countries, there are counter-balancing advantages here which the latter have not, to an equal extent, for procuring efficient progress at a cheap rate whenever a scheme of any kind is fairly and properly inaugurated. There are, in the meantime, no private interests or property to be interfered with, no local jealousies to be encountered, or obstacles of any kind beyond the physical, which are common to all such constructions to a greater or less degree everywhere.

When I came to this country, nearly thirteen years ago, my greatest ambition was to emulate the action of my dear departed friend and colleague, Sir William Logan, and to be an instrument employed to raise Newfoundland in the scale of colonies, as he undoubtedly was, and a chief one, in raising Canada to the proud position she has now attained. I have already shewn the advancement Canada has made within my own recollection; and now, old as I am, I still hope to see a new and better state of things inaugurated here, for it certainly appears to be preposterous that a great island like this, containing so many natural resources, only awaiting development, should any longer be dependent upon one solitary industry. The fisheries of Newfoundland will probably be in the future, as in the past, its greatest and most important industry, but a country to be self-sustaining must encourage mixed industries, by developing all the resources nature has bestowed. A thriving and progressive people cannot be all composed of fishermen, any more than of cobblers or tailors or tinkers—or, if you will, of engineers, of philosophers, or parsons. Each and all of these or other trades, professions or callings are useful and honorable in themselves, and, when established, they ought and must materially aid each other in the great struggle for existence; in accordance with the laws upon which the whole social fabric is founded.

We have seen what Scotland was in the first century: her coasts are as grim and forbidding, and a great part of her interior is as barren as either are in Newfoundland. The Romans deemed the Highlands to be impenetratable and worthless, as many now do the whole interior of this island. The proportion of land naturally suited for cultivation in Scotland to the whole area of the kingdom, is not much greater than it is here; and what has been done in the first case, may, to a great extent, be done in the last. The Picts and Scots were, no doubt, fishermen in the days of the Romans; the inhabitants of the Hebrides and the coasts are so still; but where would Scotland be to-day, but for her magnificent roads, her agricultural excellence, and her gigantic manufactories, which, as a son of her soil, I [illegible] proud to say are unrivalled upon the face of the earth!

I remember well the day in Canada, when old Sir Allan McNab, in answering a question regarding his political views, replied,—"My politics are railroads;" and from that day till this, the cry has ever been roads, more roads. Without roads a country is nothing, and never can be anything. See, for example, even in our little domestic comforts, what we lose at this present moment for want of the means of communication. I, for one, could live all the year round upon fresh codfish; and were I in Montreal, hundreds of miles from the sea, I could supply myself daily by going or sending to the market; while here, in the greatest fishing country in the world, such an article cannot be procured for love or money, unless it be imported from Nova Scotia! Again, I have during the winter received two letters from Tokei, Japan; the first dated November 24th, the last December 3rd, 1876. The former of these reached me here in St. John's on December 28th, the latter on January 13th—the average time of passage being about thirty-five days from the Antipodes, or a good deal less than the time of transit per royal mail on *our Great Northern route from this to Twillingate!*

In conclusion, I would beg to remark that in commencing a work of any kind, very much must depend upon the genius and experience of the constructor, whether the work is eventually to prove a success or the contrary; and road building is no exception to the general rule. A piece of bad engineering, in the first instance might be the means of doing material damage to the whole construction or to a country-side; as great as it might be to erect a splendid building upon a rotten foundation. As well to take a backwoodsman of Canada, who was an adept at building a log hut, to erect a building like the Houses of Parliament on the Thames or the Ottawa, as to place the charge of constructing roads in the hands of inexperienced men. Great highways are one thing; local tracks are quite another. A great thoroughfare through a new country must be made with a keen eye to the future, and engineered in such a way that when things become sufficiently ripe for further advancement, the railroad will supersede the old road without greatly changing its course, and the iron horse will replace the animal power.

With these convictions strong upon me, and keenly feeling conscious of utter disinterestedness, as I own neither an acre of land nor a mining share in the colony, I here once more express my belief that the elements of wealth and greatness abound in this island; but that without the construction of good lines of road through and through the country, by means of which capital and labor may be brought to bear, it will be futile to look for any real or permanent improvement. While thus advocating change—although I frankly admit my general opinions to be of the pronounced *conservative stamp*—I contend that *ultra conservatism*, or refusing to keep pace with the march of the age, is only less disastrous to the well-being of a people than reckless innovation, leading to anarchy and ruin.

His Excellency, our gallant Governor, has proclaimed his opinion that a new era is dawning upon Newfoundland, and his ministers have initiated

steps towards a system of progress; but unless these opinions and efforts are warmly supported there will always be danger of relapsing into the old state of mesmeric indifference which has kept the land at least a century behind the rest of the civilised world. Knowledge is power, union is strength; the light of the former is glimmering brightly; and it is to be hoped that the latter will prevail for the common weal. If my feeble voice were worth regarding, I would urge that there should be no hesitation or faint-heartedness in settling into a state of progress; that the whole population are interested in proclaiming they can no longer endure being without means of communication; that every resource mineral or agricultural should be fully developed, and they now resolve that their country should not only be the oldest, but should rank among the foremost of the colonies of Great Britain.

The following is an extract from the evidence of Prof. J. Macoun, before a select committee of the Dominion House of Commons, on colonization of the North West territory question by Mr. Hagar:—"Would not settlement follow railway construction, the same as in the Western States?"

Answer by Prof. J. MACOUN, *of Albert University, Belleville, Ontario*:—"Precisely in the same way. No matter how the question is taken up and discussed, the same answer is returned. If the country is opened up, *settlement is sure to follow. This has always been so, and always will be so. No sane man can deny this.*"

Yet there are some people here *supposed* to be *sane*, who try to deny what all the rest of the world know to be a fact, and would try to prove that settlement or progress of any kind was the reverse of beneficial and only implied financial *ruin*.

ALEXANDER MURRAY.