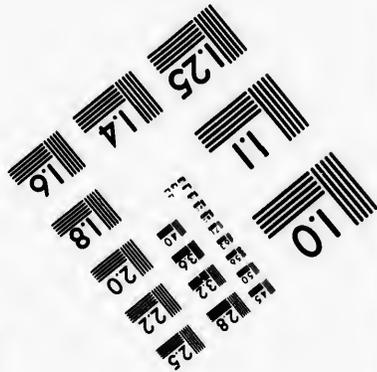
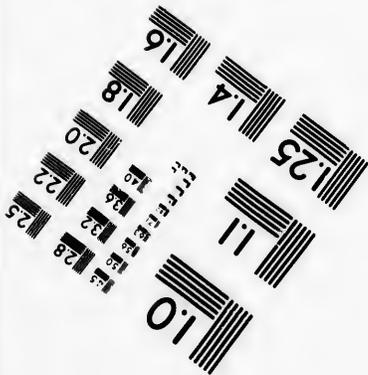
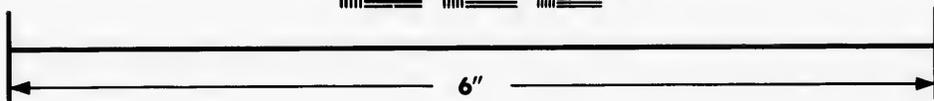
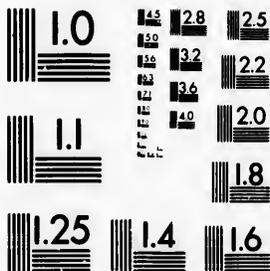


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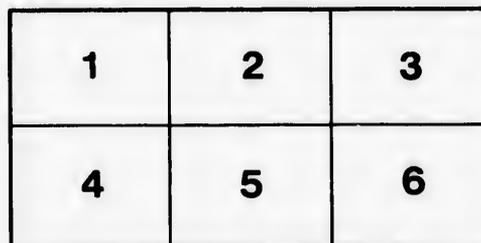
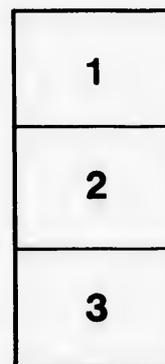
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PROVINCE HOUSE

A FORECAST

OF THE

FUTURE OF THE MARITIME PROVINCES.

BEING A LECTURE DELIVERED BEFORE THE ST. JOHN MECHANICS'
INSTITUTE, JANUARY 17, 1876,

BY

HENRY YOULE HIND, M. A.

Geologist to the Canadian Red River Expedition of 1857.—In charge of the Assiniboine and Saskatchewan Expedition of 1858.—Author of Narrative of the Canadian Expedition to the North West.—Explorations in the Interior of the Labrador Peninsular.—Report on the Geology of New Brunswick, &c.—Reports on Waverly, Sherbrook, Mount Uniacke, Oldham, and Renfrew Gold Districts of Nova Scotia, &c., &c.

SAINT JOHN, N. B. :
DAILY TELEGRAPH STEAM JOB PRINT

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(Reprinted from the St. John Daily Telegraph.)

A FORECAST

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INSTITUTE, JANUARY 17, 1876.

By HENRY YOULE HIND, M. A.

It has been the boast of the people of the Maritime Provinces of the Dominion that they own a ton of shipping for each inhabitant. This is a remarkable and unexampled standpoint from which to estimate our wealth and commerce, but at the same time it must be remembered that in the aggregate we do not raise three-quarters of a bushel of wheat for each individual of our population.

Therefore, however high we may rank as shipbuilders and ocean carriers, we can but claim a very inferior position as agriculturists supplying ourselves with food.

As a remarkable illustration of the opposite extreme, in which agricultural industry claims overwhelming pre-eminence, we find in the State of Minnesota a still greater effort determined in one direction. Seven-tenths of the cultivated area of Minnesota is put in wheat, and more than one-half, or 57 per cent., of her population, is engaged in its cultivation, and 8 per cent. in sending it to market—thus making about two-thirds of the entire population of that State chiefly engaged in the one operation of cultivating and sending wheat to market. But this is not all: There are in Minnesota 14 per cent. of her people occupying themselves as mechanics and manufacturers; but in what kind of industry do they find their chief employment?—in the building of mills for the grinding of wheat into flour. But where so large a proportion of the population is engaged in one kind of industry, the remaining portion (which, in the case of Minnesota, amounts to 21 per cent. of

professional men) expect much of their income from the sale of the wheat crop. If these statements were not based on high authority, which is no less than that of the statistician in the U. S. Department of Agriculture, we should scarcely credit them.*

Newfoundland furnishes us with another illustration of a people devoting themselves almost exclusively to one branch of industry; and for the purpose of this evening's lecture I shall consider Newfoundland as one of our Maritime Provinces. Possibly the time is not far removed when it will be allied to us by stronger ties than at present bind it, and form an integral part of our wide-spread Dominion.

In the 'Maritime Provinces' we usually include Nova Scotia, New Brunswick and Prince Edward Island, but in a general review of the industry of an entire State, such as the Dominion of Canada, we cannot isolate certain parts of the Province of Quebec which border on the ocean, just as much as many parts of New Brunswick. Nor in a forecast of the future can we forget the Island of Anticosti or the vast extent of coast line which affords harbors for our fishing craft on the Labrador, and which, like Newfoundland, may become of great importance in relation to mineral wealth.

Therefore, in attempting to penetrate, however feebly, the veil which hangs over the future of the Maritime portion of the Dominion, I do not think that the subject can be fairly dealt with,

*Address on Agricultural Statistics, by the Statistician of the Department of Agriculture, 1874.

unless we take into consideration, much of that extended coast line which forms so grand a front to the almost illimitable expanse of territory which spreads so far towards the west.

The Territorial Expanse of the Dominion.

In order to form a true conception of the vastness of the domain lying within the limits which may be occupied by civilized man, let us lay the map of the Dominion over similar and isometrical parallels of latitude in Europe, and roughly trace the route which would be followed by two travellers journeying by leading lines of communication, as near as convenient to the *locus* of the southern boundary of the Dominion, the one on the Western or American Continent, the other on the Eastern or European.

On the Eastern Continent the traveller would start at Brest, and taking advantage of the French, Swiss and Italian railways, reach the Gulf of Venice, and there attain the most southern limit of his journey. Meanwhile, the Canadian traveller would start at Picton or Louisburg, and push along the Intercolonial railway to Riviere du Loup on the St Lawrence, thence by the Grand Trunk and Great Western to Windsor, opposite Detroit in the State of Michigan, where he would reach his most southern point. From Detroit his course would be through Lakes Huron and Superior to Thunder Bay, thence by steamer, with a few intervening portages, to the north-west corner of the Lake of the Woods, when he would have accomplished one-half of his journey.

The European traveller would cross the Gulf of Venice, and entering Turkey pass through to Belgrade, and thence by the Danube and Black sea to Odessa, when the half of his journey would be over. Starting again from Odessa, he must traverse Southern Russia for fifteen degrees of longitude to the Volga, and thence on through the deserts of Astrakhan, seven degrees of longitude farther, to the confines of Tartary; and he must still journey ten degrees towards the east through Tartarian Deserts to the longitude of Bokhara, before he would arrive at the end of his weary route.

The Canadian traveller enters the great Prairie country of Manitoba after leaving the Lake of the Woods, and he may, so to speak, gallop to within sight of the Rocky mountains through a beautiful and fertile wilderness; cross the mountains on horseback and reach the Cariboo gold region, where he would find an excellent wagon road, a telegraph line, and steam communication to New Westminster on the shores of the Pacific ocean, and the last four hundred miles of his journey would be through the grand

Alpine scenery of forest-clad and river-abounding British Columbia.

The difficulties and dangers of the eastern traveller during the last half of his journey would be vastly greater than those which might beset his Canadian rival.

The comparison is instructive, for we may view the uninhabited and but partially known part of a broad Zone of the Dominion as it now is, and also, as it may become in less than a generation, side by side with the vast isometrical arid area in Asia, which has been known for upwards of seventy generations, and on this side, has been encompassed by a succession of powerful Empires, which have risen and declined without leaving their visible mark on those broad and desolate wastes.

Territorial Expanse of the Maritime Provinces.

Knowing, after this fashion, the territorial expanse of the vast country to which the Maritime Provinces form the Atlantic front, you may now leave for a while those wide-spreading inland areas, and turn our attention to the dwellers by the sea.

Limiting ourselves for the present to the four Provinces, Nova Scotia, New Brunswick, Newfoundland, and Prince Edward Island, we have the following approximate aggregate:

Province.	Area.	Population.	Tonnage.	Catch.	Fishing.
Nova Scotia.....	21,731	429,090	527,635	6,652.3	10,000 square
New Brunswick....	27,322	315,000	307,020	2,685.7	Britain and I
P. Edward Island..	2,133	104,400	54,225	288.8	undred thou
Newfoundland: ...	36,600	16,244	63,318	8,246.0	undred thou
Total.....	87,168	1,005,644	956,705	17,872.8	twenty mil

In point of tonnage the Dominion with Newfoundland stands as follows:

TOTAL VESSELS AND TONNAGE OF THE DOMINION IN 1875				
1874, 1873.				
	1873	1874	1875	Estimated
Vessels	6,780	1,073,781	6,930	1,158,303
Tonnage	1,301	67,185	1,305	798.8
Newfoundland.				72.4
Total...	8,084	1,140,963	8,235	1,223,181

The tonnage of 1874 and '75 entitles the Dominion, with Newfoundland, to rank fourth among the nations of the earth in point of maritime strength.

The foregoing tables expressed in words mean that the area of the Maritime Provinces named is about the same as that of Great Britain, that their tonnage in ships, very nearly amounts to one ton to each inhabitant, and that

catch also man and ch But, as already late from an wer of the N the dwell St. Lawrence ey are just d instincts a this Provin the above f tion of the t the sea, th me people of ising that th iles in length 20 miles as the area of iles, and its ARILTIME AREA Province. Newb... other Mariti Provinces an Newfoundl... rand total*... Which sta ne Maritim 10,000 squa Britain and I undred thou undred thou twenty mil fish catch, immense loca distinct from after represe Work Let us gla n Nova Sc even years: 868..... 869..... 871..... 872..... 873..... 874..... Mean *This estim land tonna by applied

catch about \$17 worth of fish for each man, man and child of their population.

But, as already stated, we have no right to date from an enumeration of the wealth and power of the Maritime portion of the Dominion, the dwellers on the Gulf and estuary of St. Lawrence in the Province of Quebec. They are just as maritime in their occupations and instincts as the people of the North Shore of this Province or of Nova Scotia, and when, the above tabulated summary, we add that the population of the Province of Quebec which borders the sea, the true representation of the Maritime people of the Dominion is as follows, presenting that the coast line of Quebec is 1,164 miles in length, and assuming only a depth of 20 miles as essentially Maritime, we have as the area of its Maritime portion about 23,000 miles, and its population 160,000.

MARITIME AREA AND POPULATION OF THE DOMINION, INCLUDING NEWFOUNDLAND.

Province.	Maritime por- tion, sq miles	Population	Tonnage.	Fish Catch in value
Quebec.....	22,000	150,000	238,946	1,608,660
Other Maritime Provinces and Newfoundland	87,186	1,065,611	974,884	17,873,957
Grand total.....	110,186	1,215,611	1,213,830	19,482,617

Which stated in words is, that the area of the Maritime Provinces of the Dominion is 10,000 square miles, or about that of Great Britain and Ireland, with a population of eleven hundred thousand, a tonnage exceeding eleven hundred thousand, and a fish catch of about twenty million dollars yearly. The phrase fish catch, 20,000,000 of dollars, implies an immense local industry on the sea, altogether distinct from that of ocean carriers, and is hereafter represented.

Work of the past Half Century.

Let us glance at the tonnage of vessels built in Nova Scotia and New Brunswick during even years:—

	Nova Scotia	New Brunswick
1868.....	31,038	24,419
1870.....	26,679	31,972
1872.....	3,659	35,598
1874.....	44,307	33,553
1876.....	52,882	36,464
1878.....	63,001	42,701
1880.....	74,769	46,063
	7) 326,335	7) 251,171
Mean.....	46,619	35,881

*This estimate, as it observed, does not include the land tonnage or fish catch of Ontario: it is essentially applied to the Maritime portion of the Dominion.

Let us also look back and see what New Brunswick was doing in the way of building ships half a century ago. Taking the years from 1825 to 1845, we have the following tonnage registered in the Province, including vessels built for owners in the United Kingdom:

Year	Reg'd. Tonnage New Vessels	Year	Reg'd. Tonnage New Vessels
1825.....	28,393	1830.....	21,013
1826.....	31,620	1831.....	27,288
1827.....	21,603	1832.....	30,007
1828.....	15,956	1833.....	45,861
1829.....	8,459	1834.....	64,101
1830.....	9,242	1835.....	57,400
1831.....	8,571	1836.....	22,840
1832.....	14,081	1837.....	41,560
1833.....	17,837	1838.....	31,543
1834.....	24,140	1839.....	23,072
1835.....	25,706		
	11) 266,092		10) 331,411
Mean.....	18,735		33,411

It thus appears that New Brunswick has built on an average the following annual amount of tonnage during the several periods named in the following table:—

From 1825 to 1835.....	18,735 tons
" 1837 to 1845.....	33,411 "
" 1838 to 1874.....	35,881 "

Average during the last half century from the above periods, 29,310 tons, or in the whole period about 1,467,000 tons of shipping, and this within the memory of people even now in the full vigor of life. The value of this tonnage may be, at the least, estimated at \$30,000,000, and it represents only a portion of our industry in the forests of this Province alone, and is an index of what we owe to them, but is it not also a suggestive finger post on the road to ultimate impoverishment, if means are not taken to conserve what remains of the fountain of our wealth.

It is worthy of note that in estimating our tonnage, there is a great difference between the statistics of tonnage registered in the Provinces and vessels built in the Provinces, the difference being latterly in favor of the tonnage built, as may be seen in the following tables:—

Year T'ge Built	T'ge Reg'd.	More Reg'd than Built	More built than Reg'd
1868... 31,038	47,672	16,634	.....
1869... 26,679	44,821	18,142	.....
1870... 33,659	41,643	10,984	.....
1871... 44,307	47,070	3,363	.....
1872... 3,652	45,784	.....	7,002
1873... 63,001	55,333	.....	7,668
1874... 74,769	57,200	.....	17,569
<i>New Brunswick.</i>			
1868... 24,419	29,353	.....	4,934
1869... 31,972	25,843	3,871	.....
1870... 35,599	31,571	.....	1,028
1871... 33,553	36,737	3,384	.....
1872... 36,304	43,654	7,350	.....
1873... 42,701	45,510	2,809	.....
1874... 42,701	40,277	.....	6,266

In Quebec the difference is always very con-

siderably in favor of the tonnage registered compared with the tonnage built.

Condition of Our Agriculture.

In strange contrast to the remarkable development of everything that pertains to the sea, is the agricultural industry of the Maritime Provinces. Yet even this is far from being unfavorable in relation to capacity or productive capability, it is rather in the direction which industry has taken which appears to render agriculture so much in the back ground. Neither Nova Scotia nor New Brunswick raise on an average more than three-quarters of a bushel of wheat per head of population, and the contrast with their great shipping, lumbering and fishery interests is very striking, and it does not I think altogether arise from an unsuitable climate, but from causes under our control.

Taking the Maritime Provinces as a whole, including Newfoundland and the estuary portion of Quebec, the relative value of the several leading industries stand thus:—

For every head of population,...	...\$20 worth of shipping
" " " "	... 20 worth of fish.
" " " "	... Sixty acres of land.
" " " "	... One bushel of wheat.

But with regard to Nova Scotia and New Brunswick it is only $\frac{1}{4}$ of a bushel of wheat per head of population, and this involves the importation of about one barrel of flour for each man, woman and child in the country.

In order to contrast the varied and far-reaching character of our industry with the industry of a leading Western State of the Union, such as Iowa or Minnesota, the following figures showing the relative production of wheat are interesting.

NOVA SCOTIA.

Popula- tion.	Wheat Bushels.	Oats Bushels.	Butter.	Cheese.	Indian Corn.
1851	270,117	297,157	1,384,437	3,613,890	652,069
1861	330,857	312,981	1,973,137	4,532,711	901,296
1871	387,800	227,497	2,190,099	7,161,807	881,853

NEW BRUNSWICK.

Popula- tion.	Wheat Bushels.	Oats Bushels.	Butter.	Cheese.	Indian Corn.
1824	74,176	.....	.....	.....	.....
1834	110,457	.....	.....	.....	.....
1840	154,000	.....	.....	.....	.....
1851	193,800	200,555	1,411,164	3,050,939	62,225
1861	252,047	279,775	2,656,833	4,591,477	218,067
1871	285,504	204,911	3,044,134	5,115,047	154,758

Production of Wheat in Iowa and Minnesota, in contrast to the Maritime Provinces.

IOWA.		Average per acre.
Year	Yield of Wheat.	
1866	14,035,520	14
1868	16,009,072	14
1872	22,080,000	12.6
1873	31,600,000	13

†Census returns.

MINNESOTA.

1870	10,011,823
1868	15,381,022
1869	17,600,467
1872	23,100,000
1873	28,056,000

But listen to the comments of the statistical published in the Report of the U. S. Commissioner of Agriculture for 1873. "Minnesota only happy when the people of Great Britain supposed to be in danger of starvation." "Minnesota, meanwhile, as crop is maturing can never ascertain whether the want will be 40,000,000 or 90,000,000 whether the home price will be 50 cents a dollar, or the ultimate result of these tence."

How much brighter is the outlook of the Maritime Provinces than is pictured in those works owing to their varied industries.

Our Maritime Industries and Resources.

Now let us see how the 'Shore folk,' the dwellers by the sea, are represented in their peculiar industry, which all European nations desire to foster to the utmost, as the foundation of their maritime strength.

NUMBER OF VESSELS, BOATS AND MEN EMPLOYED IN FISHERIES IN 1874.

Vessels.				Boats.	
Number.	Tonnage.	Value.	Men.	Number.	Value.
N. Scotia	529	20,163	756,128	4385	8923
New-Brk.	131	2,518	68,354	614	3351
Queb.c.	174	11,776	105,410	719	4952
Newfld.	1661	56,274	8,340	15,838
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Total	1895	90,731	14,053	33,004

Thus giving, exclusive of Prince Edward Island, of which no returns were available, a total fleet of 90,731 tons engaged in fishing, by 14,058 sailors and fishermen, together 33,064 boats, manned by 61,856 fishermen; grand total of men on the sea, engaged in industry of 73,475, deducting 2,439 shoremen. This is the nursery of that marine which to the Dominion of Canada such promising abroad and such power at home.

Our Coast Line

But while enumerating the area of the Maritime Provinces that important element, their coast line, where their fish most must not be omitted, nor the area of their waters and the portion of the ocean they enclose which is in a certain measure their own inheritance.

The lineal extent of sea coast, not including the indentations of the land, is thus given the census returns for 1871:

1,011,828	17	Brunswick	1,04	Stat Miles
5,381,922	17	St. Lawrence	545	"
7,000,407	17	St. John's	1,170	"
4,100,000	17	St. John's	340	"
8,050,900	17	Newfoundland	2,00	"
		Total	5,250	

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of St. Lawrence	78,000
of the Chaleur	1,923
of the Fundy	5,403
of the St. Lawrence	9,201
Total Ocean Waters	94,827

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agrate 5,480 square miles, thus bringing up the

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strength. naties, is, exclusive of Newfoundland, 9,947
square miles, and with Newfoundland about
000 square miles.

Such then is an approximate estimate of the
population and property in land and sea of the
people of the Maritime portion of the Dominion.

Now let us consider the three great industries
which have given to them the four remarkable
sources of wealth and far-reaching influence

enumerated, namely, Shipbuilding, Lumbering,
occupation of Ocean Carriers and Fishing.
It is clear to a demonstration that the three
great named industries are dependent to a very
large extent upon the wealth of our forests, for
we were deprived of these we could neither
build ships, or export lumber, or be long ocean
carriers.

The position of our Commercial Marine is un-
paralleled in history, and the only approach to
is afforded by the United Kingdoms of Nor-
way and Sweden. The area of this frugal, yet
enterprising state, is 253,000 square miles, or a
title over double that of the Maritime portion
of the Dominion. Its population is about
1,000,000, of which 7 tenths are in Sweden and
tenths in Norway. Norway with a popula-
tion of 1,800,000 has a tonnage of 1,385,843 tons,
and thus approaches the Maritime Provinces in
this standard of commercial wealth, but Norway
stands far beyond all other European countries
the proportion of untouched forest land to
each head of her population. Norway has 24
acres of forest land per head; Sweden, 8 acres;

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Russia, 4 acres; and no other country in Europe
comes nearer than six-tenths of an acre of forest
per head of population. Now the question
which we ought to be able to answer in view of
our commercial future is this—what proportion
of really valuable forest land do we possess per
head of population, so that our shipbuilding
may be continued without difficulty, and our
lumber exports brought under such control by
forest conservancy that the forests, or what is left
of them, may be utilized in such a manner as to
maintain a perennial supply.

I think these questions can be approximately
answered and in most particulars favorably to
the maintenance of those great industries which
have led to the present Maritime position of the
Dominion. But in attempting to answer them
we must fearlessly examine the results of past
widespread and apparently utter neglect of the
future which has seemingly characterized the
past history of all the Provinces with regard to
their forests. I say apparently and seemingly,
because it does not strike me that our predeces-
sors, or even those who now rule the country,
can be blamed for neglect in this particular, and
this immunity from blame arises from the cir-
cumstances of the country, from the very super-
abundance of the forest growth which has made
the Provinces what they are. Suppose we had
to begin over again with the full knowledge we
possess of the present necessity for preserving
the forests. How could the country be occupied
without removing them; how could we have ar-
rived at the position of owning a ton of shipping
for each inhabitant, and thus producing on a
grand scale a commercial condition such as his-
tory cannot parallel, if our forests had not been
almost ruthlessly invaded. We have now ship-
ping, commerce and wealth and we have paid
for them out of our forests; with wise economy
for the future, properly directed, the investment
will be immensely valuable, and we may pre-
serve a large share of our capital and improve it.
But the time has arrived, no doubt, when we
must seriously consider the questions involved
in the maintenance of that marine which springs
from our forests, in its full condition of efficiency,
for as ocean carriers we may maintain our
standing and preserve our influence, but the
conservancy of our forests is the key to this
supremacy.

Our Forest Area.

Let us endeavor to find out even approximat-
ly the present area of our forest in relation to
the entire area of the country and thus gain
premises from which we may draw rational con-
clusions.

Men.	Number.	Value.
85	8023	267,777
14	3351	109,857
19	4052	157,573
40	15,808	.....
058	33 004	61

According to the Census of 1871 the superficies of New Brunswick and its inland waters, such as Miramichi Bay, is as follows:—

Area of New Brunswick	17,486,280
From this deduct area of inland coast water (Miramichi Bay)	92,870
Area of Rivers, Lakes, Boulds and Railroads	650,000
Total	16,743,404
Deduct area of improved land	1,471,157

Leaving total area of land in natural condition, 15,272,247 Or 92 per cent of the entire land superficies of the Province still in a natural condition.

Let us now take Nova Scotia. The area of this Province, exclusive of inland waters, lakes, rivers, boulds and mill-races, is about 12,000,000 acres Area of improved land 1,027,000 "

Total land area in a natural state 10,972,990 " Or about 85 per cent. of the Land superficies in a natural condition.

But it must not be supposed that the 92 per cent. of land in a state of nature in New Brunswick, or the 85 per cent. in Nova Scotia is forest clad. We must deduct the Rocky area where no soil exists, the Rocky area where a thin but now burned-out soil exists, the barrens where a forest once grew but by repeated fires the soil has been rendered unfit for many years to come to bear forests; similarly for present estimates we must deduct the burned districts on poor land, where a new growth will be very slow, and finally we must make allowance for those terrible scourges, the conflagrations, which annually sweep through and destroy so many thousand acres of our finest forests.

I think that when these causes of present forest improvement are deducted, there will not remain more than two-thirds of the area of wild land clothed with available and growing trees, and this perhaps is too favorable an estimate. It would leave us 61 per cent. for New Brunswick and 56 per cent for Nova Scotia, but certainly not all bearing trees fit for lumbering or ship-building.

Assuming these data to be approximately correct, and the error lies probably in the estimate being too high, our forest capital compared with other countries stands thus:—

	Proportion of Forest Land to aggregate area.	Proportion of Acre of Forest Land per head of population.
Norway	66.01	24.91
Sweden	69.00	8.55
New Brunswick	61.00	27.00
Nova Scotia	56.00	9.00
† Maine	46.09	18.00
† Russia	30.90	4.28
Germany	26.58	0.66

* U. S. Census.
† Heutzsch—Authority for the European countries.

Belgium	18.52	0.180
France	16.79	0.370
Sardinia	12.20	0.224
Neples	9.43	0.138

Our forest Wealth Compared with other Countries

But in order to arrive at a result which will even approximately show the amount of forest capital, we must compare the area of population of the different countries, and present purposes it will suffice if we take four leading states, namely Norway, Sweden, New Brunswick, Nova Scotia, and compare them with Quebec, assuming the forest area of Quebec to be 60 per cent. of the entire superficies, which, it will be remembered, takes a large part of the Labrador peninsula to height of land when trees only grow in secluded valleys.

	Population.	Land Area in Acres.	Ratio of Forest Area.	Ratio of Popul. to Forest.	Tonnage.	Ratio of Forest.
New Brunswick	1,795,821	76,029,718.00	21.61	1,335,834		
Sweden	1,291,177	88,115,792.00	8.55	215,450		
N. S.	395,000	17,333,419.61	27.00	291,741		
N. B.	425,000	13,382,061.53	9.00	479,633		
Quebec	1,300,000	20,000,000.00	55.60	2,800,000		

This table, interpreted, appears to bear following meaning: Norway has 59 millions acres of forest capital, with which to build her ships, exporting lumber, and carrying on the business of ocean carriers; Sweden has 52 millions of forest capital to carry on the same business; New Brunswick has but 27 millions of forest capital; and Nova Scotia, and Quebec, but 7½ millions. Yet Nova Scotia tonnage exceeds that of Sweden, and the forest capital of New Brunswick is but a fifth part of that of Sweden or Norway.

Is it not a fair question to ask whether, under existing circumstances, and at the wonderful wood-cutting rate at which both Nova Scotia and New Brunswick are consuming their forest capital, and the present enfeebled condition of that capital, the end is not in sight, unless measures are taken to protect the forest capital and increase it?

Taking another view: The aggregate tonnage of Sweden and Norway is 1,800,000 tons; Nova Scotia and New Brunswick 770,000 tons. The forest capital of Sweden and Norway is 102,000,000 acres; of Nova Scotia and New Brunswick 77,000,000 acres.

* The water area in Norway is not deducted—(see E. Sidenbladh), secretary of the Royal Swedish Bureau of Statistics.
† Deducting water areas as stated in the census and stating the population as in 1871.
‡ Obtained by multiplying total area by per cent of forest area.

0 180
0 370
0 224
0 183

nswick, 17,250,000 acres. The ratio of ton-
s to forest capital in Sweden and Norway is
is to 57; in Nova Scotia and New Brun-
as 1 is to 22.

result which w
nt the amount of
pare the area
countries, and
ise if we take
Norway, Swed
otia, and comp
g the forest are
f the entire sup
umbered, takes i
or peninsula to
only grow in secti

orway, with her 1,795,824 people, has only
nt three quarters of a ton of shipping per
d of her population, but she has an enor-
is forest capital, and preserves it strictly.
a Scotia has over a ton of shipping per head,
a very small forest capital, and she does
erve it. New Brunswick has very nearly a
of shipping per head, and a moderate forest
ital, but she takes no steps to preserve it.
way and Sweden are old countries. A hun-
dred twenty-five years ago Sweden and Nor-
had more than three times the present pop-
on of New Brunswick and Nova Scotia, and
coal. They have an immense charcoal iron
atry, a very extensive lumber industry, and
e been a prominent maritime power for cen-
es; but they look to their forest capital with
ye to the strictest economy, regarding the
ire, and they have recently practically laid
embargo on the exportation of lumber.
at, it may well be asked, is our future to be
e continue to consume indiscriminately, with-
any attempt at conservancy? Every year
rain upon the forest becomes greater. Let
ook at the causes of consumption. Setting
e shipbuilding and lumbering—the great
dbs of the country (for it must be observed
t with the decline of shipbuilding our indus-
as ocean carriers declines also)—for our ships
the sea are equivalent to paying railroads on
d, and are earning an enormous annual rev-
e, which is too lightly thought of.

Area.
Ratio of Popul-
ation to Forest
in Acres
Tonnage.

Ratio of Forest
Tonnage

24 61	1,385,814
8 55	415,450
27 0	291,741
9 00	473,670
55 00	2,899,918

appears to bear
ay has 50 million
with which to g
g lumber, and car
n carriers; Swe
sited to carry on
uswick has but
d Nova Scotia
va Scotia tonnage
the forest capita
fifth part of the

YEARLY INCREASE IN A GROWING FOREST.
The first question we have to consider is, how
much wood grows every year upon an acre of
at the wonderful wooded land? A computation, resulting
ova Scotia and No careful observation and measurement, en-
their forest capital Mr. Fleming, the chief engineer of the
on-ition of that canda Pacific Railway, to determine that the
unless measures ual growth amounted to three quarters of a
capital and to; or, to produce a cord of wood each year
the ordinary process of tree growth, requires
and one-third acres. Hence, every mile of
road requires for fuel, replacement of cross
fencing, and the general maintenance of
rolling stock, as much wood as grows each
va Scotia and Nr on three hundred acres in order to keep up
erpetual supply; 1,000 miles of railway, con-
is not deducted—(sing wood as fuel, requires the annual growth
Royal Swedi h Bur 100,000 acres of first-class forest to keep it in
ated in the census 1871. king order; and if the fuel used be coal, it
al area by per cental require 200,000 acres to be preserved in

order to keep up a perpetual supply for cross
ties, etc.

The popular idea of the quantity of wood for
all purposes still available in Europe and Ameri-
ca is not, I think, based upon any correct data.
In "The Forester" for 1871, Europe, the United
States and the Dominion are credited with the
following acreage of forests:—

	Acres.
Dominion of Canada.....	300,000,000
United States.....	500,000,000
Europe.....	500,000,000

Let us examine this statement, for it is all-
important to us.

	Acres.
The area of the four Provinces—Ontario, Quebec, New Brunswick and Nova Scotia, after deducting inland waters, 1871.....	215,892,000
Deduct improved lands.....	17,335,818
Roads, Railroads, Rivers and lakes not included in inland waters.....	10,000,000
	<u>27,335,818</u>

Total supposed forest area..... 188,556,182

Applying to this area a proper reduction for
bare rock, burned districts, etc., say, one fourth,
considering that a vast area near the height of
land is burned over, and the soil destroyed for
many generations in that severe climate, and
there remains, in round numbers, 140,000,000,
or 35 acres of forest land to each head of popu-
lation—not much more than half the percentage
of Sweden or Norway, in the four Provinces.

It cannot be said that we may eventually
draw supplies from the Basin of Lake Winni-
peg; the quantity of lumber there will all be
required for that comparatively treeless area,
and the quantity of available timber in British
Columbia is greatly overestimated, as well as
its permanency. For all practical purposes as
affecting commerce, and making all allowances
for Ontario, we are not justified in estimating
our timber resources in the Basin of the St.
Lawrence, at more than 35 acres per head, and
with our rapid increase in population and an-
nual waste of the forest, through fires, enormous
exports and consumption, this ratio is rapidly
diminishing.

How much land do we annually deprive of
trees by our lumber exports? The answer to
this question will show how fearfully rapid our
forests are being consumed.

The following is from the census of 1871, for
the four Provinces:

	Cubic Feet.
White Pine.....	24,236,821
Red Pine.....	1,954,372
Oak.....	3,302,043
Tamarac.....	5,685,963
Birch and Maple.....	1,939,357
Elm.....	1,832,654
Black Walnut.....	117,589
Soft Walnut.....	102,981

Hickory	197,827
All other timber.....	23,299,264

In round number 65,600,000 cubic feet; or at 50 cords an acre, (equal to 6400 cubic feet to the acre,) a quantity which would be produced on 10,250 acres of first class forest land.

But to this we must add the following items, also from the census of 1871 :

	Cubic Feet.
Pine Logs	12,416,408
Other Logs.....	9,315,557
Masts, Spars.....	21,685
Lath Wood.....	3,200,000
	25,052,650

or what would grow on 3914 acres of first class forest land.

Again to this we add the cordwood for fuel, amounting to 8,713,083, or what would grow on 174,261 acres, at 50 cords to the acre.

Adding these items together—

	Acres.
White Pine, &c.....	10,250
Logs, &c.....	3,914
Cord Wood.....	174,261
Total.....	188,425

which being expressed in words, means that our consumption of the forest amounts to the absolute clearing of 188,425 acres every year for fuel and lumbering. At this rate, in 100 years, we should clear an area of forest land of the first quality, producing 50 cords an acre, larger than the entire superficies of the Province of New Brunswick, and that we do invade the forest in much greater ratio that is thus represented, is evident from the fact that every year considerably more land is cleared for farming purposes alone. We may arrive at an approximate estimate of the annual quantity of land cleared, by comparing the result of the census of 1851 with that of 1871, for the Provinces of Ontario and Quebec, and we find the average annual quantity of cleared land to be for that period, about 365,000 acres, taking as the basis of the estimate, the increase in the cultivated land; this is at the rate of 1000 acres a day.

Hence, we may infer that the average annual clearing of the forest in the Basin of the St. Lawrence portion of the Dominion, amounts from all artificial causes, to 553,000 acres, which would make a area nearly equal to that of the land superficies of New Brunswick, altogether denuded of trees in 30 years, or one generation.

It is now thirty years since the late Mr. M. H. Perley wrote an admirable treatise on the forest trees of New Brunswick, in which much valuable information was given, and hints thrown out. I do not know to what extent this information has been used, or whether it

has in the remotest degree influenced the conservancy of their forests, but the information is far penetrating, and us now with peculiar force. I shall attempt here to point out the vast importance of knowing the true meaning of 'Forest,' but it will suffice to mention that the difference is as great between an aspen and a pine, or between a forest of maple and beech, as between a forest of maple and birch, or between a forest of pine and a forest of northern spruce and stunted

Weight of a cubic foot of	Pounds]	Sp. Gr.		Heating Power.
		Sp.	Gr.	
Dried Aspen.....	26	..	..	..
Gay Oak.....	52	..	..	..
English Red Oak.....	50-54	..	..	..
N. B Red Oak.....	44	0.675	69	..
White Maple.....	38	..	..	..
Red Flowering Maple.....	44	..	..	..
Sugar Flowering Maple.....	46	0.61	60	..
Black Birch.....	45	0.65	63	..
Red Beech.....	43-53	0.672	..	..
White Ash.....	34-52	0.616	77	..
White Elm.....	33	..	..	..
White Pine.....	28	0.46	43	..
Black Spruce.....	29	..	..	..
Hemlock.....	..	0.45	..	..
Hickory.....	..	0.929	100	..

The numbers in the first column are from Perley's excellent report published in referring to New Brunswick trees. Nos. 3 and 4 are from a paper published by Charles Robb in 1859, and the authorities are Dr. Gray and Holtzapffel's *Manual of Manipulation*. The table is very interesting and intended for illustration only. Several years ago Mr. Perley called attention to the wanton destruction of certain kinds of trees in this Province. Speaking of them in general terms without describing their nature and the climate in which it grows, and its character can be deduced, is like saying a tree, in reference to shipbuilding, without stating whether it is an oak or a birch, or a pine or a soft pine, a black spruce or a

The Forests of the United States

Now let us examine into the condition of the neighbors the United States, and see what the officials state on this subject.

By reference to the Report of the Secretary of the Bureau of Agriculture, for the whole of the United States contains 10 per cent. of forest, and this estimate of Alaska, which is supposed to embrace the entire forest area.

* Perley

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pine, or between a
between a forest of
a forest of pine and
a spruce and stum

Pounds.	Sp. Gr.	Heading Power	Value of the Timber exported.
26	..	..	8,282,922
52	..	..	5,003,040
50-54	..	..	6,431,060
44	0.675	..	6,727,006
38	..	..	7,208,536
44	..	..	8,670,702
46	0.6	..	8,264,837
45	0.65	..	8,410,917
43-53	0.672	..	11,124,950
34-52	0.616
33
28	0.46
29
..	0.45
..	0.929

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port published in B
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opposed to embrace
area.

Report of the Statistician to the Commissioner of Agriculture, 1873.
United States Geographical Survey of the Territories 74, page 239—(Hayden) Prof. C. Thomas.
Ibid.

Acres.
land area of the United States includ-
Alaska..... 571,937,412
the Alaska..... 119,858,889
451,078,523
announcing the population to be 40,000,000
this area would give eleven acres for each
bitant, and is diminishing at a rate fearful
ntemperate, so that the imports from Canada
assuming a very large and rapidly increasing
nitude, as the following table exhibits.

ACTS OF TIMBER FROM THE DOMINION TO THE UNITED STATES.
Value of the Timber exported.
8,282,922
5,003,040
6,431,060
6,727,006
7,208,536
8,670,702
8,264,837
8,410,917
11,124,950
FACTORY OF THE TIMBER WEST OF THE 100TH MERIDIAN.
speaking of the forests of the far West
in the United States and also in Dominion
tory, due regard must be had to the kind of
ber now growing there, and its applicability
manufacturing purposes, and for fuel.
It may appear absurd to say that after you
enter upon the plains going West, you
not find sufficient hard wood in that portion
the United States lying between there and
Pacific Ocean to make an axle-helve?
Yet this is no exaggeration. Go into the
yon shops of San Francisco and Sacramento,
ask the workmen there to tell you where they
cure the timber for the hubs, spokes, fellios,
gates, axles, etc., and they will tell from the
st. I had supposed that here, or at least in
regon, an abundance of suitable timber for
gions, agricultural implements, etc., could be
ained, but the oak and ash is not used, as it
infit on account of its want of tenacity or
rashness." Traverse the entire Rocky Moun-
n region from Montana to the Mexican line
d this will be found true without any excep-
n. The climate is incompatible with the
duction of such wood when left to the supply
moisture nature gives."§

purposes, but this is far from being the case; even in Idaho, although in the adjoining Province of British Columbia the forests are magnificent in many parts, but there a humid region supervenes.
Fort Hall in Idaho is situated on a tributary of Snake River, in lat. 43° 8' 54, lon. 112° 6' 30, or about due South of Edmonton, and on the west side of the Rocky Mountains. Its altitude above the sea is 4,754 feet, or upwards of 4000 feet below the limit of timber on the mountain in that region. "As a general thing lumber is scarce throughout this entire region, that of value for lumber being found only in those mountains whose summits are covered with snow all or a great part of the summer, and here as elsewhere in the whole Rocky Mountains belt, when the forest is once destroyed, it is never restored. Most of the best lumber used in the buildings at the fort, as I am informed by Capt. Wilson, the polite officer in charge of the fort, was brought from Truckee, California, and most of the other sawed lumber from Corinne. About fifteen miles to the southeast some tolerably good pine and fir timber can be obtained in the mountains."

As we proceed more to the north, and attain a colder and more humid region, this destruction of timber by fire is not followed by a desert area or a plain, or necessarily a prairie, for in many parts the forest, in the form of pine, spruce, fir or aspen reasserts its supremacy.
Fires in the forests of the Rocky Mountains, within Dominion territory, have continually occurred over small areas and sometimes have been widespread and destructive, but there is the young growth now to be seen rapidly clothing the burnt district once again with forest. But avalanches and land slides are most destructive in the humid Alpine region of British Columbia, as in all humid Alpine countries, and yet these really terrible phenomena do not appear to have merited a title of the attention they demand in relation to the Canada Pacific Railway, throughout the humid regions of the Rocky Mountains.

Dominion Forest Wealth.
But what is our Dominion timber supply to be estimated at, as a whole? It is really 100,000,000 acres, as stated by the influential European authority quoted.

The sub arctic forest of coarse white spruce, birch and aspen, exclusive of the eastern shore of Lake Winnipeg, in the Basins of Lake Winnipeg and the Mackenzie, is estimated by Richard-

§Ibid, page 246.

son, to be 600 miles deep on the Canoe track or from the 50th to the 55th parallel. It follows the course of an isothermal line, and forms a forest zone across the Continent about 500 miles long. This enormous area of 300,000 miles is in the widest acceptance of the term a forest-clad country, but when we examine into the character of this vast forest, we shall find that the deductions to be made are enormous, not only on account of the poor quality of much of the timber, but also because of the existence of immense prairies, plains and barrens throughout the vast expanse. To these we must add the burned districts where, owing to the thinness of the vegetable soil, the forest once burned, is lost for many generations. Then again, we must bear in mind that the limit of perpetually frozen soil passes through this zone. This limit is roughly represented by the isothermal line of 32 degrees, which approaches in the Basin of Lake Winnipeg, much nearer the fertile valley of Red River than is generally supposed, and although trees spread their roots over the permanently frozen soil like over a rock, yet their growth is very slow on such an icy substratum, and when destroyed, it takes a very long series of years to recuperate the forest growth.

Hence, we may reject from the above area fully one-half as the extent of the available forest in the North West Territories, exclusive of the Hudson Bay slope. This gives us 150,000 square miles of forest or 96,000,000 acres.

Turning to British Columbia, we have surely there a grand forest-clad country as large as France, or the Empire of Germany. This is true in point of area, but we must remember that an immense portion of British Columbia is a "Sea of Mountains," and that the limits of trees are determined by altitude. How much of the area of British Columbia lies above 7000 feet over the sea level, I am not able to state, but it is very considerable, for we find glaciers over a considerable portion of that alpine country, and hundreds of miles apart. But where glaciers exist there is an index of climate and altitude which cannot be misunderstood, as well as of the limit of trees.

The following table shows the altitude of forest growth; or the timber line, in the Rocky Mountains. Under any circumstances, we ought not to assume that the timber-producing area of British Columbia is greater than three-fourths of its entire area, or the same as on the opposite and in part sub arctic slope of the Rocky Mountains; and I very much question whether it nearly approaches this estimate, after proper deductions are made for arid districts,

rocky districts, area above the timber line, glaciers, lakes, rivers, etc.; and it must be borne in mind that even as a glacier on the summit of a mountain tells a tale of climate, the unmistakable language of physical fact, does the growth and renewal of forests up and very snow line show the absolute necessity of humidity, without which they cannot be produced.

THE TIMBER LINE IN THE MOUNTAINS.

Locality	Latitude	Elevation
Dominion Territory.*		
Mixed Forest.....	53 to 49	5,000
Forest of Balsam Spruce (Abies balsamea).....	"	4,000
Abies Alba.....	"	7,000
Alpine Region.....	"	7,000
Montana Territory, U.S.A.		
Ridger's Peak.....	45 47	9,000
Mount Delano.....	45 42	8,781
War's Peak.....	5 30	9,156
Mount Blackmore.....	45 23	9,650
Second Canon, Madison River.....	43 00	9,775
Near Henry's Lake, Idaho.....	44 55	9,368
Cascade Range, Oregon.....	44 00	7,000
Mount Shasta, California.....	41 15	8,000
Long's Peak, Colorado.....	4 50	11,100
Peak's Peak.....	38 53	12,000
New Hampshire.		
Mount Washington.....	44 00	5,200

The Dominion forest wealth stands thus, rough approximation towards its true value and commercial character:—

	Acres of Forest Land
Basin of the St. Lawrence, including New Brunswick and Nova Scotia.	72,400,000
Total.....	129,150,000
Basin of Lake Winnipeg and the Mackenzie.	96,000,000
British Columbia.....	90,000,000
Hudson Bay Slope.....	35,000,000
Total forest area of the Dominion.....	350,150,000

This estimate, which is about one-third of the European authority before quoted, gives seventy-eight acres for each head of population, or three times more than the estimate in any country in Europe, and sometimes more than the estimated proportion of the United States.

And in relation to the ratio of the forest to the entire area, we have the following approximate result, neglecting, of course, the Arctic area north of the forest zone.

Area of the four Provinces.	
(Basin of the St. Lawrence,	215,000,000
Area of the Basin of Lake Winnipeg and Mackenzie, south of the limit of trees, ..	422,000,000
Area of British Columbia,	130,000,000
Area of Hudson Bay Slope, south of the limit of trees,	100,000,000
Total area of Dominion within the limit of the forest growth.....	867,000,000
Total forest area.....	350,150,000

* Hectar.

† United States Geological Survey, s.

...ve the timber line and it must ... as a glacier on the ... tale of climate ... of physical fact, ... newal of forests up ... absolute necess ... they cannot be ... of forest to total area, about 42 per cent.

THE TREELESS AREA.

... people have any true conception of the ... of the great treeless plains in the United ... and the North West of British America, ... valley of the Sa-katchewan. ... the aggregate the superficies of this area is ... 600,000 square miles, of which about 400, ... square miles belong to the United States, ... 92,000 square miles to the Dominion, lying ... of the 49th parallel, and in the Valley of ... askatchewan. This is the latest estimate ... r. G. M. Dawson, and is given on page 318 ... report on the British North American ... dary Commission, recently published. ... 192,000 square miles of treeless area, is a ... er area than is included within the super- ... of Ontario, Newfoundland, New Brun- ... Nova Scotia and Prince Edward Island ... ined, and this vast treeless area is all held ... n the embrace of the Valley of the Sas- ... ewan.

... the bare enumeration of so many thous- ... are miles of treeless area in our grand ... ern Dominion, affords no direct indication ... influence. Its effect on the climate of that ... valley is all powerful, and year by year, ... to fires the treeless area is increasing and ... rid plains augmenting. So influential is ... xpansion of the treeless area on the climate ... e far West, that even now and within the ... fifteen years its effects are startling, and I ... ve that the Dominion will soon suddenly ... en to the consciousness that we are suffer- ... change in our climate, that is to say in the ... lution of heat and cold and in rainfall, not ... in the far West, but in a less degree in our ... t, which cannot be measured by any ordin- ... standard of national prosperity. I think ... a great and most disastrous change is tak- ... lace with accumulating rapidity, and that ... change is due in great part to the destruc- ... of forests and swamp-grasses by fire in the ... West and with us by our forest industries ... the land.

Latitude	Elevation
53 to 49	5,000
"	4,000
"	7,000
"	7,000
45 17	9,001
45 32	8,784
5 30	9 156
45 23	9 559
45 00	9 775
44 55	9 368
44 00	7 909
41 15	8,000
4 50	11,100
38 53	12, 00
44 00	5 200

... Acres of Forest Land ... (Quebec.....724 ... Ontario...409 ... New Brunswick...109 ... Nova Scotia...73 ... 129 ... and the Macenzie, 964 ... 35 ... the Dominion...350, ... is about one-third o ... rity before quote ... es for each head o ... more than the esti ... try in Europe, and ... estimated proporti ... the ratio of the fores ... ve the following ... ecting, of course, th ... the forest zone. ... ces. ... e; Winnipeg and ... e limit of trees, ... 130, ... epe, south of the ... 100.0 ... within the limit of ... 867,4 ... 390 ... ical Surve, s.

... plicable wide-spreading and increasing desicca- ... tion.

So far as the forests of Nova Scotia and New Brunswick are concerned, and perhaps even those of Ontario and Quebec, I would venture to suggest, that as their removal very materially affects climate, and consequently agriculture, it would come within the province of the agricultural societies so widely scattered everywhere, if the attention of the members were directed to this subject, and their powerful co-operation enlisted in the collection of facts. A number of questions might be framed which if widely distributed among members would in two or three years not only accumulate much information but what is equally valuable, direct general attention to the subject. The result would be, if properly discussed, of as much importance to agriculture as to forestry, and in the end lead to great mutual benefits, and even rise to the standard of national importance.

The following extract shows how carefully the attention of foreigners if directed to the effects of the general destruction of forests :-

FOREST PROTECTION IN RUSSIA.—“The Moscow Gazette, in commenting upon a correspondence from the provinces of the Vistula, predicts that if the wholesale destruction of timber be not placed under effective limitations within the next quarter century, that finely wooded region will become an arid plain. Volhynia, in which formerly 42 per cent. of the land was forest, now contains but 25 per cent. Riga will soon lose its character as a timber-exporting point. Rianza has reduced her forest area from 35 per cent. to 20 per cent. of her surface. Other provinces show a similar tendency. These complaints are re-echoed by the other leading journals of the empire. The danger of injurious denudation of forest areas has attracted the attention of the leading agricultural societies, and the impression is gaining ground among all classes of the people that prompt action must be taken by the government to avert the injurious consequences of a general destruction of forests.”—[Monthly Report—Department of Agriculture, 1874, U. S.

RATIO OF DOMINION FOREST WEALTH.

We are now enabled to arrive at a rough approximation of our Dominion forest wealth, as compared with that of other countries; and yet in making this comparison we are liable to be deceived, for, as already stated, it is the kind of timber which gives value to the forest for very many purposes, and a very large portion of our forests will not compare favorably with those of more southern climes, especially the forests of the great western portion of the continent, where a coarse white spruce and the white birch and aspen reign supreme. But self-deception in these matters is folly now-a-days,

and, therefore, when we speak of forests, we must also think of the kind of forests we speak of.

DOMINION FOREST WEALTH COMPARED WITH OTHER COUNTRIES.

Country.	Ratio of Forest Land.	
	To entire area.	To population.
Norway.....	66	24.61
Sweden.....	60	8.55
Dominion of Canada.....	42	78.
United States, with Alaska.....	25	14
United States, without Alaska.....	23	10.1
Province of Quebec.....	50	55.
Province of Ontario.....	60	23.
Province of New Brunswick.....	61	27.
Province of Nova Scotia.....	59	9.

The capital invested, the number of hands employed in, and the total value of the products of the saw mills compared with the grist mills in the Dominion, according to the census of 1870-71 was as follows:—

	Capital invested	No of hands	Total value of products.
Flour and Grist Mills.....	\$ 9,929,898	4,992	\$39,135,919
Saw Mills.....	16,040,589	35,691	39,256,247
Agrical. Implements.....	1,104,308	2,516	2,685,393
Shipyards.....	1,084,425	6,046	4,432,262

Forests of Europe according to European Estimate.

Country.	Area occupied by Forest.	
	Ares.	Ares.
Europe.....	50,000,000	
France.....	18,000,000	
Russia.....	300,000,000	
Switzerland.....	500,000	
Norway and Sweden.....	80,000,000	
Spain and Portugal.....	6,000,000	
Netherlands.....	570,000	
Germany.....	50,000,000	
Italy.....	5,000,000	
Turkey and Greece.....	10,000,000	
Denmark.....	500,000	
Belgium.....	1,400,000	
England—Crown Land.....	40,000	
America—Dominion of Canada.....	900,000,000	
United States.....	560,000,000	

Proportion of Forest Land in Europe according to Rentzsch.

Country.	Ratio of forest to entire area.	Ratio of acres per head of population
Sweden.....	60.0	8.55
Russia.....	50.00	4.28
Germany.....	25.58	0.6638
United States.....	25.00	
Belgium.....	18.52	0.188
France.....	16.79	0.3766
Switzerland.....	15.0	0.396
Sardinia.....	12.29	0.223
Naples.....	9.43	0.138
Holland.....	7.10	0.12
Spain.....	5.52	0.231
Denmark.....	5.50	0.22
Great Britain.....	5.0	0.1
Portugal.....	4.40	0.182

The Fishing Industry of the Maritime Provinces.

In this branch of industry we stand unrivalled.

*Estimate of James Brown, Esq., LL. D.—"The Forester" 1871.

led, and in proportion to our population the area and value of our vast sea pastures, being absolutely unapproachable. I shall content myself with enumerating a few facts of importance referring to the Reports of the Commissioner of Fisheries, Mr. W. F. Whiteley; to the Inspector of Fisheries for New Brunswick and Nova Scotia, Mr. W. H. Venning, relative to the voluminous records contained in the Report of the U. S. Commissioner of Fish and Fisheries for 1872 and 1873. However, here state that there are to be found in the annual reports of the Department of Marine and Fisheries, for many years, numerous valuable papers and essays, subjects connected with our fisheries which it would be most desirable to have revised, reprinted, distributed far and wide among our people interested in the fisheries, and among the intelligent and enterprising of our practical fishermen. There are documents embracing records of the Department of the high importance in relation to that vast and profitable interest, which may become, under wise management, a perennial source of wealth to the maritime part of the Dominion. And a revision of these, supplemented with the ledger which has been accumulated during the past few years in many different countries, would be a boon to the State in any form if coupled with practical suggestions from experience, it would be seed to a soil which could not fail to yield a harvest the hundred fold.

In order to estimate the value of our fisheries we must compare them with those of other nations, and for the purposes of illustration the following will serve:—

UNITED STATES FISHERIES.	
1871.....	\$1,000,000
1872.....	1,200,000
1873.....	1,500,000
1874.....	1,800,000
1875.....	2,000,000
DOMINION FISHERIES (INCLUDING EXPORTS OF SEA-WEED).	
1870.....	\$1,000,000
1871.....	1,200,000
1872.....	1,500,000
1873.....	1,800,000
1874.....	2,000,000

These enormous sums represent approximately the value of fisheries which come under the notice of the returning officers, added to the fish consumed, the fish sold as bait, especially the Newfoundlanders, the fresh fish of which very imperfect cognizance can be taken, shall not fall far short of the mark, if we estimate the actual value of our fisheries for the purposes of trade and before

to our population the enormous sum of \$2,000,000 annually, vast sea pastures, employing 74,000 men on the coast. I shall content a fleet of 90,000 tons, and 33,000 open boats of importation. The reports of the Committee were to arrange these open boats in a file, touching one another, they would be as close as the shad. Mr. W. H. Venning, relative catch of the Provinces is thus stated in the following records oriented : -

U. S. Commission for 1872 and 1873.	1874.
New Brunswick.....	\$8,240,000
Prince Edward Island.....	6,062,391
Nova Scotia.....	2,055,793
Quebec.....	1,098,660
St. John's.....	258,863
Total.....	\$19,481,677

...sends about 9000 sailors (1874) to all our fisheries, including old and newfoundland fisheries, and although the annual commercial value does not exceed 15 20 million francs, but \$3,000,000 to \$4,000,000, yet these fisheries are regarded as of the utmost importance as necessary for seamen.—(*Revue des Douanes*)

...an illustration of the wane of great fishery hands, and although the annual commercial value does not exceed 15 20 million francs, but \$3,000,000 to \$4,000,000, yet these fisheries are regarded as of the utmost importance as necessary for seamen.—(*Revue des Douanes*)

...have decreased to a remarkable extent during the past twenty five years, so well explained in the following table:†

	Vessels and Boats.	Men and Boys.
1840.....	10,883	114,073
1850.....	15,257	68,739
1860.....	12,381	49,208
1870.....	13,758	53,073
1880.....	13,402	55,660
1890.....	9,509	49,956
1900.....	9,332	38,444
1910.....	7,914	31,311
1920.....	7,181	29,307
1930.....	6,266	26,924

...the vessels and boats are less by considerably than one half as compared with 1840, and crews have been reduced to one-fourth. This fearful and sudden falling off in a national industry and should not be contemplated by us, without enquiry as to the cause, for it may be, similar agencies are at work which might to reduce our fisheries, although I trust is not even probable.

STATES FISHERIES.

CLIPPING EXPORTS OF NEWFOUNDLAND.

THE DEVELOPMENT OF OUR FISHERIES.

...order best to develop and maintain our vast fisheries, united and concerted action throughout great marine domain of 100,000 square miles provincial waters comprised within the Gulf of St. Lawrence and the Bay of Fundy, is all important. And an equally united and concerted action over the 16,000 square miles of exclusion to the fishing ground within the three limit, is also essential.

...report of the Inspectors of Irish fisheries for 1873, before the famine.

The movements of the fish at different periods of the year, are still but little known, yet observation points to an all pervading law which appears to guide and direct them, namely temperature and barometrical pressure. It appears to be the temperature of certain currents on the coast which determines the movements of the fish at certain seasons, and the temperature of certain coastal marine areas which determine the periods of spawning.

The herring spawns earlier or later, according to the coldness of the waters, as far as is now known. The shad comes with the increase of warmth, the herring spawns with the gradual diminution of warmth.

The shad in the spring appears first in the Rivers of Florida, then in order in those of the Carolinas, New York, New England, and last of all New Brunswick. The herring begin first to spawn in the Bay of Fundy and the Gulf of St. Lawrence, and as the warmth of the coastal waters diminishes towards the fall going South, its period of spawning appears to be extended into December. But to know all facts in relation to this most valuable fish over the vast area of our fishing grounds in the Gulf, simultaneous observations with the thermometer conducted by practical fishermen all along their fishing grounds, as is done by the Dutch, is the only way of obtaining serviceable knowledge. It is upon the current of cold and warm water which circulate about our coasts that the migration of certain species of fish are supposed to be dependant, and we can only obtain the knowledge of these currents and their relation to fish migration, by the simultaneous and concerted action of practical fishermen.*

In Norway the Government causes information to be given to their fishermen by the telegraph reporting the movements of the cod and herring to their shores, so that the fishing fleets may direct their movements accordingly,† and this can be greatly facilitated and extended by communicating the intelligence to the public press.

In Newfoundland as well as on our own coasts the winter fishery is becoming a very important industry, and if telegraphic information of the approach of storms from the West could be conveyed to large fishing stations much loss arising from the destruction of nets could be avoided, and also information conveyed of a sudden change from cold weather to warm weather, like the changes which have occurred in such a

* See a note, page viii, in the Report of the United States Commissioners of Fish and Fisheries.
 † Page x (ibid).

marked degree this winter, by which the frozen fish could be preserved from destruction. Such a system prevails at Eastport, on the other side of the International boundary.

How little we know about the value of the herring fisheries may be inferred from the following information, for which I am indebted to a friend in Newfoundland.

"The herrings of Fortune Bay are of inferior quality, and are largely exported in a frozen state in the month of January, principally to New York markets, and also for bait for Cape Ann fishermen. There is also a large export of them to the French Island of St. Peters during the months of April and May, for bait for the French Bank fishery, probably 40,000 barrels are taken to St. Peters annually, not reported at the Customs, and do not appear in returns, as is also the case with Bay of Islands, Bonne and St. George's Bays. The small settlements of St. George's Bay takes yearly, in the month of May, about 30,000 barrels; Bay of Islands and Bonne Bay, in the months of November and December, about 25,000 barrels, each of large and fine quality."

And with regard to the cod fisheries he says: "Nothing will better illustrate the easy-going style prevalent here, more than the fact that those great Bank fisheries, not more than 50 or 80 miles from us, are frequented by vessels which have crossed the Atlantic or have come 800 or 1,000 miles from Maine or Massachusetts or Nova Scotia, while not one vessel can be found there to represent Newfoundland."

Recent N. S. papers notice the departure of the American fishing fleet for the Grand Banks, and also for LaHave Bank, off Nova Scotia. Already numerous vessels from Europe have arrived at St. Peters, and an immense supply of bait, supplied by Newfoundland fishermen accumulated.

COAST SIGNAL AND LIFE SAVING SERVICE.

I ought not to conclude this portion of my subject without some slight reference to the importance of a Coast Signal and Life Saving Service, in relation to our marine and fisheries. Elsewhere and referring to another subject, namely a "Baie Verte Gut," I have alluded to this all important adjunct to our Maritime prosperity, and an enumeration of the results of three and of two years experience in different parts of the coast of the United States will suffice to illustrate the good likely to result from it.

"The Life Saving Service has now been in operation under the present system three years

on the coasts of Long Island and New York and two years on the coast of Cape Cod. Statistics of disasters upon these coasts at this time are reported as follows:

Number of wrecks.....	Number of lives imperilled.....
Number of lives saved.....	Number of shipwrecked persons sheltered.....
" " lost.....	Number of days shelter afforded.....
Number of shipwrecked persons sheltered.....	Total value of property imperilled.....
Number of days shelter afforded.....	" " saved.....
Total value of property imperilled.....	" " lost.....

Almost all the disasters which occur on these coasts are from the stranding of vessels and it is against death and loss of property resulting from this class of disasters that a life-saving service, as thereon established, is needed to afford protection."

Report of the Secretary of the Treasury (S.) 1874.

Comparing this statement with the losses during 1874, without any signal or life-saving service, the contrast is remarkable. It must at the same time be observed, that details are only approximately comparable.

Owing to the absence of a life-saving service it is impossible to say how many lives and much property might have been saved. Of the casualties occurred when no life-saving service could have affected the result it is well to bear in mind that much might have been accomplished if we had possessed the most frequented portions of our coast where casualties prevail, even a modified service commensurate with our status as a Maritime power beginning at two prominent points where the results would bring the importance of the service so pointedly before the public that extension would be merely a question of time.

WHAT INDIVIDUAL PROVINCES MAY DO. The history of fish culture shows in no manner what can be done by different individuals, in replenishing the rivers with valuable fish such as the shad, &c., once abundant and an important employment, food and income to the inhabitants. The field for this kind of enterprise in the Provinces and has become an important branch to the great sea fishing industry we cultivate. But the bare fact that our sea fisheries us in an annual income of about \$20,000,000 and have increased rapidly during the

See an article in the *Monetary Times*, November 1874, on "Wrecks and Casualties to Canadian Shipping."

g Island and New d are susceptible of very much greater
 coast of Cape Cod are in themselves sufficient to demand
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 me of about \$20, following extract from the 36th protocol,
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 ities to Canadian Shippi

"The subject of the fisheries was further discussed at the Conferences on the 7th, 20th, 22nd and 25th March. The American Commissioners and stated that if the value of the inshore fisheries could be ascertained, the United States might prefer to purchase, for a sum of money, the right to enjoy, in perpetuity, the use of these inshore fisheries, in common with British fishermen, and mentioned \$1,000,000 as the sum they were prepared to offer.

"The British Commissioners replied that the offer was, they thought, wholly inadequate, and that no arrangement would be acceptable of which the admission into the United States, free of duty, of fish the produce of the British fisheries, did not form a part; adding that any arrangement for the acquisition, by purchase, of the inshore fisheries in perpetuity, was open to grave objection.

"The American Commissioner inquired whether it would be necessary to refer any arrangement for purchase to the Colonial or Provincial Parliaments.

"The British Commissioners explained that the fisheries within the limits of Maritime jurisdiction, were the property of the several British Colonies, and that it would be necessary to refer any arrangement which might affect Colonial property or rights to the Colonial or Provincial Parliaments, and that legislation would also be required on the part of the Imperial Government."

It will be observed that this acknowledgment of the exclusive property right of the several British Colonies to the inshore fisheries on their coasts was made long after Confederation had been established, and as will be shown, subsequently, this view was taken by the Nova Scotia House of Assembly on the 17th February, 1871.

PROVINCIAL RESPONSIBILITY IN RELATION TO THE FISHERIES.

It is also particularly urged by the Colonial Office that each of the Maritime Provinces should furnish every information respecting the values of their fisheries in relation to the contemplated "Fishery Commission" which has been so long delayed; and in this particular nothing can be clearer than the statement made by Mr. Odo Russell, in a despatch addressed to the Under Secretary of State for the Colonies, bearing date, "Foreign Office, Aug. 31st, 1871, or three months after the Treaty of Washington was signed:--

"I am to add that, as regards the desire expressed by the Government of Prince Edward Island that some person should be appointed

to attend the Commission at Halifax, it appears to Lord Grayville that it would not only be permissible, but highly desirable, that Prince Edward Island AND THE OTHER PROVINCES should furnish the fullest information before the Commission as to the value of the inshore fisheries ON THEIR COASTS. The 24th article of the Treaty provides that the Commissioners shall be bound to receive such oral or written testimony as either Government may present; and it will, consequently, be competent for the Government of Prince Edward Island to send to Halifax any person who may be selected as best capable of giving evidence on its behalf.

FORMER WANT OF INFORMATION WITH RESPECT TO THE FISHERIES.

By way of illustrating the manner in which our great fisheries have been dealt with, I introduce at the outset an extract from the "Correspondence between the Government of the Dominion and Imperial Government, on the subject of the fisheries, with other documents relating to the same," laid before the House of Commons, 20th Feb., 1871. Sessional papers, No. 12, 1871. Correspondence covers the years 1866 to Feb., 1871.

The first extract is from the document which is placed first in the series and styled "Minute of the Canadian Government," dated Montreal, 23rd March, 1866.

"The take of fish by Provincial fishermen, irrespective of Newfoundland now amounts annually in value to from \$4,000,000 to \$5,000,000, employing upwards of 20,000 men and boys, and providing a nursery for laudly seamen, &c."

Turning to the tables of Nova Scotian exports for 1865 and 1866 we find that they amounted in those years as follows:

1865.....	8,476,431
1866.....	3,378,700

In the years 1871, 1872, 1873, the ratio between the fish exports of Nova Scotia and the total catch credited to that province is as follows:

	Exports of Nova Scotia	Total catch.
1871.....	2,852,255	6,570,730
1872.....	3,258,578	6,016,835
1873.....	3,791,152	6,577,080

In all cases bearing the ratio of nearly 1 to 2 between "exports" and "catch."

Applying this rule to the statement of exports for the years 1865 and 1866, the total catch which ought to be credited to Nova Scotia for those years is about \$6,500,000, and yet in the minute of the Canadian Government dated 1866, the total take of fish by all the Provinces was

then estimated at from \$4,000,000 to \$5,000,000 only, which does not nearly amount to the probable catch of Nova Scotia alone during 1865 and 1866 according to the ratio which exists now between "exports" and "catch"—if that ratio possesses the value it *appears* to indicate.

Conclusion.

It seems to me that notwithstanding many apparent drawbacks, there is a promise under Providence of a bright and hopeful future for the Maritime Provinces, in spite of the growing scarcity of lumber in our forests for exportation and shipbuilding. Our climate is such that the forest recuperates itself with wonderful rapidity. Look at the vast tract destroyed by the Miramichi conflagration. We have a favorable answer there.

The condition of our coast and deep sea fisheries is abundantly satisfactory in most particulars, for with us, there is yet opportunity and space to prevent depletion, and vast accessible fields for operation so as to give time to those which have been abused to recover themselves. But these hopeful promises are altogether dependent upon a well established principle which finds best expression in *unity of action*.

Our forests must be cherished and preserved, that they may continue to support the magnificent lumbering and shipbuilding interests from which our commercial marine derives so much of its support. Our fisheries must be nurtured with every care which science and experience can suggest, that they may not only remain elastic and fruitful sources of annual income, but a grand training school for our seamen. Our industry as ocean carriers, which is dependent upon the industry of the forest and the industry of the sea to a very large extent, must be aided by every economy and every reasonable facility, which legislation can confer. But to do all this unity of action on the part of the several Maritime Provinces is absolutely essential. We have the same interest to protect and advance, the same industries to foster and encourage, the same depletion to fear and deprecate.

We have the same great ocean pastures to study, oversee and preserve, and in our forests the same strict economy to learn and pursue, in order to prevent the industries which are dependent upon them from suffering a decline. With a view to arrive at this result, which promises a bright future for the Maritime Provinces, we require a unity of purpose which can only be secured by unity of administration.

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