

NOVEMBER, 1902

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THE  
NATIONAL  
MONTHLY  
OF CANADA.

W/M/C

OUR POINT OF VIEW  
THE ECONOMIC NEED OF  
TECHNICAL EDUCATION  
THE LOGGING INDUSTRY  
THE NEW CAPE BRETON  
SCENES IN THE CANADIAN  
ALPS  
EUROPE *VERSUS* AMERICA  
THE IMPRESSIONS OF  
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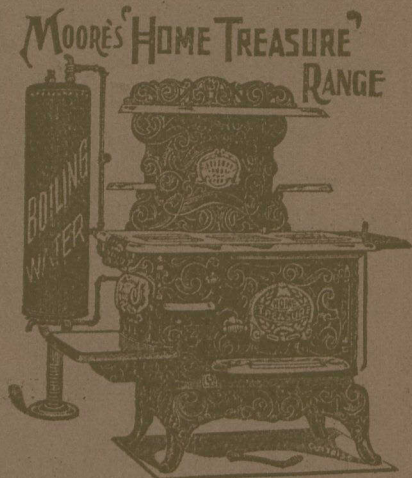
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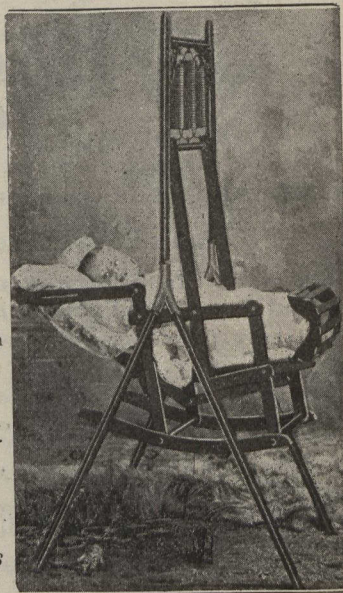
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# THE NATIONAL MONTHLY OF CANADA.

## CONTENTS FOR NOVEMBER

1902

	PAGE
OUR POINT OF VIEW—	
Is Canada Going to be a Nation? . . . . .	233
The Market at Home . . . . .	234
An Industry that Should be Fostered . . . . .	235
A Good Way to Advertise Canada . . . . .	235
The Yukon Country . . . . .	236
Shall the North Pole be Canadian . . . . .	237
President Roosevelt on Good Citizenship . . . . .	238
Progress in Europe . . . . .	238
Simple Remedies for Consumption . . . . .	239
THE ECONOMIC NEED OF TECHNICAL EDUCATION . . . . .	240
THE LOGGING INDUSTRY . . . . .	247
By J. MACDONALD OXLEY, B.A., LL.B.	
THE NEW CAPE BRETON . . . . .	257
By ARTHUR E. McFARLANE	
SCENES IN THE CANADIAN ALPS . . . . .	266
By FRANK VEIGH	
THE NEW ST. LAWRENCE MARKET . . . . .	275
"EUROPE <i>versus</i> AMERICA" . . . . .	276
By ANDREW CARNEGIE	
THE IMPRESSIONS OF JANEY CANUCK ABROAD . . . . .	293
By EMILY FERGUSON	
THE HOME . . . . .	297
By JANEY CANUCK	

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# THE NATIONAL MONTHLY OF CANADA

VOL. I

NOVEMBER, 1902

No. 5

## OUR POINT OF VIEW

### Is Canada Going to be a Nation?

CANADIANS first felt the ambition to be a nation when they began to realize the greatness of their country. Within the last five years especially this ambition has made marked progress in Canada, and the idea has gradually taken fast hold. The first step was a desire to grow. Then, as a people, we began to take a wider outlook, to be prouder of our country, and to assert our qualifications as a nation. When we thus began to look on ourselves, the rest of the world took note, and now we are recognized at home and abroad as a nation by right of our own greatness. Canada is young, but she is growing. She is not nearly as great as she will be, but still she is great. A great country should have great expectations, and this national ambition of Canada's is the inspiration which will lead to wide success and public prosperity.

We have answered the question and said that we are already a nation. In fact, however, we have only laid the foundations. Our national future, which rests largely in our own hands, lies yet before us. With, say, a five years' start, shall we let the national idea continue and be the motive force of the country's industry? To that course we have indeed committed ourselves; but to continue so certain things are necessary. National greatness

follows natural greatness, and Canada's only hope for the one lies in the development of the other. Both may, however, be artificially hampered—as, for example, by an inefficient tariff. The questions of national growth and national protection are inseparably associated, and while in the last five years we have made more progress in the national idea than in fifty years before, the national greatness of the next half-century depends largely upon the policy adopted in the five years immediately ahead of us. At least one public Minister sees this and accepts the logical conclusion. Mr. Tarte, having examined the country's resources and industries, and studied the nation's needs, declares for protection. In a speech at the recent Toronto Industrial Fair he said:

"I cannot understand those who think it better to buy in Germany or the United States instead of in Canada . . . . The question is: are we going to be a nation? If we are to be Canadians we must stand on our own basis. If we are going on spending one hundred and fifty millions annually with the United States for manufactured goods, we are not helping our own country. And we lose just so much population thereby . . . . We must grapple with affairs as they are to-day. We have in this country every raw material required to make us a great manufacturing nation—timber, iron, coal, wheat lands, and the finest waterways in the world. Tell me why we should buy from the United States, who close their doors against us, the things that we could manufacture here and sell just as cheaply as they can, if we only had a tariff that would permit us to manufacture them? And why has Canada not made more progress—as much progress as our neighbors of the United States? The United States has prospered because it has had a definite tariff and transportation policy of its own.

"Canadians have made up their minds to be British. We are not as big as the United States, but we are pretty



big. We have side by side the products of the farm and of the factory. We must carry them through our own ports and our own waterways . . . The best means of keeping the British flag flying is to build up a nation by developing our own resources, our own industries, and our own trade."

What Mr. Tarte proposes as a safeguard to national industry and commerce may best be put in his own words:

"No one is asking that the tariff be raised all along the line. My belief and the belief of the Manufacturers' Association is purely and simply that the tariff of this country should be readjusted on certain points for the greater development of our national industries and so as to create a profitable and permanent market for the agricultural classes, to give more and more work to the laboring classes, and to cultivate the trade between the different provinces and the various parts of the Empire."

On another occasion, at Chatham, on October 8, Mr. Tarte is thus reported:

"I feel keenly that on this matter there should be unanimity of opinion. It is not a party question; it is a broad national question. Some do not like the word 'protection.' Well I don't care for words; call it a self-defence tariff, if you will, provided that it is high enough."

This is what the Minister of Public Works holds as the ideal of a faithful statesman:

"When a man is a public man he cannot disregard public sentiment, but when a man resolves to become a public man he should make up his mind to deal with public questions, not in a narrow party spirit but in a broad Canadian spirit: he must try to serve his country. Therefore public men must try to harmonize their views and work together for the good of Canada as a whole."

We are right with Mr. Tarte on this question. His point of view is fair and the remedy he suggests is manifestly in the best interests of the country. What he says he says from no political motives, but as the result of what he has seen, heard, and believes. He wants Canada to become a great nation, and he recognizes protection as one of the chief means to that end. Mr. Tarte has the courage of his convictions.

### The Market at Home

WHILE efforts are being made to increase Canada's trade across seas, an annually increasing amount of our home trade is passing into the hands of another country. We are sending commercial agents to South Africa, Australia, and the West Indies, and they are

seeking to open up new channels for Canadian manufactures; at the same time the United States, with equally commendable enterprise, sends a commercial agent to Canada with a similar end in view. During the past summer an agent travelled through various parts of the Dominion, investigating and inquiring into the prospects of increasing American trade. The following is an extract from one of his reports:

"The demand for American goods is increasing in Canada. Hardware, brass goods, agricultural implements, ladies' novelties, boots, shoes, and hats are especially popular, and goods are advertised as American in order to win patronage. No license is required in Ontario for commercial men or drummers, and samples are duty-free."

Comment is hardly necessary. The question arises, however, whether Canada is doing herself justice. By all means let us increase our export trade, for therein lies the hope of a large portion of our industrial enterprises. But let us attend to our home market first. It is the best and the most important. In the long run the producer has to pay for transportation, and by saving him these heavy charges the home market provides him a better outlet for his products. The home market already exists. It is now being supplied, to a very considerable extent, from a foreign source and has been unfortunately neglected by our own people. But it is illogical and most unprofitable that we should continue to import vast quantities of manufactured wares, while it is disloyal and altogether reprehensible that we should call our home-made goods by a foreign name in order to sell them. The Americans are quite naturally desirous of holding our trade, for it is already large and is yearly increasing. But these are the things we should be making ourselves. That we are not supplying our home market from our own resources is due to two causes: the lack of adequate protection and the lack of public confidence in the "made-in-Canada" label. Canadian manufacturers can not supply



the home demand without a self-defensive tariff, and such a tariff is not only lacking now, but foreign competition is encouraged by the absence of even a drummers' license. It is manifestly unfair.

#### An Industry that Should be Fostered

CANADA'S pulp business is a case in point of an industry which would be materially strengthened by efficient protection. It is an industry for which Canada is naturally adapted. The total export of wood pulp to England and the United States in 1901 was \$1,950,000, or about 56 per cent. of the whole make of Canada. The total output was 265,000 tons, of which 40 per cent. was required for home consumption. Forty per cent. does not, however, represent all that Canada needs for her own use. Large quantities of manufactured paper are imported from the United States, to the value last year of \$1,800,000. If Canada first provided for her own necessities the percentages of reserve and export would at least be reversed. The larger the surplus then, the better. But not only does Canada export wood pulp in its semi-manufactured form, but she sends away the raw material. Last year pulpwood to the value of \$1,282,800 was imported into the United States from this country and there manufactured into pulp, Canada losing thus the benefits of an industry rightfully her own. Export of raw material is a most unwise policy for any country, and especially such a country as Canada to adopt. It is true that there are not at present enough mills in Canada to supply the demand of England alone, while the United States has the mills but a scarcity of wood. The import from Canada is therefore a natural consequence. But there is no sufficient reason why there should not be more mills in Canada and why all of the raw material should not be manufactured in our own country.

The remedy is protection. Some

approach to protective legislation has been made in the provinces of Ontario and Quebec, the former prohibiting the export of all timber cut on Crown lands and the latter reducing the stumpage duty from sixty-five to forty cents a cord when the pulpwood is manufactured in Canada. Evidently in retaliation the United States has imposed an additional duty of twenty-five and thirty-five cents a ton, the policy of that country being to foster its own industries and to meet trade restrictions imposed by other countries with the stern justice of retaliation. In the present case the natural result should be the establishment of more mills in Canada, which would more certainly follow if the Dominion Government enacted still stronger protective measures. An adequate export duty would confine the manufacture of pulp and paper to our own country and build up an industry which might easily take rank among our most important.

#### A Good Way to Advertise Canada

A PARTY of British journalists visited Canada this last summer, and toured the provinces with ready eyes and open note-books. They were not merely tourists, but were sent out by their papers to study the country and write about it when they returned home. Having thus spied out the land, their reports of it, which will be widely circulated, can hardly fail to attract attention and to make the English public more favorably acquainted with Canada, its greatness, its wealth of resource, and its all-round desirability. Such advertising is to be encouraged. Some system of attracting experts to our country and facilitating their investigations while here might well receive the attention of the authorities. Advertising is quite as necessary for a nation as for an individual tradesman.

A surprising ignorance concerning Canada and things Canadian has had its serious and its ridiculous sides. Our



climate has been outrageously maligned; our geographical distances have been greatly under-estimated; our standard of civilization has not been comprehended; while any practical knowledge of the country's resources or industrial advantages has been confined chiefly to those seaboard districts which have had commercial relations with us. Of late, however, Canada is coming to be better understood and more fully appreciated. Tourist travel has cleared away many misconceptions. So far as England is concerned, a certain measure of this improvement is due to the advertising which Canada has done for herself. The Canadian office in London, and the various exhibitions in which the Dominion has been represented, have done much to popularize Britain's premier colony with the people of England. We look for good results also from the journalists' recent visit. But Canada needs advertising in other places beside England. During the past year several German travellers have visited our country at various times, and have declared themselves quite surprised and delighted with what they have seen. The people of the United States have also learned much about us by travelling through our provinces. Unfortunately the American youth learn practically nothing about Canada in their school-geographies, and very frequently the greatness of their northern neighbor comes as a surprise in later life. Still closer home, Canada needs advertising among her own people, a great bulk of whom do not yet know their own country, nor realize its possibilities. Perhaps Canadians need to travel in Canada as much as Englishmen or Americans.

### The Yukon Country

**I**N the five years since gold was first discovered in the Yukon the total production has been \$80,000,000. The mines are still yielding plentifully, the

production this year being estimated at \$12,000,000. Coal has also been discovered, in large quantities and of good quality.

Those who are in the best position to judge of the prospects claim that Canada's most northern territory has a bright future before it. The boom, which was at its height some three years ago, has not been followed in the Yukon by a collapse such as is usual in the history of mining camps in other places. It speaks well for the integrity of the Yukon industry that it is passing through the test of after-boom days without loss or injury. Business is steadying, industrial conditions are coming to a normal level, and the people are settling down to a permanent and intelligent idea of citizenship. In boom-days none of this steadying process was possible. A considerable exodus has taken place, but it has been composed largely of classes that the country is better without. Those who stay have become permanent residents, with a pride and real interest in the country of their adoption. They have already a capital which does them credit; Dawson is rapidly becoming a model city. What was only a few years ago a barren mining camp is now even desirable as a place of residence, while its business is solidifying in a more normal and permanent form. In short, the Yukon has passed out of the rule of the adventurers and is now under good government, maintenance of order and development of industry going hand in hand. Progress thus, constant, sure, and safe, is infinitely better than the abnormal activity which obtains during a boom. It is the Canadian policy not to exploit an industry merely for its immediate returns but to make it the centre and support of its country, colonization following in the track of industrial development.

About two-thirds of the Yukon trade is in the hands of Canadians. Heretofore Canadian manufacturers and tradesmen have unwisely allowed a large volume of



business to pass into the hands of more enterprising Americans, and early shipments of inferior goods brought Canadian manufactures into disrepute. Gradually, however, the trade is changing into Canadian channels. The Yukon demands the best, and our manufactures should do themselves justice. And why should they not secure that remaining one-third of the Yukon trade?

### Shall the North Pole be Canadian?

TWO Polar expeditions came to a close this fall, and both were failures so far as finding the Pole was concerned. Explorer Baldwin established a large number of food depots, in readiness for another expedition next year, and made some important marine collections. He did not, however, make any real advance in polar discovery. Lieutenant Peary accomplished more, but still failed. He reached a latitude of eighty-four degrees, seventeen minutes, or in other words, he was within three hundred and sixty miles of the Pole. He rounded the northern limit of Greenland, probably the most northerly land in the world. He found the relics of the ill-fated Greeley expedition and brought back valuable collections of specimens and scientific data. He turned back because the polar pack became impassable.

It is possible that the Union Jack will be the first flag at the North Pole and that a Canadian will put it there. One of the earliest expeditions, the Greeley, was made up of Canadians, under Canadian auspices, and now there is another project on foot by which a native explorer hopes to win the coveted honor for his country. Captain Bernier, a French-Canadian, is now raising funds for a new expedition, the cost of which will be \$120,000. The Dominion Government will contribute half that amount, and the Ontario Government has promised \$15,000; the balance is being contributed privately. As soon as the funds are in

hand the work of building a ship will be begun. Captain Bernier's plans are novel and original. Peary, Baldwin, Nansen, Abruzzi, Greeley have all sought entrance to the Polar Sea by way of Greenland, while Captain Bernier will go by the Behring Sea. He claims this to be the more scientific route and more likely of success. He will sail as far north as he can, and then, taking up a good position, he will drift with the ice pack for two years and a half. At the end of that time he expects to be within one hundred and fifty miles of the Pole. At that point he will leave the ship and 'staff' the ice north to the Pole, leaving condensed provisions at half-mile intervals along the way. These caches will also serve as guideposts on the return to the ship, which will continue drifting to the southeast, coming out some eighteen months later between Greenland and Spitzbergen. In this way the action of nature will be taken direct advantage of, instead of opposing it.

Captain Bernier will use the wireless telegraph system on his expedition. He will carry instruments in full sympathy with a receiver at Dawson, and communication will thus be maintained regularly with the outside world. A telegraph message from the Pole will be a distinct achievement.

The discovery of the North Pole will not be of any material importance; it will never give financial returns. But measured in scientific terms, it will be of great significance. The Pole is now the only great geographical discovery that remains to be made. The indomitable energy of man has conquered all other seas and lands, but the Pole has hitherto conquered man. The game will not be given up, however. Some one will yet triumph and the great discovery will be made. It will be a distinction for Canada if this triumph shall be under her auspices and won by her sons. The North Pole is rightfully Canadian territory.



### President Roosevelt on Good Citizenship

PLAIN and forceful words on the duties of good citizenship were spoken by President Roosevelt in a public address at Boston on August 25. Without a reservation, they are just as applicable to Canadians as to Americans, and the kind of men that would be thus produced are just as much needed in Canada as in the United States. Therefore we may fittingly quote a portion of his speech:

I care not how good its laws; I care not in what marvellous mechanism its constitution may be embodied; back of the law, back of the administration, back of our system of government, lies the average manhood of our people. In the long run we are going to go up or down according as the average standard of our citizenship does or does not wax in growth and grace.

Now, when we come to the question of good citizenship, the first requisite is that the man shall do the homely, every-day, humdrum duties well. A man is not a good citizen, I do not care how lofty his thoughts are about citizenship in the abstract, if in the concrete his actions do not bear them out; and it does not make much difference how high his aspirations for mankind at large are, if he does not behave well in his own family these aspirations are not going to bear very visible fruit. He has got to be a good bread-winner; he has got to take care of his wife and children; he has got to be a neighbor whom his neighbors can trust; he has got to act squarely in his business relations. In fact, he has got to do all those every-day, ordinary things first or he is not a good citizen.

But he must do more than that. In this country the average citizen has got to devote a good deal of thought and time to the affairs of the state as a whole, or those affairs are going to go backward. That time must be devoted steadily and intelligently. If there is any one quality which is not admirable, whether in a nation or in an individual, it is hysteresis. The man or woman who makes up for ten days' indifference to duty by an eleventh day's morbid repentance about that indifference is of very scant use in the world. Now in the same way it is of no possible use to decline to go through all the ordinary duties of citizenship for a long space of time and then suddenly get up and feel angry about something or somebody, and demand reform as if it were a concrete substance and could be handed out forthwith.

### Progress in Europe

PROGRESS toward international arbitration has been made by the first regular sitting of The Hague Conference, in September. The first case tried by this tribunal came from the United States, and concerned the adjustment of certain financial troubles of long standing between California and Mexico.

The cause of the contention was an old mission, originally started by the Spanish, and the question at issue is known as the "Pious Fund" case. It has no important international interest in itself, but is none the less significant as the crowning of a plan that has long been the dream of lovers of peace. Although The Hague Tribunal begins with minor cases, a definite progress has been made in the world's peace, and more important matters may follow.

In England the chief interest is political. The Education Bill is the centre of public concern and continues to awaken high feeling. It is thought, however, that it is being made use of merely as the most available weapon by those whose ambition it is to worry and eventually upset the Government. The whole difficulty is one which could not possibly occur in this country, but is characteristic of English customs and temperaments. Mr. Balfour is happily surprising his critics by proving more alert and vigorous than was expected of him. He has apparently thrown off the role of dilettante and has taken up his work as a leader in sober earnest.

The great schemer of Europe is Russia. It is seldom that she is not planning something, or doing something, and keeping it quietly to herself as long as she can. Her plans leak out, however, and then it becomes apparent how gigantic her ambition is. It is reported that she is now building a secret strategic railway from the Siberian line through Mongolia to Peking, while it is certain that she is contemplating an immense undertaking in the form of a railway connecting the Arctic with the Persian Gulf. These railway schemes are not, however, taken seriously by the other powers; but that Russia has designs upon the Mediterranean is a fact that comes home more closely and especially concerns England. The Russian ambitions in the far East have,



for the time being at least, been checked by the Anglo-Japanese alliance, and Russia now turns her attention to the eastern Mediterranean, where she is seeking to persuade Turkey to accept Russian protection and virtual control. It does not seem to be England's purpose to thwart this move on the part of Russia. The English press looks on it as a necessary safety valve for Russian energy, which had better let out in the Levant than explode in India. England cannot monopolize the Mediterranean and she already is dominant. It is altogether likely, therefore, that Russia will soon be one of the powers represented on the Great Sea.

A step backward, which may lead to a step forward, is the attitude which Roumania is adopting toward the unfortunate Jews. Her laws against the Hebrews are so strict that large numbers of them have been compelled to emigrate to America, and Secretary Hay has sent a note to the powers asking that they intervene in behalf of humanity and secure better treatment for the poor Jew. The interest of the United States in the matter is due partly to the fact that Roumania's persecutions are causing an undesirable class of immigrants to come to America, and self-interest thus co-operates with humanitarianism to invite the attention of the European powers.

#### Simple Remedies for Consumption

CONSIDERABLE attention is being given in Canada to the treatment of tuberculosis and much progress has been made in the way of sanitariums, etc.

A prominent American physician declares that the main features of the successful treatment of this dread disease are outdoor life, plenty of pure air, good food, and absolute rest in extreme cases. He names a list of things which a consumptive must and must not do if he hopes to recover. He must:

Get at least an hour's exercise in the fresh air every day.

Sleep with bedroom windows open.

Form a habit of deep breathing whenever he is in the open air.

Avoid stooping and contracting the chest while bending over work.

Open the windows of his office or workshop several times a day.

Wear light weight woollen garments next to the skin.

Eat as much fatty substances as possible.

Drink all the cream he can afford, and plenty of water, especially just before going to bed.

A consumptive must not:

Do anything which suppresses the breathing.

Wear tight, heavy clothing.

Sleep in same garments worn during the day.

Eat scorbutic foods, salt meat, pickles, cheese and spices.

Drink alcoholic liquor or smoke tobacco.

These simple remedies, the consumptive's table of commandments, are not too simple to be worth the trying. They have the advantage of being easily available and will undoubtedly in average cases give a considerable lease of life to weakened men and women.



# THE ECONOMIC NEED OF TECHNICAL EDUCATION\*

## The Incessant Demand for the Technically Trained Man.

THE day of the untrained man is past; the day of the technically trained man is here. At no time have the untrained, the unfit, the poorly prepared been so ruthlessly weeded out of the professions, the arts, the trades and business callings as they are to-day. The incessant demand, heard by him who has "his ear on the ground," is for young men in the vigor of manhood, whose eyes ears and hands, as well as minds, are trained to do the work demanded in modern industrial pursuits.

Those who stand midway between the active industrial workers on the one hand and the oncoming groups of young men on the other, like the administrative officers and professors of our technical schools are able to take a broader and more comprehensive view of the field of supply and demand than most others.

## The Manual Training of the Future.

The pedagogical reason for the existence of manual training in a school curriculum is identical with the reason for the existence of drawing, singing, number-work, science-work or reading—no more and no less. To be perfectly fair and impartial, then, it must be admitted that the term "Manual Training School" is as erroneous as "Mathematical Training School," "Science Training School," or "English Training School." The names primary, grammar and high school are quite sufficient, for in each school mathematics, English, science and manual training should enter as co-ordinate subjects. Manual training should no more give name to a secondary school than philosophy should be the describing feature

of a university. Rather should shopwork, science and hand manipulation be an integral part of the curriculum of all grades of schoolwork, from the kindergarten up. The simple handwork of the kindergarten, the science-work of the primary school, sewing and cookery for girls and carpentry for boys in the grammar grades, are all movements in this direction.

The manual training of the future, and the very near future, will be handwork of some kind adapted to the ability of the student, whatever may be his stage of advancement. *Manual training will then lose the distinctive feature it now holds as an adjunct to a high-school course, and become one means of education applicable to all grades of instruction.*

## The Proper Point of View.

Most, if not all, recent improvements in educational methods in this country, have been purely academic or philosophic; they have been evolved by musing in the library, or perhaps from classroom experience; but none of them have resulted from a close acquaintance with the real conditions of the industrial and business warfare into which the student enters when he leaves the school. The so-called "systematical development" given to young people is but a twentieth-century way of training a "jack-of-all-trades."

The one thing needful will not come from teachers' conferences, nor county institutes, nor the August meetings of school superintendents, for the attendants at these assemblages have not, and can not get from their experience, the proper point of view. The great majority of the public-school teachers are women whose environment has been limited by the home, the school and some social

\* Paper by Victor C. Alderson, Dean of Armour Institute of Technology, Chicago, read before the Western Society of Engineers, and published in the Journal of the Society, June, 1902.



functions. The number of men engaged in teaching who have done serious practical work outside of the schoolroom is small. The academic circle which they tread reminds one of the Illinois farmer whose circle of experience was to raise more corn to feed more hogs, to buy more land—to raise more corn to feed more hogs, to buy more land—*ad infinitum*.

Educators of to-day should break out of the circle in which they are travelling and look at matters from a new point of view. This should be from the vantage ground of the factory, the workshop, the railroad or the counting-room; it should be industrial and commercial rather than academic. The practical needs of everyday workers should be considered, after a scientific study of conditions at present existing. There should be no prejudgment by the social or educational philosopher who knows not the difference between a "shaper" and a "milling machine," and evolves theories of what ought to be, but never is.

Industrial life in its relation to national growth and prosperity, in its influence on international competition, and in its demands upon educators, offers interesting fields of investigation. *This change of view from the speculative and philosophic to the practical and industrial will result in many desirable changes for the betterment of our system of education.* Hitherto the speculative element has been supreme; the time has come for this influence to be tempered by the introduction of more rational and scientific views.

### **This is the Age of Technical Education.**

With advancing civilization, with the luxuries of yesterday becoming conveniences to-day and necessities tomorrow; with our products going to far-away lands in competition with local goods, with competition becoming sharper day by day, with the margin of profit becoming steadily narrower, it is found

necessary to seek new lines of economy. In the accurate application of the laws of science, an almost limitless field is open. Mere practice, no matter how long continued, can not long avail against theory followed by intelligent application. A stupid fireman can burn up the profits of his establishment by ignorant firing; an engineman was recently discovered running an engine for no other purpose than to get exhaust steam to heat his building. He was a "practical man of long experience." A soap manufacturer who had depended upon the "knack" of one workman for many years, nearly went into bankruptcy when the man died, for no one else seemed to have the requisite "knack;" but the employment of a trained chemist without the "knack" regained for him his lost business. A large railroad company recently saved more than half a million dollars in six months by equipping a laboratory in connection with its machine shops and putting in charge a technically trained man—one who could unite theory with common sense.

*Day by day the demands for scientific and technical training become more and more emphatic.* The present age has truly been called the age of science, but with this designation the story is only half told. *Pure science to be of the greatest value must be applied.* The application of science to industry has made this the age of technical education; it has changed many of the conditions of life and has given rise to new problems, the solution of which depends in a high degree upon men who have received a technical education.

### **Technical Training Covers a Broad Field.**

Technical training in its broadest significance, should be made to include professional schools, as of law, medicine, theology, engineering, dentistry, pharmacy, the special research work of universities, as well as the more modest



schools for the textile industries, the mechanic arts or domestic science. Although professional training may, in this broad sense, be termed technical, yet for the present purpose it will be best to limit its significance and apply it only to the arts and crafts. A dozen years ago the introduction of manual training was always preceded by a spirited controversy; to-day its value is generally conceded and its introduction is becoming fairly common. Not only is it incorporated into the high-school curriculum, but it is fast going where it especially belongs—into the graded schools, as an organic part of educational training. In another dozen years the necessity for advocating manual training will probably have ceased. What new features will be advanced to take its place? What new element in educational progress will be demanding recognition? In all probability it will be secondary technical education. Leaving out of consideration the two extremes—unskilled labor at the foot of the educational ladder and those professions at the top, which demand a preliminary college training—there are many vocations in the middle ground for which a technical training is necessary. This broad field has been cultivated very little in this country. England, France, Holland, Belgium, Germany, Austria, and Switzerland have all done more than we have, and it may not come amiss to examine the system of technical education in one of these countries.

#### What has Been Done by a Small Country —Switzerland.

Switzerland is best known to Americans as a region of mountain scenery, but it is an object lesson for us in a manner not yet fully recognized. The natural conditions under which the Swiss people have struggled for the past six hundred years have been so burdensome, and their industrial success so pronounced, that Switzerland is to-day the best of the

European countries in which to study the close relation which exists between the technical education of the masses of the people and national industrial prosperity.

There are fewer people in all Switzerland than in Greater New York; the largest city, Zurich, contains only 150,000 persons; the area of the country equals the combined area of but three of our smallest States, Massachusetts, Connecticut and Rhode Island; of this area twenty-nine per cent. is utterly unproductive even for the frugal Swiss; twenty-one per cent. is forest; twenty-five per cent. is meadow and grazing land; thirteen per cent. is under fruit; twelve per cent. is under crops and gardens; the country has no seaport, no navigable river and no lake of commercial size; she has little or no natural wealth; she must import her raw materials, work them up into salable form and export them; lines of transportation are expensive and rates high; the amount of fertile soil is meager, and would scarcely make a respectable-sized western ranch.

In the United States we have been allowed to blunder at will, to be improvident and wasteful; we cut down our forests with reckless disregard for the future. Twenty-six years ago Switzerland enacted a law that her forest area should never be reduced; and since that time for every tree that has been cut down another has been planted. Forced by almost cruel natural limitations to rigid economy, both of material and labor, required to solve the problem of industrial success under exacting requirements, Switzerland has given us a solution which it behooves us to examine with considerable care. *That solution is the careful, systematic education of each citizen, be his station in life high or low, so that his efforts will be efficient enough to meet competition in similar lines of work the world over.*

Like the United States, Switzerland has no national school system. The constitution of the federation allows the



federal government to establish a polytechnicum, a federal university and other institutions of higher instruction or to subsidize such local schools as may be selected. Provision for elementary instruction must be made by the several cantons, but the federal government in most cases subsidizes these cantonal schools. There is no federal university, but six cantonal universities exist at Basel (founded in 1460), Zurich (1835), Berne (1834), Geneva (1873), Fribourg (1889) and Lausanne (1891).

### The Three Grades of Technical Schools.

#### 1. THE POLYTECHNICUM.

The polytechnicum at Zurich (founded in 1854) is supported entirely by the federal government. The school covers the higher scientific and technical fields in a most thorough manner. For accuracy of instruction, completeness of equipment and high professional standard, it is the peer of any technical school in Europe. It has the proud distinction of having more of its graduates holding positions of responsibility and of attracting more foreign students than any other continental technical school. With a most complete cement-testing laboratory; a mechanical laboratory, covering every possible demand that can be made upon it; with a department of electricity equipped regardless of expense; with extensive departments of chemistry, forestry and agriculture; with a new department devoted to the testing of building material alone, it is evident that the federal government has provided liberally for the most advanced instruction in technical lines. *There seems to be no fear in the minds of the Swiss that a man can be too scientific, or that too deep a study of the scientific basis of industrial questions is possible.*

#### 2. THE TECHNICAL SCHOOL.

Next below the Zurich Polytechnicum are three technical, or technical schools, offering less theory and more practice,

and relating their work more closely to the trades, and industries. One is located at Bienne; the second, at Winterthur, is noted all over Europe for the thoroughness of its instruction and the success of its graduates; the third is at Burgdorf, where Pestalozzi taught his first school and where Froebel at one time was developing his philosophy of education. This group of technical schools gives scientific character to the entire Swiss system of technical education.

#### 3. THE TRADE AND INDUSTRIAL SCHOOL.

The trade and industrial schools, to be carefully distinguished from the group first described, have been established to teach the homely trades, and are a conspicuous feature in the educational and industrial life of Switzerland. They are found in every canton, and are intended to make the local industries more successful. Some cantons with a population not over 300,000 have as many as a hundred of these schools, enrolling more than 3,000 students.

#### Schools of Watchmaking.

The watchmaking schools have had a long existence, the Geneva school beginning as early as 1770 with the desire of a journeyman watchmaker, Luois Fargare, to learn more of his trade than the ordinary school instruction provided. Besides the school of watchmaking at Geneva, which has a worldwide reputation, and has contributed largely to the success of the Swiss watches, other schools exist at Locle, La Chaux de Fonds, Neuchatel, Fleurier, Solothurn, Bienne, Porrentruy and St. Imier. In these schools the course covers from three to five years; the age limit is thirteen or fourteen years; vacations are few and brief. At Locle the school is open every day in the year except Sundays and holidays. At Neuchatel three weeks' vacation is allowed in summer. The tuition is invariably higher for foreigners than for natives. At Fleurier the charge is



\$1.93 per month for natives and \$4.83 per month for foreigners. The pupil on entering one of these schools enters into a contract of apprenticeship with the school authorities. At St. Imier a contract must be signed by the parents or guardian. At Porrentruy the pupils are on probation for the first three months and may be dismissed if found unfitted for the work. At Solothurn pupils must pass a theoretical examination and afterward a practical test before entering fully upon their apprenticeship. If they leave before the expiration of their contract, a fine of not more than \$1.93 per month may be exacted for the unexpired term. The amount of practical work is greatly in excess of the theoretical. At La Chaux de Fonds theoretical instruction is given for only ten hours per week in the first year, twelve hours per week in each of the second and third years, eight hours per week in the fourth and only seven in the fifth year. All the rest of the time is given to practical work. The object of these schools is primarily to give instruction in every detail of the art of watch-making. *How well they have succeeded all the world knows; but it is not so well known that these schools have converted regions naturally fit for nothing but growing pine trees into important industrial centers.*

#### School of Metal-Working.

In 1888 a school of metal-working was established at Winterthur, as a part of the Industrial Museum, under federal control. The object was to educate skilled workmen for the various branches of fine metalwork. Attendance is in the form of apprenticeship; the course three years in length, and the age limit fifteen years.

#### School of Wood-Carving.

At Brienz, the present center of the wood-carving industry, a school of wood-carving was organized in 1883, under

municipal control. Tuition is gratuitous, but a contract of apprenticeship is required. This school has a fully organized faculty; instruction covers not only the art of wood-carving, but the distinctive characteristics of the different woods and the manufacture of all needed tools. Not only are the usual styles of carving studied, but special attention is given to the plants and animals peculiar to the Alpine region, as every tourist in that country knows.

#### Schools of Straw-Plaiting.

No better illustration of the value of technical education can be found than in the straw-plaiting schools like that at Wattwyl. These had a very humble origin, and were established to teach the people in the poorer regions of the sub-Alpine districts a useful occupation. The result has been to create a new industry and to convert regions naturally poor into flourishing industrial centers.

#### Schools of Shoemaking.

There are also shoemakers' schools, with a peripatetic staff of instructors who give short courses wherever classes can be formed. They also issue publications to the trade, dealing with subjects of technical interest, as the structure of the human foot or the reasons of the military authorities for the specifications relating to the contracts for boots and shoes for the army.

#### School of Silk-Weaving.

Somewhat different in plan is the school of silk-weaving at Wipkingen, near Zurich, which is owned by the Association of Silk Manufacturers of Zurich. Only a few of the graduates of this school are ordinary weavers; most of them hold superior positions, as proprietors, superintendents or master weavers. The School for Carpenters and Shoemakers, founded at Berne in 1888



by municipal authority, but aided by cantonal and federal grants, is peculiarly interesting. Instruction is gratuitous; hours of instruction are from 7 a.m. to 6 p.m., with a free dinner at noon. *The object of the school as published is distinctly utilitarian, namely, to teach thoroughly a trade, to investigate the latest improvements in the trade and to meet the increasing competition of foreign labor by putting domestic labor on a high plane of efficiency.*

### Schools for Women.

*The needs of women are by no means neglected.* A private school of ladies' tailoring and needlework, with a three years' course at Zurich; a trade school at Berne, teaching plain sewing, ladies' tailoring, embroidery, ironing, cookery, housekeeping, mending and making children's garments; a housekeeping school at Worb which is self-supporting and has more applications than vacancies; a housekeeping school at Buchs, with a three months' course, popular with young ladies about to be married; a trade school at Basel, which has enrolled nearly three thousand pupils since its organization in 1879; a school of art and needlework at Zurich, with a curriculum of such artistic, educational and scientific merit as to make it a model for other schools; schools at Berne and Lenzburg to supply the demand for trained and competent household servants. *All these emphasize the necessity for giving women, as well as men, a technical training.*

### Industrial Art Schools.

Schools for Embroidery, Designing, Bookbinding, Basket-braiding, Stonecutting, Fruit Growers and Gardeners, Agriculture, Horticulture, Dairying and Commercial.

Industrial art schools exist at Geneva and Zurich. The one at Geneva is the oldest in Switzerland, founded in 1751, and is attended chiefly by persons already

employed, but wish to devote their spare time to improving themselves in the artistic side of their work.

At St. Gallen, the center of the lace industry, a special school devotes its attention to embroidery and designing. In Zurich alone there are seven schools for woodwork; in Fribourg, schools for bookbinding, basket-braiding and stonecutting; in Bienne, a school for railroading; at Waedenschwyl, a school for fruit growers and gardeners; at Zurich, Berne and Neuenburg, schools for theoretical and practical agriculture; at Geneva a school for horticulture; at Sursee, Brugg and Lausanne, winter agricultural schools; at Ruti, Fribourg and Lausanne, dairy and cheesemaking schools; at Geneva, Neuenberg, La Chaux de Fonds, Berne and Winterthur, commercial schools. In addition to the already extensive list must be added a large number of institutions designed for the instruction of the humblest members of the working classes. The first of these, a drawing school for apprentices, is now nearly a hundred years old. Between 1820 and 1830 three others were established at Aarau, Baden and Zug; between 1840 and 1850 nine were organized, and between 1850 and 1865 seventy-eight more. Since that time their number has increased with great rapidity, and now reaches into the thousands, while the attendance reaches tens of thousands. Sessions are held evenings and Sundays. The original idea of teaching drawing has been maintained in many, but in others distinct industrial courses in cabinetmaking, tailoring, upholstering and other trades have been introduced.

Swiss education is the result of no single philosophy, no one method, no selfish utilitarian object; it has not been dominated by social reformers nor by mere theorists; it is a composite type, the result of many conflicting views and necessities. Throughout the entire system can be seen, however, an attempt to solve the problem of the relation be-



tween education and industrial prosperity. This point of view is the one thing needful in developing our own system of technical education, and the one idea which we can best borrow from the Swiss. With them no valuable feature, either cultural or technical, is ignored. Each branch of knowledge is prized according to its value as discipline or as a distinct aid in professional or industrial pursuits. *Their object is not only to train men and women for their vocations, but to build up new industries or at least to extend and strengthen those already established.* They have even enriched the humblest callings with many applications of art, skill or science; they have expended money liberally upon every form of technical education which would increase the workingman's efficiency; they have transformed regions naturally poor and barren into thriving communities; they have entered freely into international competition, and have made the world their marketplace; they have shown that technical education is an economic necessity, worth many times its cost. *The commercial and industrial success of Switzerland, achieved in the face of great natural obstacles, shows conclusively that the surest foundation for industrial prosperity lies in a complete and thorough-going system of technical education.*

Technical education is one of the greatest needs of an enlightened democracy and should not be left to private enterprise. With state normal schools where young men and women can be trained for teaching, with State universities furnishing instruction in agriculture, dairying and stock-raising, besides training engineers and librarians—technical education supplied at State or national expense—it is evident that we are irretrievably committed to the policy of providing technical education at public expense. If the farmer's son can secure at the State university free instruction in scientific agriculture, what good reason is there

for depriving the son of a mechanic from securing free instruction in engineering practice, machine-tool work or any other industrial calling at the city technical high school? The answer of the schoolmaster that the public schools are intended not to teach trades, but to develop character, citizenship and general culture, is totally unsatisfactory. *We must remember that in order to become a good citizen a man must first secure a livelihood by honest toil; that whatever conduces to greater industrial efficiency in the individual increases the national prosperity and indirectly improves citizenship. Technical education does this.* Furthermore, if it is proper to train civil engineers, stock-raisers, butter and cheese makers, librarians and the teachers themselves at public expense, why should machinists, enginemen, carpenters, plumbers and house painters be excluded? No cleavage line can be drawn. If technical education is a good thing for one class, it is equally good for others. Hitherto the ranks of such workers have been supplied by the influx of foreigners trained abroad, aided to some slight extent by apprentices from selected industries. But we should not, as a nation, depend upon any such uncertain supply. We should follow the example of Switzerland and, recognizing the dependence of national prosperity upon technical education, set about the task of providing an education for all classes of workers suited to their lives. The technical high school, if properly equipped and put in close relationship with the trades and industries, will satisfy this national need; it will not be a copy of the European trade school, but rather an adaptation of the trade school which will be in harmony with American thought and American educational ideals.

Industrial warfare is not a new idea, but its sociological effect in giving impetus to technical education during recent years is noteworthy. We are familiar with martial warfare. Our newspapers



for the past few years have been teeming with reports of battles, of warfare, of disease and death as the concomitants of war; we have been called upon to pay homage to the prowess which has conquered our enemies on land and sea; we are playing the part of hero-worshippers as we have not done since the Civil War. But in the midst of all this clamor there has been going on, largely unknown and unnoticed, the most bitter, the most relentless war in the history of the world; a war not for territory, not for naval nor military glory, but for wealth, for industrial supremacy, a contest of brain with brain, skill with skill, economy with economy, technical training with technical training. It is only another example of the "struggle for existence." The war in South Africa or the Philippines is less

fatal to the workingman than the ceaseless competition of similar workingmen in other countries. It is this unremitting rivalry between workers of the same class the world over that makes the cultivation of the workingman's powers by means of technical education an absolute necessity. *That nation that neglects to equip its workmen with the armament of industry—technical education—will surely be defeated and become a decaying nation.* These workers should receive immediate and thoughtful attention for they are the bone and sinew of successful national and industrial life. That they should be technically trained through the medium of the technical high school is at the present time the greatest economic need of the American people.

## THE LOGGING INDUSTRY

By J. MACDONALD OXLEY, B.A., LL.B.

ONE fresh from the perusal of the fascinating pages of Parkman might well be pardoned for thinking that the fur-traders and the voyageurs were the pioneers of civilization in Canada.

This, however, would hardly be a correct conclusion. The gay and reckless seekers after profitable peltry were indeed the first to plunge into the vast wilderness, and to brave the perils and privations of traversing its mysterious depths, where the red man and the beast of prey lay in ambush. But they left no abiding impress upon it. Their tortuous trails never grew into highways, nor their scattered camping-places into cities. They were at best mere wayfarers, the marks of whose presence vanished utterly soon after their activities ceased.

Not so was it with the lumbermen. They were the true pioneers to whom the

opening up of the country is really due. Beginning by clearing the land along the banks of the larger rivers they proceeded to follow up every tributary stream that could float, or be made to float a log until they had penetrated far into the forest wilds, hewing out and laying down roads, bridging and damming rivers, establishing depots which in due course developed into villages and towns, and withal contributing largely to the revenue of the country.

The lumbermen were the first and best customers of the farmers in the newly settled districts. Indeed, in very many cases they provided the farmers in the following way. The immigrant on arrival usually possessed little or no capital, but he could at once find regular and remunerative employment in the service of some lumberman. A few seasons steady work afforded him the means of buying land, while it also gave him the knowledge of





THE OFFICE

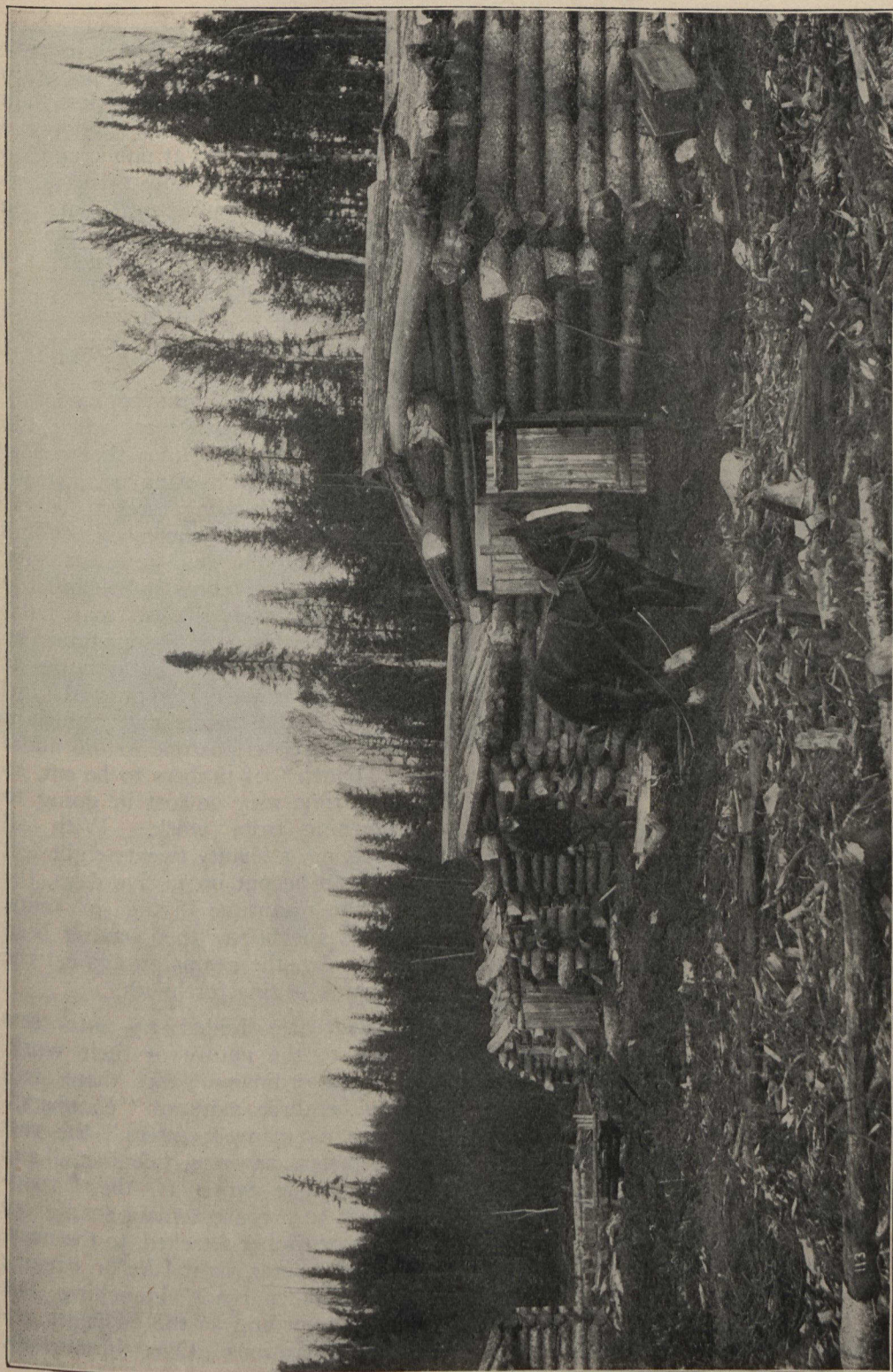
the country and the ability to shift for himself, so essential to a new settler. Hence he was enabled to select a good location, and to put up his own buildings on it. When he had raised his first crops of wheat, oats, vegetables, etc., he found a ready market near at hand among the lumbermen. When he could afford to purchase a team of horses, after working them on his farm all summer, there was remunerative employment for both them and himself in the lumber camp during the winter. Such in brief is the history of many a prosperous pioneer farmer in Canada.

The development of the city of Ottawa so admirably illustrates the whole process that it will serve as an example of what took place in the case of many other Canadian cities. More than a century ago

the worthy Philimon Wright, of Woburn, Massachusetts, established himself beside the Chaudiere Falls, and founded what is now the flourishing city of Hull. A score of years later he could boast of having cleared 3,000 acres of land, and built several mills, for which the roaring Falls provided illimitable power. He was both lumberman and farmer, and reaped large returns from both vocations.

Among his numerous employees was one, Nicholas Sparks, who, lifting up his eyes, and looking across to the opposite river-bank, beheld that it was also a goodly land, and greatly to be esteemed. Accordingly he secured an extensive tract covering the greater part of the site of the present political capital, and emulated his former master in the joint industries of farmer and lumberman. This was in





THE STABLE



1821, and from that day the manufacture of lumber has been the chief interest of the city, its political activities being mere by-play in comparison therewith.

While the forest is being converted into logs in almost every province of Canada from Nova Scotia to British Columbia the methods of conducting the business in vogue at Ottawa are sufficiently characteristic of other lumbering centres to render them typical.

In regard to facilities for the lumbering industry Ottawa would be unique upon the continent were it not for Minneapolis. As it is she has in the tremendous torrent that passes so tumultuously over the Chaudiere an even mightier power than the falls of St. Anthony, while in the matter of rail or water communication with the timber limits, honors are easy, at all events.

But at the Chaudiere Falls you reach the final stage in the life of a log, which there becomes converted into a plank, and so in order to begin at the beginning we must betake ourselves far up into the depths of the forest primeval where the mighty trees stand all unconscious of the fate awaiting them.

Among the many natural resources which Canada possesses in common with other countries there is one which she can claim to hold in larger measure than the rest, and that is her supply of pine. Her pine forests are unquestionably the most extensive and valuable in the world. They spread through all the eastern provinces. They go as far north as Ungava Bay, and Coronation Gulf, and as far west as the Yukon. After they have yielded up their large timber they will continue to furnish pulp wood indefinitely.

The proprietary rights in them are held by the different Provincial Governments, who grant licenses or leases to the lumbermen. An area of standing timber is known as a "limit." Theoretically, a limit is ten miles square, but, owing to the topographical features of the country,

the limits are of all sizes from twenty square miles and upwards. It is not often that one worthy of the name is less than fifty square miles in extent. They are in the first instance sold at public auction to the highest bidder, and there is no restriction upon the number of limits one person or firm may hold. The extent of territory held under lease by some of the Ottawa lumber kings, such as Mr. J. R. Booth, or Mr. E. B. Eddy, is so immense that an ordinary German principality would be lost in it.

Work upon these limits begins early in the month of September, when the gangs of men are sent into the woods, the usual number in a gang being from thirty to forty, including foreman, clerk, carpenter, cook, and chore-boy. This number is about doubled, however, later on when the teams come in to haul the logs that have been cut, so that from sixty to eighty men may sometimes be found at one shanty. On arriving at their destination the gang proceeds immediately to build their shanty, which is placed as nearly as possible in the midst of the "bunch" of timbers to be cut, so that little time may be lost in going to and returning from work. With all hands helping, a shanty twenty-eight feet by forty can be put up in five days, the men in the meantime living in tents. Stables for the horses then having been added near by, the campaign against the forest giants begins forthwith.

The men are divided up into sets according to the nature of their work. Thus in an ordinary gang there will probably be three pairs of "choppers," and twice as many "cutters," the rest being teamsters, sawyers, "chainers," and so forth. The work of the "road-cutters" is to prepare a main road from the bunch of timber attacked, to the nearest available water, be it lake or stream; and also smaller roads branching out from this according as the choppers extend their operations. Over these roads,





JAM OF 150,000 SAW-LOGS

which are often rendered very hard and smooth by the use of a sprinkler, the teamsters haul the logs from the rollways upon which they have been piled, and drop them beside the borders of the stream or upon the icy bosom of the lake, there to await the coming of spring.

No part of the work is more interesting than that which devolves upon the choppers. The foreman, having gone ahead and "blazed" the trees he wishes felled, the choppers set to work in pairs at opposite sides of the trunk, and, handling their heavy, keen-edged axes as though they were mere trifles, chop swiftly into the heart of their helpless victim. The white chips fly thick and fast as the axes swing steadily to and fro, and presently the tree begins to tremble; a few more skilful strokes, a

warning crack, and then with a sudden sweep the great tree comes crashing down to earth, making a wide swath in the smaller trees standing unsuspectingly around.

Having felled their tree, the choppers next trim off the branches, and then with cross-cut saws divide the trunk into lengths of thirteen and a half, or sixteen and a half feet, according to its quality. Two, three, four, or even five logs may be got out of a single tree, and with such rapidity do experienced choppers work that on new limits, where the timber is thick and heavy, eighty logs is not an out-of-the-way day's work for one pair. While when towards the end of the winter "striving" is begun,—that is, one pair putting themselves against another pair—it is not uncommon for six



hundred logs to be turned in as the handsome result of a single week's work.

Twenty-five thousand logs will be a good winter's work for such a shanty as the one I have been describing, and when the warm spring sunshine comes, unlocking the bars and bolts of winter, the labor of the lumberman enters upon its most exciting stage, to wit, the "drive."

The winter's cut of logs having been piled in heaps beside the river-bank or lake margin, or better still, upon the ice itself, when in mid-April the Frost-King's rigid grasp is finally relaxed, they go tumbling pell-mell into the water to begin their long, rough journey mill-ward.

And now it is the business of our hardy, fearless toilers to direct this great fleet of cumbrous tree-trunks in their devious, varied course by swift-running stream, and placid lake, dislodging those that fain would tarry by the way, and lifting stranded ones into the current again until the broad bosom of the Ottawa is reached, and the logs, gathered into "booms" can be towed by powerful steamers to their destination.

Each "river-driver," as the men are now called, is armed with either a long pike-pole, a "cant-dog," or a handspike, and in big flat-bottomed boats, called "bonnes," or tramping along the bank they keep the awkward army of logs in movement, having ever before them the danger of a jam. The jam is the lumberman's *bete noire*, and it is caused by the logs catching in mid-stream against some projecting rock, and piling one upon the other until a barrier is formed that puts a veto upon all other farther progress.

Then comes the most thrilling experience in the lumberman's career. The jam must be broken at all hazards, and with the least possible delay, for the longer it is left the worse it becomes. To accomplish this the "key-piece," the log which was the first to stick, and has caused the whole trouble, must be found, and loosened, or, if necessary, chopped to pieces.

The precision with which an experienced river-driver will locate the key-piece of a jam is only less remarkable than the skill with which he will evade the rush of the suddenly liberated logs. Maintaining his balance well-nigh miraculously on the slippery cylinders, he will with strenuous strokes chop the offending log in two, or drive it back into deep water, and then, as the whole mass thus set free charges furiously down upon him, he will leap from log to log, with the sure-footedness of a chamois, until safe out of harm's reach, or, perhaps dive headlong into mid-stream and thus avoid the danger.

Dexterous as these men are, nevertheless, scarce a season passes without taking its toll of their lives, and there is nothing more unwelcome to the lumberman's ears than the announcement that a "jam" has formed.

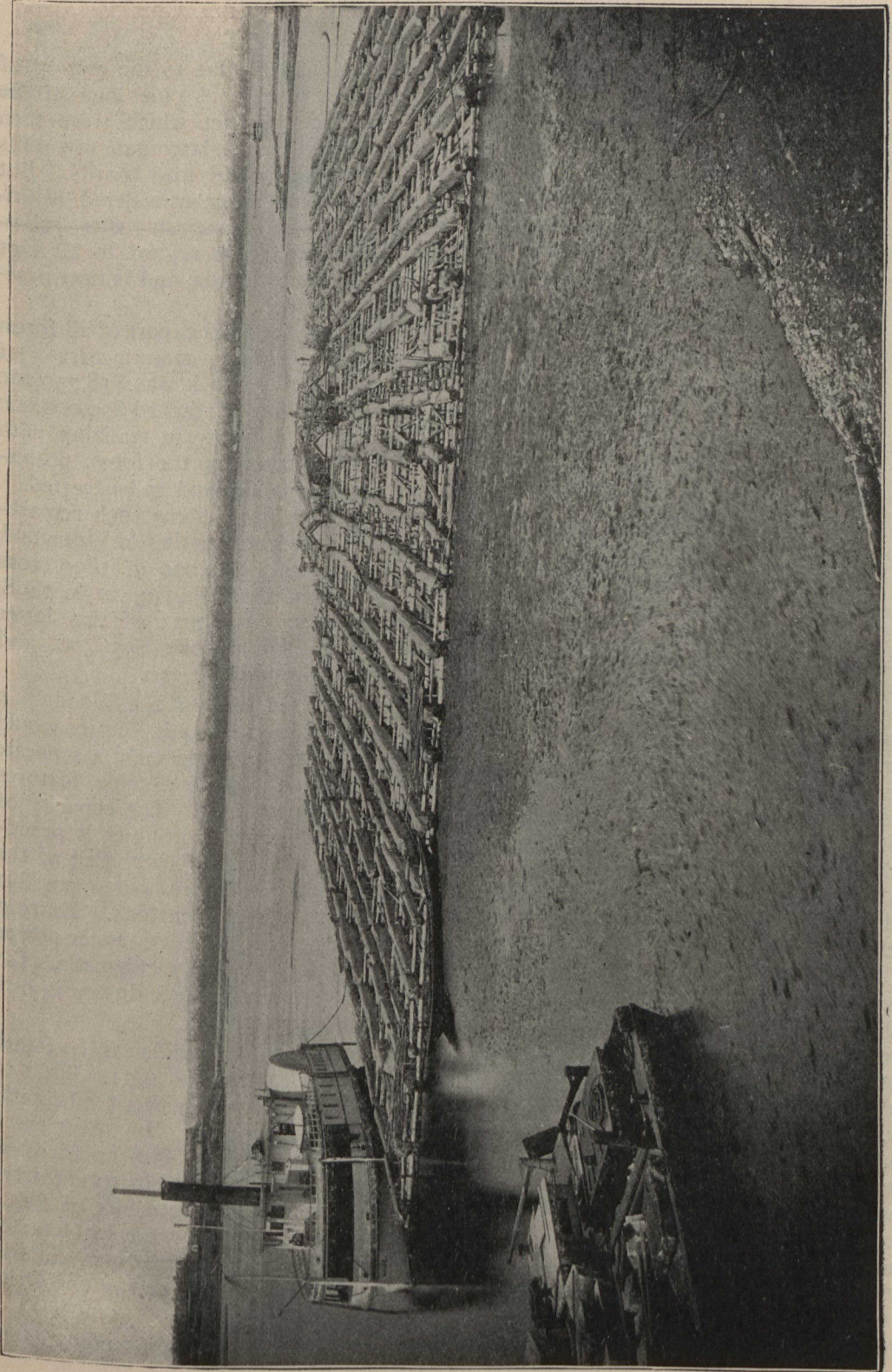
Once the logs are fairly afloat in the deep waters of the Grand River, as the lumberman loves to call the Ottawa, the river-driver's work is at an end; and he either finds employment in the mills, or idles away his time at home until autumn.

Having been assembled at the booms, and sorted out according to the marks of ownership they bear, the logs are now sent forward to the mills in tow of powerful paddle-wheel steamers; and, following in their wake we come in due time to the immense lumber-mills which have the spring of their highly profitable existence in the foaming floods that fling themselves over the chasm of the Chaudiere.

At these mills by the merciless teeth of gang-saws, band-saws, and circular-saws, the rough red logs are converted into boards and planks, box-shooks, laths, pickets, and railroad ties, and by this process of transformation the life of the log as such is ended.

With some allowance for varying local conditions the business of lumbering is carried on in practically the same way from Nova Scotia to British Columbia,





RAFT OF TIMBER



and it is therefore not necessary to go further into detail.

The economic importance of the products of the Canadian forests can hardly be over-estimated. Until last year, when the wonderful output of the Yukon gold fields wrought a change, they stood next in value to agricultural products as the following figures will make clear. For the four years, 1897-1900, the totals in round numbers were:

Agricultural products . . . . .	\$288,000,000
Products of the Forest . . . . .	115,500,000
Products of the Mine . . . . .	63,750,000

But for the year 1901 the respective results were:

Agricultural products . . . . .	\$80,000,000
Mine products . . . . .	40,000,000
Forest products . . . . .	30,000,000

so that the mine stepped into second place.

The great bulk of Canadian lumber goes either to Great Britain or the United States. In the year 1901 the exports to the Mother Country were valued at \$15,662,750, and to the Republic at \$12,190,617. Without giving the figures for each, it is interesting to note the way in which these exports were divided. Thus Great Britain went in principally for Spruce and Pine Deals, while the chief purchases of the United States were Planks and Boards and Laths, Palings and Pickets.

The best class of Canadian lumber, and especially the pine, goes to England, but as between the Old Country and the New there is a significant change in the business done which calls for comment. We find in *Morang's Annual Register*, which Mr. J. Castell Hopkins has so competently compiled, that Canada shipped to Great Britain in 1890, 68.07 per cent. of that country's total import of forest products, but in 1895 only 33.41 per cent., whereas to the United States in the same period her exports increased from 30.67 to 66.05 per cent. of the Republic's total forest import. This striking reversal of

figures was chiefly due to the cutting of immense quantities of pine logs in the Georgian Bay district which were then floated across to the Michigan saw-mills to be there converted into boards. But this proceeding being considered injurious to Canadian interests was subsequently prohibited in regard to all logs cut upon Crown Lands, and is now practically at an end.

Comparing the total export of all forest products, including manufactures of wood, for 1868, when it was \$18,750,000—with 1901, when it reached \$30,000,000—one has no difficulty in realizing with what respect and care the forest possessions of Canada demand to be treated.

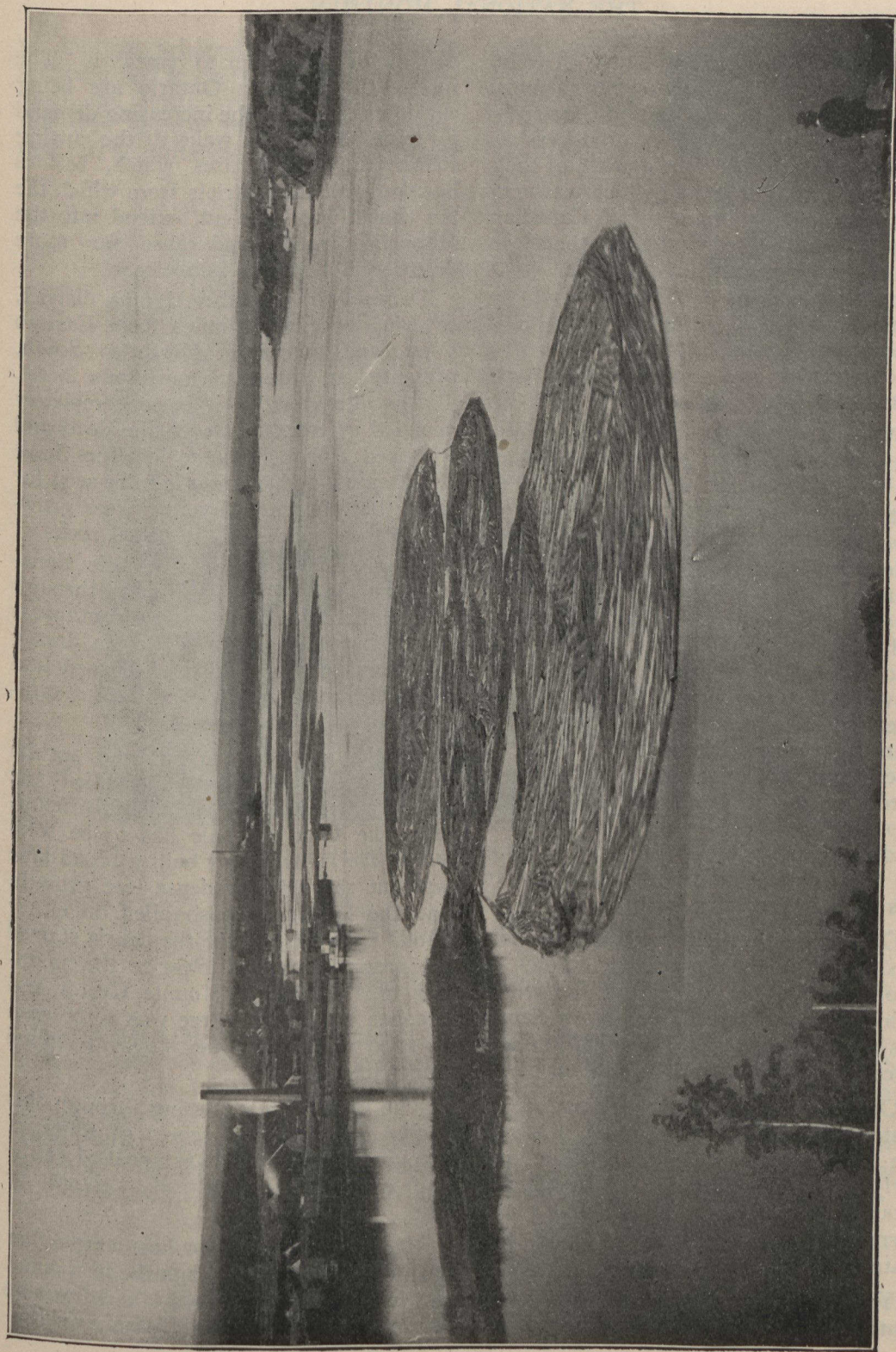
None of the items show such remarkable relative increase as that of Pulpwood, which from only \$80,000 in 1890, rose to \$675,000 in 1896, \$1,210,421 in 1898, and \$1,937,207 in 1901; of this latter total Great Britain took \$934,722 and the United States \$937,330.

The rapid growth of the Wood-Pulp Industry and its future possibilities would require for adequate treatment a separate article, and only some notable features can be now mentioned. The capacity of the Dominion for this product is practically unlimited. Dr. Robert Bell of the Geological Survey figures out a possible supply of 16,000 million tons. Bearing in mind that the available water-power of the country is equally exhaustless the future for this profitable industry is certainly of the brightest.

No mention of pulp mills can be found in the census returns for 1871. That of 1881 showed five mills with a total capital of less than \$100,000. In 1891 there were twenty-four mills with an invested capital of \$3,000,000, and in 1900 thirty-five mills showing investments of \$15,000,000. Ten of these were in Ontario, fifteen in Quebec, five in Nova Scotia, four in New Brunswick, and one in British Columbia.

The recent action of the United States





BOOM OF SAW-LOGS



Government in raising the duty on wood pulp 25 cents a ton, and upon chemical pulp 35 cents a ton has caused consternation among the Canadian producers as it cannot fail to check the growth of their business in that direction, which was very encouraging, the imports of Canadian pulp into the United States for the seven months ending 31st July of this year being \$200,000 in excess of the corresponding period of the previous year. It is accordingly to be hoped that some way of overcoming or removing this new obstacle may be discovered.

When it is considered that the forests of the Dominion of Canada form one of her chief assets the reckless prodigality with which they have been treated by governments and individuals alike seems little short of startling. Instead of care being taken to conserve these natural coverings of the land, strenuous measures both legitimate and illegal, have been used to destroy them. In all the older provinces this has been done to such an extent that in many sections that fifty years ago were covered with unbroken forest, there is to-day scarcely a good-sized tree to be seen. Without taking into account the loss in beauty to the landscape, and value to the land, there is the consequent change in climate due to this short-sighted deforesting.

On the sea-coast cutting away the forests has let in the sea-air, and to-day, as Prof. Macoun has pointed out, the soil of Prince Edward Island, and Nova Scotia has become so much moister that in many places under-drainage is a necessity.

On the other hand the deforesting of Ontario has dried up springs, lessened the flow of rivers, caused sudden and early thaws in winter, and in summer droughts over large areas, and as a result decreased the products of the sod materially.

Yet year by year this state of things continues with little or no effort on the

part of the authorities to remedy it. The forests of Northern Ontario are being cut down to supply the increasing demand for pine, and in the wake of the cutting follow the annual fires which, besides burning over the districts from which the big timber has been cut, extend into the untouched woods, and cause far more destruction than the lumberman.

Thirty years ago the Algoma district, covering over 1,000 miles from East to West, and 200 from North to South, presented an unbroken coniferous forest. To-day the most of it is so completely denuded of trees that even the dead and whitened trunks of some localities have disappeared, and nothing is to be seen for miles, but bushes and young trees growing in the crevices of the naked rocks.

A traveller going west on the Canadian Pacific Railway will pass through 1,200 miles of what was once continuous forest, but now little else than a dreary wilderness of bare rock, of burned and bleaching tree-trunks, of rotting "ram-pikes," will meet his eyes.

Of the vast and magnificent forests that clothed the slopes, and filled the valleys of the Rocky and Selkirk mountains the same sad tale has to be told. When the railway was built a broad lane was cut through the dense tree growth, and the logs and brush piled on either hand. The burning of the debris started the fires that climbed clear to the mountain tops so that at Mounts Hector and Stephen not a green tree was to be seen in 1890 where they had stood in serried ranks in 1885.

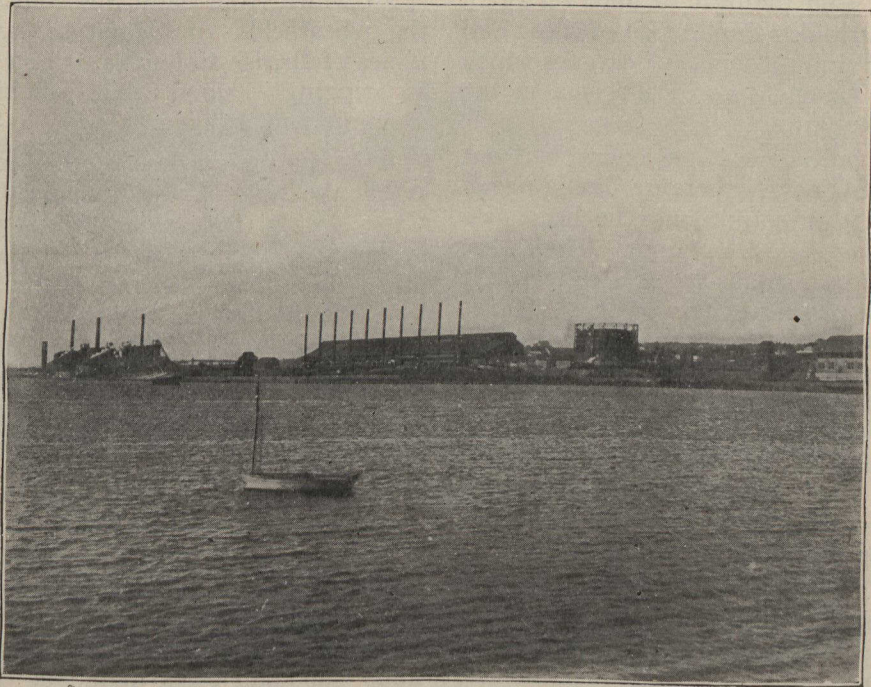
The writer while passing through this region in 1896 saw scores of miles of smoking forests, and was appalled at the ruin which had been already wrought by fire.

Recklessly as Canada has wasted her magnificent forest heritage the loss is not yet irreparable, and if only the admirable example of Germany for instance, in con-



serving her arboreal resources could be seriously laid to heart, and faithfully imitated, the future would be full of hope. But very efficient measures are imperative. The different provincial govern-

ments must take the matter in hand, and by concerted as well as by individual action protect the forests that remain, for in no other way can they be made to meet the demands of the future.



STEEL WORKS FROM RIVER

## THE NEW CAPE BRETON

ARTHUR E. McFARLANE

A CANADIAN who desired to learn something about his country for himself recently took passage at Montreal for Charlottetown and Cape Breton. The boat was a passenger-carrying freighter, and the device on her funnel was a black diamond upon red. Besides a manifest of "general supplies," she was laden with mining and milling machinery,—huge grey castings, plates and girders, and fine engine gear of oily steel and new-lathed brass. Ahead of

her, down the harbor lane pushed a big sister freighter, similarly bound, similarly laden, and with funnels blazoned with the same heraldry of ocean. On the way to Quebec eight more great freighters were met, all sailing under the same emblem: and they were not only all either Canadian owned or chartered, but they were all carrying Canadian coal to Canadian consumers.

In the main port of Prince Edward Island, that long sea-girt farm, eternally



fertilized by the unresting tides, there was taken aboard a deck-load of fruit and vegetables, sheep and cattle. The latter, swung over the bulwarks by surcingle girths, were curiously reminiscent of the sign of the "Golden Fleece;" and at least one on-looking passenger accepted the symbol. And the boat steamed on again with a latter-day duplication of those odd "Swiss-Family-Robinson" cargoes which went to Australia and California in the gold-strike years.

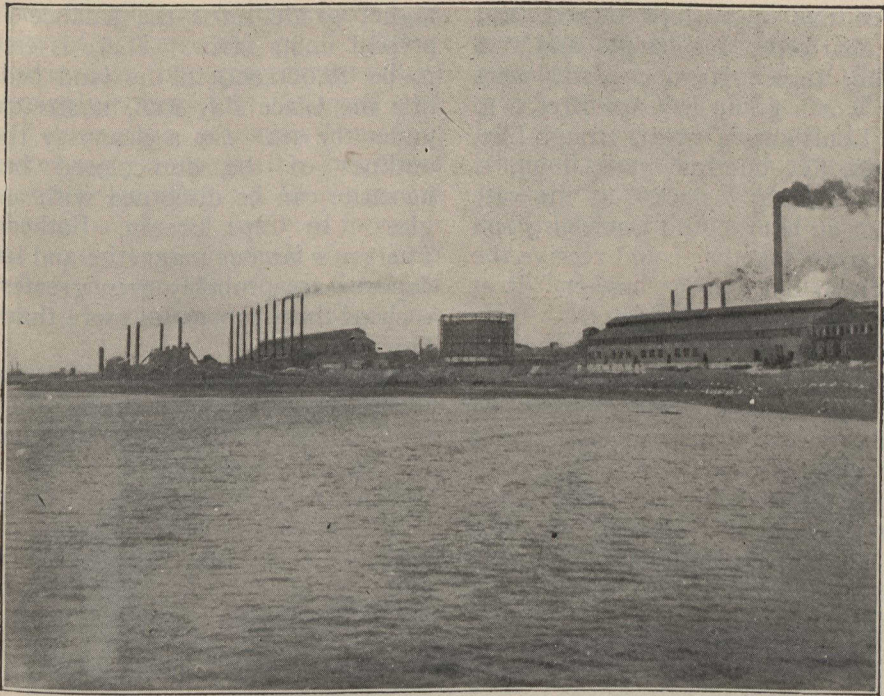
While still some three hours' sail out of "the Sydneys," there gradually began to show themselves along the headlands a long line of dusky plumes. They were the same dark smoke-banners which drift across the mouths of the Clyde and Tyne, which overhang the grey northern coast of Germany, and darken the southern shores of Lake Erie and Lake Michigan. They come from great mills and factories, from furnaces and coking-ovens and collieries. They are no white plumes of chivalry,—but they *are* the swarthy standards which bespeak the power and vitality of modern nations.

Passing North Sydney and leading on up the broad sea-way of the inner harbor was a big, black, French man-of-war. And the chart showed that she had fifty and sixty feet of water everywhere. She might, if she had chosen, have pushed in close enough to those "bold" shores to throw a spring line to the beach. And now with the broad red stretches and stacks of steel works, a whole fleet of other craft come into view. A Bath six-master,—one of the only two in the world,—was loading coke for New York. A blunt-nosed English "tramper" was filling her hull with five thousand tons of steel billets for far over-sea. Hopper-car after hopper-car was being dropped into two more deep-lying freighters, and still another "tramper" was giving up her cargo of iron ore from Belle Island. And before dawn next day, one and all would have given place to yet other craft.

It was hard to think that this was Canada. And it *was* not the old Canada, although only thirty miles to the southward lay Louisburg, with all which it inherits of ancient-time traditions. It was a New Canada. Here on the seaboard has come the same strong, stirring, life-spirit which from Sault Ste. Marie, from the wheatfields of Manitoba and the mines of British Columbia, is now calling so ringingly upon this whole huge Dominion to awaken.

It is not the purpose of this article to repeat the story of the last nine years in Cape Breton, but rather to tell what is being done there now. Coal had been mined there from the times of the French,—it was the first coal mined in America, indeed;—it was good coal, there was known to be much of it, and it was on tide-water an inestimable export advantage over the American fields. Yet in a hundred and fifty years, the output had not grown to an amount that could be called considerable. In 1893 Henry M. Whitney, of Boston, became interested in Cape Breton coal, consolidated two-thirds of the small warring interests into the "Dominion" company and began to mine Canadian black diamonds in quantities very considerable indeed. The presence of iron ore in Cape Breton was equally well-known. It was in all the geologies. Nor was there any reason either, why steel could not also be made at tidewater. Yet not the first pound of it *had* been made. In 1899 Mr. Whitney became interested in Cape Breton iron conditions, managed to get half a dozen other wealthy men equally interested, and a new enterprise began to take life. And because little Sydney possessed a pluck and spirit as big as its purse and population were small, it raised \$85,000, bought up three hundred and eighty acres along its harbor, and got the steel works. The two companies were united, the former being bought up by the latter, after the manner of such corporations when con-





STEEL WORKS FROM RIVER

solidating. Both are distinct in staff and management, but both are instinct with the same life and vigor, and they shall here for the most part be considered as one.

Now, without wishing to go too tediously into details or to be betrayed into the arid labyrinths of the technical, at least some approximate idea of the huge proportions of these twin enterprises may be given. More than one hundred and forty square miles of coal areas are owned. There are five seams, without including anything less than three feet thick; and only the upper two have as yet been touched. The total capacity of the six collieries now being worked is 297,000 tons a month. One new shaft—the Dominion No. 2—has now been sunk to nine hundred feet, the greatest depth in the coal mining world, and when it is completed it will “lift” more than any other shaft in the world—some 6,000 tons daily. Some conception of the new

machinery being installed may be gathered when it is said that only a part of the old machinery it has recently replaced has been sold, merely as “scrap,” for \$28,000. Electricity and pneumatic tools are replacing hand-work everywhere. If horses must still draw the big “tubs” out to the “haulage ways,” compressed air is driving the mining picks. And the miners’ lamps are far outnumbered by the long vistas of incandescents. Twelve hundred double houses have been built, and boarding-house accommodation for another fourteen hundred single men as well. The company owns the forty miles of railway which connects the mines with Sydney and Louisburg; and thousands of steel hopper-cars are moved daily. During the close of navigation last year there was piled up in one place 165,000 tons of coal; it would have taken half a dozen circus tents to cover that far-sprawled black behemoth. The company’s fleet

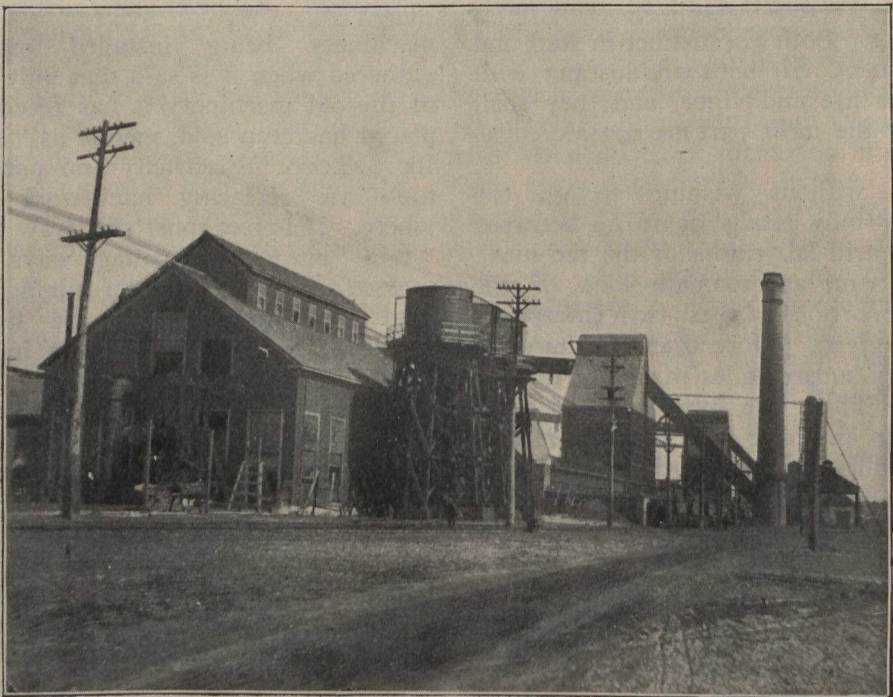


consists of five steamships owned, and fourteen chartered, five barges and two ocean-going tugs. Its docks and piers are alone worth going to Cape Breton to see. At Louisburg a great, trough-like, rubber belt, five hundred yards long, is capable of loading "slack" at the rate of 750 tons an hour. And Louisburg and Sydney harbor together could receive the whole British navy and "bunker" it at the rate of 40,000 tons a day.

But of necessity the coal company is largely tributary and subservient to its younger and more opulent brother of steel, and of its resources it is hard to give any just idea. Before this second company began to build, it made itself owner of properties not only throughout Cape Breton, but in Newfoundland, far north along the coast of Labrador, and even in Cuba. It is from Belle Island, Newfoundland, that the company brings the greater part of the ore it is using now: it is not so near as the home deposits, but its

higher grade turns the balance for the present in its favor. There is estimated to be 28,000,000 in the land bed; and, like the Glace Bay coal, it stretches far under the sea. On a clear day the wide outlines of the dun-colored bank of hematite can be discerned with a water-glass. In Cape Breton, Father MacPherson's famous magnetite and hematite deposits are probably even greater. For each of these properties more than a million was paid.

Mr. Moxham, late general-manager of the steel company, and now the genial philosopher of the industrial renaissance in Canada, has written that "steel, reduced to its final analysis, is a product resulting from the application of man's labor to three raw materials, ore, coal, and limestone." And to make one ton of pig iron,—steel in its first state,—there is required one and three-quarter tons of ore, one and a half tons of coke, and three-quarters of a ton of limestone. The



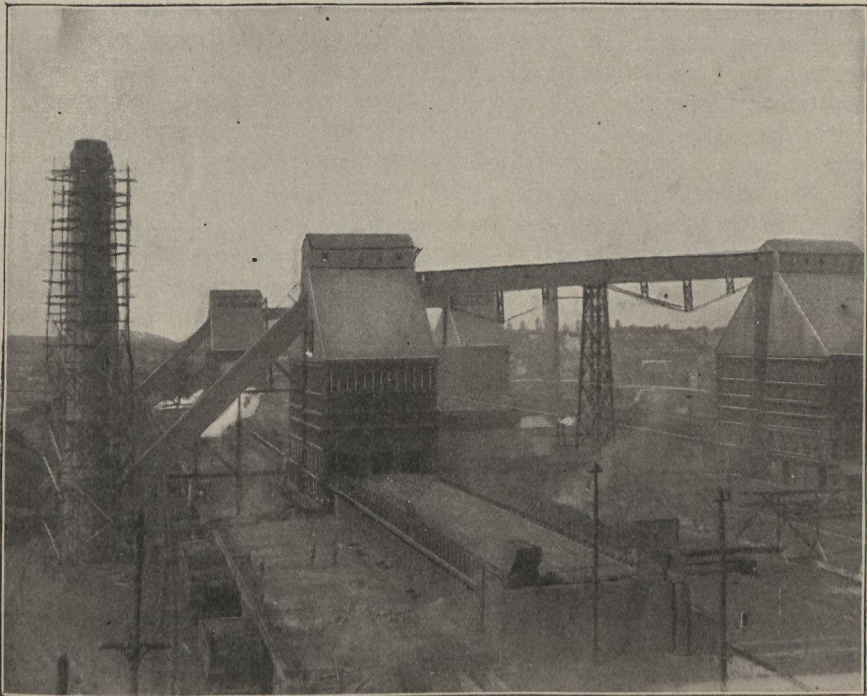
THE COKING OVENS



four blast furnaces at Sydney have each a capacity of 250 tons of "pig." Therefore, down those four great throats there is unceasingly poured four thousand tons of the "three raw materials" a day. And unceasingly through the long lines of "stoves" standing up like gigantic test-tubes of oxide red, there is forced a blast under the heat of which everything which does not go off in gas flows off as fluid. The hourly volcano from the

purification, and its clinging enemies, phosphorous and sulphur, are all but eliminated. The excess of fluid metal which cannot be handled by the "open-hearths" is poured into a sort of endless-chain of moulds, which, hardening by a passage through a water-bath, drops the solid, loaf-like "pigs" into the shipping-car.

From the "open-hearths" the molten steel is let out into other great ladles, and



VIEW OF PART OF STEEL PLANT FROM WITHIN

stacks lights the countryside. At Louisburg, on an evening of fog, it shows like an immense conflagration to the north. Sailors can point to Sydney while still half a night's sail away.

The liquid pig iron is run off into twenty-five ton ladles, and a procession of them is constantly moving to the ten open-hearth furnaces,—great fifty-ton, rocking crucibles. In them the iron becomes steel. It receives its final fiery

again from these ladles, raised by seventy-five ton cranes, the cooling ingot-moulds are filled. The ingots issue from them flushing a fierce, rosy grey, and are passed on for another heating before they go to the blooming-mill. There they are rolled out to long bars and bitten off as steel billets: or, as will be the case by the time this article is in print, they will be sent into the rail mill. It alone will have a capacity equal to Canada's entire railroad!



demand. And with the Clergue "plant" at the "Soo,"—to say nothing of the other forges and furnaces fast being erected,—Canada's production of steel will, in tonnage if not in variety, be correspondingly as much for her entire consumption. Five years ago, it was not equal to one-twelfth of it.

The "coking" plant at Sydney is no less immense. There the coal is crushed sand-fine in the "breakers," is cleansed of its surplus sulphur in the "washeries," and is shaken free of slate in the great, revolving, screening drums. From them it is carried to the "compressing machine," where it is moulded into cakes, each of some 260 cubic feet. And the four hundred great ovens give these mammoth cakes their thirty-six hours' "baking." The finished coke,—it is really the same word as "cake,"—is broken up and poured down the huge hopper tops of the blast furnaces. But the coke is not the only product of the ovens. Tar, gas, sulphuric acid and sulphate of ammonia must be added to it. Of the latter, enough is produced to keep all Cape Breton fertilized. Indeed it was Mr. Whitney's own original genius that actually suggested the giving back to the soil something no less valuable than was being taken from beneath it. As it is, huge quantities of the "sulphate" are now being disposed of to the chemical works of Boston and Charleston, the West Indies and Glasgow. As for the gas, enough of it is purified and sent back to the ovens as fuel to serve for its own production! It is one of the "magic circles" in this amazing world of modern science in which it is our particularly good fortune to have our existence.

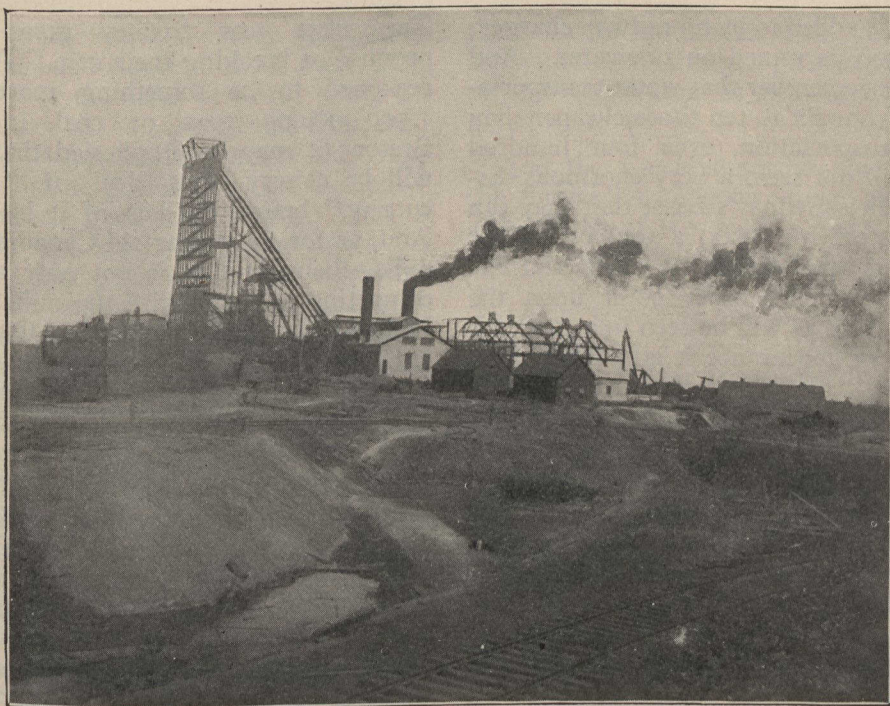
And how closely, in a score of other ways, are these mighty and astonishing processes linked by this magic of modern science to the even greater processes of the steel mills! The vast body of coal-gas not sent back to heat the coking-ovens

is sent on to a great central gasometer; and coupled with the tar,—driven flaming through atomizers,—produces the frightful temperature of the open-hearth furnaces. Nor, as is often the case, is the gas from the blast furnaces allowed to pass off in blazing waste. It goes to the fireboxes of the boiler-house and is there turned to steam,—more than 8,000 horse-power of it. And that "power" not only drives the gigantic bellows which blow the blasts, but also loads and unloads the freighters at the ore and coal docks, turns the hundred-ton wheels and rollers of the mills, and finally,—transmuted to electricity,—plays all *its* manifold Ariel magic, and lights the whole multiplex system of the works.

The mines and mills and furnaces work together in a sort of mechanical Utopia of power. Yet, Canada, looking delightedly at these new things, is too prone to let herself regard them merely as big new toys; to her pride they seem sufficient in themselves. But it is our business to ask, what have they actually done? What are they doing now? The government is assisting them with heavy bounties,—can almost claim that the bounties have alone made them possible. Will the future pay this back? As a sound business investment, has it been worth while? To look at this three-fold question from a proper perspective, we must step back a little way.

Says Mr. Moxham, speaking again of iron ore, and coal and limestone: "Nowhere has nature grouped together these three raw materials in the proper economic quantity and the proper economic quality. We have all heard of places where the three elements were together. In fact they existed one on top of the other, ready placed in proper proportions, and always in a hill of the proper height, provided with a nice level valley just fitted in size and location for a modern blast furnace: all that was needed was for the hill to topple down into the





"DOMINION NO. 2"—ONE OF THE GREATEST COAL SHAFTS IN THE WORLD

mouth of the furnace awaiting it below. We will all of us hear of these favored localities again. When they are brought to you and you are asked to believe in them,—remember Mr. Punch's good advice, and "don't"!

Yet,—“the ore and limestone delivered on cars or boat, (as the case may be,) must be 'dirt cheap,' and the coal not far from the same. This is to be taken literally, not figuratively. In the Messabi and Birmingham (American), the Middlesboro (English), the Luxemburg (Belgian), and the Belle Island (Newfoundland) mines, the actual price of mining and putting the ore on cars is less than the traditional contractor's price for the removal of earth.” In short, the question of cheap steel is altogether one of the cost of “assembling the three raw materials at the blast furnace.” It comes down to a question of distances and freights: and herein Sydney has most unquestionably a long lead upon the

world. Pittsburg, the mighty, brings its ore eighty miles from the Michigan mines to the South shore of Lake Superior, one thousand miles to the Lake Erie ore ports, and another one hundred and fifty to the mills. Its coal comes almost altogether from Connelsville, eighty miles away, and its limestone one hundred and thirty miles from the Tyrone district. In Newcastle, England, the case is the same. The coal and limestone come from the centre of the island, and as for the ore,—perhaps this would astonish the average Englishman,—it comes almost wholly from central Spain. In Germany, the assembling distances are hardly less.

At Sydney the coal lies from ten to twenty miles to the south, the limestone is on the water, about twenty-five miles to the north. Ore in great quantities lies in almost every direction. And if, as was said before, the richness of the Belle Island deposit invited its prior use, the four hundred miles it is distant across the



channel is added to by no railway charges; for it, too, is mined on tidewater. And when we remember that water transportation is from six to ten times cheaper than land transportation, even four hundred miles will not seem a very enormous distance. It is Sydney's boast that they can export steel for \$6.00 a ton, or 50 per cent. less than it can be made and exported from any other point upon the globe. And, as will be seen in a moment,—to every appearance it is making good its vaunt.

But first a little geography; and it is safe to say that for the majority of readers, it, too, will have its surprises. One might expect to learn that Sydney is much nearer Liverpool than is Pittsburg, but not that it is 1,228 miles nearer. And being closer to Liverpool it is correspondingly closer to all the ports of the German Ocean and the Baltic. It is also 1,050 miles nearer to Gibraltar,—and consequently, too, to every port in the Mediterranean. And so much does the outstretching of this right hand of the Dominion count for, it is even 757 miles nearer Capetown than the great American steel centre. Yes, and it is even 200 miles nearer than Liverpool, too! But most astonishing of all, Sydney is actually closer to every South American port, from Pernambuco to the Horn than any rival shipping point on the American sea-board!

Nor has Sydney failed to take full advantage both of its cheapness of "assembling the raw materials" and its cheapness in getting out the finished product again. The coal company alone has done much. Not to mention the American bitumen it has replaced all along the St. Lawrence,—(last year Montreal alone took 675,000 tons,)—three trampers' full a week are required by Boston. At the present moment merely one coke contract being filled in New York calls for 25,000 tons. American coal men a year ago gained a foothold in the Mediterranean.

This next year Sydney gives every promise of breaking their grip. There is reckoned to be something more than 1,500,000,000 tons of coal in Cape Breton; it may be prophesied that there will be a very great deal of "undercutting" before the last of it is mined. And, as for these year-old Canadian steel mills, their product is not only already competing at home with the mills of the United States and England and Germany, but,—mark the full meaning of this,—it is selling to Glasgow and Liverpool, to Rotterdam and Hamburg, and to Pittsburg the tariff-protected, the city of the wall of coal and iron, itself!

Whether or not the rest of Canada realizes the significance of these facts, Cape Breton certainly does. At Sydney Mines more hundreds of thousands of tons of coal are being "lifted" and at North Sydney more steel mills and blast furnaces are being erected by the "Nova Scotia Coal and Steel Company;" this, too, is now a multi-millionaire corporation, and was the first in the field, indeed. Much more might have been written of it, did not the "Dominion" companies seem the Castor and Pollux, the great "twin brethren" of good omen to the eastern "Cape." An English concern, the "Gowrie and Whitehouse Company," is working coal mines at Morien Bay, and is said to be planning other enterprises. The redoubtable Mackenzie & Mann combination has entered the field; and it may safely be inferred that it will be heard of in the very near future. And there are more besides.

Sydney has changed much in the last three years. It has taken on the distinction of the cosmopolitan. In that town of twelve thousand people, one feels hardly more distant from the centres of the world than when in Montreal or Toronto. Its percentage of skilled labor is undoubtedly much greater than it is in any other place in Eastern Canada. And the "big" men who have now made



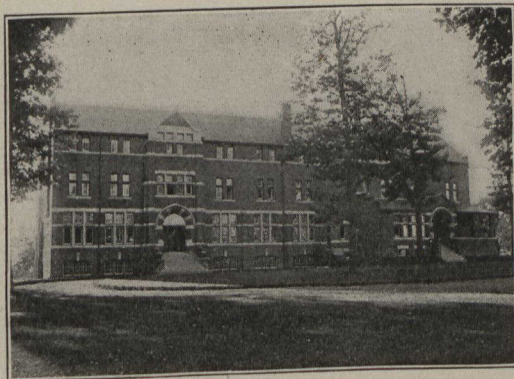
it their home count for very much more than the hand-workers in all their thousands. For the miles of works along the south shore of the harbor came from their creating brains, and wherever they may go, that same power to work the industrial miracle goes with them. What of the men who are in command now?

In the first place it is an old story that Canadian capital, with a hard-headed recognition of a good investment, coupled perhaps, to a patriotic distrust of Steel Trust "Morganizing," has purchased the preponderating influence in the fortunes of the "Dominion" companies. Yet he would be an ingrate Canadian who did not freely give to these powerful and restless spirits to the South the fullest credit for having made the way clear for this new Cape Breton. Nor has it been any mere matter of superior capital. They have not only the lubricating money, but the knowledge of where to place it, in the new machinery of nature, to make it do its work the best. They have fairly won their place as master mechanics of the modern world. And just as there will always be work for the "binder expert" in the western wheat-fields, there will, for many years to come, be work for

these master mechanics in the vast workshop, the mere ground plan of which is now being drawn in the Canada it is given us to know.

And the Canadians who now control the "twin" companies may also well claim to be of the world's master-craftsmen. They are the same type of men who have made the United States the power it is to-day. Jas. Ross, and Sir William Van Horne and their fellows have learned their trade over half a continent. Part they have picked up when railroading, part banking, part mining,—now managing, now constructing, now financing. They know their tools and can safely be left to do the rest of the work alone.

In the Sydney works the "slag," that molten concrete of flint and iron poured off from the furnaces, is being used to fill in the marsh along the frontage of the "open hearths." On such a foundation the Carnegie Steel Company is now erecting the greatest mills and forges in the world. And upon the foundation which is now being laid at Sydney there may well be done such building as neither Americans or Canadians can now foresee.



THE NEW PREPARATORY SCHOOL,  
UPPER CANADA COLLEGE



# SCENES IN THE CANADIAN ALPS

BY FRANK YEIGH

THE entrance to the Rocky Mountains of Canada is impressively dramatic. The sun sinks, a glowing ball of fire, beyond the rolling plains that border the foothills, leaving behind the great ranches, the long irrigation canals, the herds of cattle and flocks of sheep, and the lonely hamlets where the ranchers live; it shines the following morning on a narrow portal, with towering walls looking weird and ominous in the grey light of dawn—the stupendous Cordillerean barricade that Nature has thrown across the Continent, from the

Arctic shores to the southern ranges of California. He who made the mountains also made this wonderful avenue of approach, through which the Bow River flows impetuously toward the prairie.

Following the erratic course of the stream, the Government National Park at Banff is reached, where an area twenty-six miles long by ten miles wide has been set apart in perpetuity for public use, and it is probable that the enclosure will be greatly enlarged within the near future. Situated within the very



JUNCTION OF SPRAY AND BOW RIVERS, BANFF, ALTA.





VIEW OF THE BOW RIVER VALLEY





THE GREAT GLACIER OF THE SELKIRKS

heart of the Rockies, the boundaries of Banff contain many a lordly peak. Cascade and Rundle Mountains stand out as geological curiosities, both having been completely overturned when the inconceivable upheaval took place, the older Devonian and carboniferous limestone being imposed on the newer rocks. Thus the word of Job of old is true: God overturneth the mountains by their roots! Tunnel Mountain has its limestone summit grooved into channels by the movement of the glacial ice. The scratches can be traced, and the slopes are covered with boulders that have been brought from some distant region and left stranded thousands of feet above sea level.

From the top of Tunnel Mountain the panorama is a superb one. On every hand are the curiously jagged profiles of peaks, rivalling the valley of the Yose-

mite in grandeur and variety of scenery. Mountains from eight to ten thousand feet high overhang the clear lakes, the twisting river with its picturesque falls, and the little village of Banff. To the north, the lines of Cascade Mountain seem to have been caught in their primeval writhing like giant serpents, resulting in strange rocky contortions on a colossal scale, and beneath the shadows of Mount Inglismaldie lies the deep Devil's Lake, an immense reservoir high above the hills.

A two hours' railway run brings the traveller to Laggan, from which station the Lakes in the Clouds are accessible. A carriage drive up a steep grade and by the edge of a rushing, noisy torrent covers the distance to queenly Lake Louise, the first of the trio of lakes. The view from the Chalet reveals a magnificent arena of peaks, making it the Switzerland of





THE LOOP FROM OBSERVATION PEAK, THE SELKIRKS, ALONG  
THE ILLECILLEWAET RIVER



Canada. Facing the beautiful sheet of water is grim Mount Lefroy, with its northern edge appearing like a scene partially shifted across the stage of a theatre. To the right the Victoria glacier, sheathed in its garment of white, effectually bars the way to the westward. It was on the slopes of this glacier that the American mountaineer, Abbott, met his death in 1896, falling a terrible distance in sight of his horrified companions, who narrowly escaped a similar fate. This forms one of the comparatively few tragedies of the Canadian Alps. The eastern slope of Lefroy presents a practically sheer precipice three thousand feet deep, and its towering ridges form the vertebrae of the whole Rocky range. As each midday approached, the melting power of the sun produced a succession of avalanches, the sound of which reverberated through the canyons and over the Lake with thrilling effect.

Mounting our horses and led by an experienced guide,—an old trapper with a full stock of hunting tales—the journey skyward was commenced. A thick forest of spruce and fir was entered, the low branches over the trail just missing one's head. Occasionally a forest giant reared its top high above its fellows, showing hundreds of rings as evidence of great age. One old monster exhibited a sufficient number of rings to prove that he started to grow when Columbus discovered America! Alpine flowers grew in profusion, white mountain anemones, violets and orchids vying with the sheep laurel, whose red flower caught the eye in every direction. An open space in the forest had been made by a snow slide, which had swept away every vestige of the standing timber.

A sudden turn of the path revealed the second body of water—Mirror Lake, resting unmoved in its granite basin. High above our heads towered the Bee Hive, seemingly preventing all further progress. Carved out of flinty sandstone

to a cone of horizontal strata, it poised as a sentinel over the world below. But the guide ordered an advance across the bed of an avalanche, thickly strewn with immense boulders, over which the ponies cautiously picked their way. Beyond lay a narrow trail clinging to the face of the craggy cliff not unlike a llama path in the Andes. At the end of the dizzy and unnerving trail, where the fullest faith in the sure-footedness of one's horse is called for, Lake Agnes came into view, literally among the clouds, as a mid-summer snow squall swept over the range. Then the veil of storm moved southward, revealing some of the finest Alpine scenery on the American continent. Mirror Lake and Lake Louise have shrunk to the dimensions of small ponds and are but trifling features in a landscape that includes miles upon miles of peaks. The Bow River valley meanders from east to west for many a mile; lonely Mount Temple, 11,658 feet high, is separated from its neighbors of the continental watershed, the fearfully steep sides showing black against the matchless purity of its ice beds. Away to the north, buttressed against the sky, sketches a mighty phalanx of summits. Immediately above us rise still higher peaks, the home of the big horn sheep and the mountain goat. The high hills are still a refuge for the wild goats. The only trace of animal life came from a whistling marmot, in its shrill answer to the well-imitated challenge of our guide.

Proceeding westward from this delectable lake region, two other colossal peaks in the Rockies are near neighbors—Cathedral Peak and Mount Stephen. The summits of the former have apparently been broken off, the debris crossing the mountain sides and reaching the banks of the Kicking Horse River far below. Cathedral Peak makes puny the greatest of men's creations, the massive mountain resembling a mighty minister with dome and roof and countless spires. The play





VALLEY OF THE TEN PEAKS, NEAR LAKE LOUISE

of storms around its roof-top is a sublime sight, but when the sun emerges from a bank of clouds and casts its rays upon the fleecy world around it, then the effect is beautiful beyond the power of words to portray.

Mount Stephen, the monarch of the Rockies, is widely different in conformation, its solitary dome of rock piercing the heavens to a height of ten thousand feet. A Canadian Government surveyor scaled the mountain some seven or eight years ago and celebrated the event by placing a Union Jack thereon, but the winds of the years have long since blown away every vestige of the banner. As the train curves around the base of Mount Stephen and the eye glances upwards along its ribbed sides to the giant pinnacle,

the mind grows bewildered in the attempt to estimate the bulk of the gray old monster. Such a view causes one to firmly believe in Ruskin's dictum that mountains are the beginning and end of natural scenery.

The exit from the Rockies is through as narrow a gateway as the entrance along the Bow River. The lower Kicking Horse Pass leads to the valley of the Columbia River, sweeping northward for the bend it makes preparatory to its final journey southward to the Pacific. Again there is a view superb in its vastness. Behind are the everlasting hills of the Rockies, with keen knife edges of rock cutting the clouds asunder. Across the valley, martialled in military line, loom up the Selkirks, with their green bases and





IN THE FRASER CANYON

L. J. G. S. P. 1905





THE THREE SISTERS' PEAKS, AT CANMORE, ROCKY MOUNTAINS

snow-silvered crests, suggesting, under the glory of sunset, the celestial city of Asgard.

The Selkirk range is entered through the Rogers' Pass between walls four thousand feet high. To the right rise the Hermit peaks, scarred by the tracks of avalanches and roofed with glaciers. Beyond and to the north lie scores of great hills that have never been scaled. Gazing southward, one views the noblest prospect of all—a theatre of mountains, around the bases of which the railway line curves. The eye is attracted as by a magnet to the King of the Selkirks, Mount Sir Donald, named in honor of Sir Donald A. Smith, now Lord Strathcona, who played such an important part in the construction of the great railway. The mighty pinnacle of Sir Donald

reaches a height of 10,662 feet—"a kingly spirit throned among the hills, which seems to overhang the world."

At its feet glistens the great glacier of the Selkirks which, according to Professor Muir, is the largest sea of ice left remaining on the Continent, outside of Alaska. The Selkirk glacier is a wonderfully beautiful frozen river, which reflects the sunshine with dazzling effect. The loosening of huge masses of ice led to their tumble down the slope until the echoes reverberated across the valley. The front wall of the glacier is honey-combed with curious caves that are constantly changing their form, as the stream moves on its downward way foot by foot. During ten years the glacier had receded five hundred feet in its shrinking, even as it travels to the lower levels.



Still journeying westward, the third of the four parallel ranges—the Gold, or Columbia as it is better known—is traversed amid a succession of charming lakes that recall the Scottish lochs for quiet, restful beauty. Some of them had forced the railway to excavate a path for itself out of the wall of rock on the side. A detour southward for a few miles connects with Okanagan Lake and Vernon, in the garden of British Columbia, where the sheltered vales account for the rich fruit farms and orchards.

The final gorge of the route—the Fraser Canyon—is the wildest of all the clefts among the hills. Penetrating the Coast Range, the railway follows the sinuosities of the turbulent river, indicating the engineering difficulties that were overcome. No less than eleven different lines were located before the present one was decided upon. The valley of the Fraser is singularly formed as if some super-human sword had at a single stroke cut through the labyrinth of mountains, leaving the narrowest of footholds for the tracks and the narrowest of beds for the salmon river. The wild rush of waters makes all the more remarkable the successful trip of Simon Fraser, the old fur trapper of a hundred years ago, who succeeded in sailing through the seething floods, past the dangerous Hell Gate and around the sharp bends where before and

since many a human toll has been exacted. Along the steep sides of the canyon are the pathetic remnants of the old Cariboo trail of the "Sixties," leading to the gold fields four hundred miles from the sea, over which thirty thousand men travelled, and most of whom drifted back physical wrecks and penniless. Deserted cabins and dead towns line the way and many a lonely mound tells its own story. A wayside board speaks of the Headless Indian. The inscription reads:

"Here lies the remains of the Headless Indian, discovered by Lord Milton and Dr. Cheadle, A.D. 1863."

Then is added:

"150 yards up the banks of the River was also found the skull, which was sought for in vain by he above gentlemen."

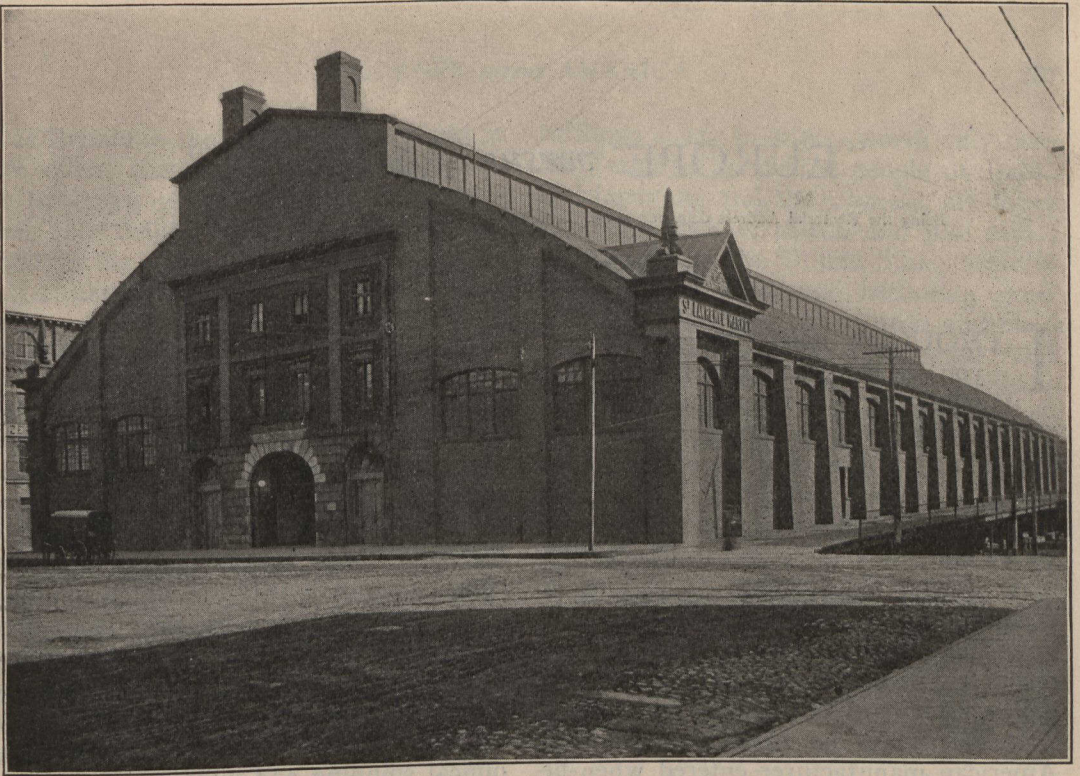
(Signed),

"T" Party, Canadian Pacific Survey.

June 5, 1872.

The Fraser Canyon ends at the town of Yale, from whence there is an open stretch of a hundred miles to Vancouver. The huge folds in the crust of the earth, with their towering peaks and deep chasms, telling of the convulsions of Nature when the continent was formed, have been left behind, and the sea of mountains which have been passed leaves a picture on the mind that will live as long as memory lasts.





THE NEW ST. LAWRENCE MARKET, THE FINEST MARKET IN CANADA



INTERIOR, ST. LAWRENCE MARKET



# "EUROPE *versus* AMERICA"

Being the Rectorial Address delivered at St. Andrews University, Edinburgh, Scotland, October 22, 1902

By ANDREW CARNEGIE

I THOUGHT that I might interest you by considering a subject now attracting wide attention—the economic changes which have come and are impending in the relative position and power of nations, since it has been necessary for me during my business career to watch and study these and to base action upon them. The growth of nations in wealth and population, the social conditions and aptitudes of their people, natural resources, prospects, ambitions, national policy, all bore directly upon our problem.

It was upon no easy task that the American manufacturer entered when he determined to struggle for place for his country among manufacturing nations, and it behooved those who risked their capital, or incurred debt in the attempt, to keep a wary eye upon the doings of their established competitors, and weigh future probabilities of development in other lands.

In studying the manufacturing world, Britain claimed more attention than all other nations together, for here was the seat and throne of manufactures. We examine the globe and note how much is marked red under the Union Jack, and speculate upon what would be left if this were obliterated. But if in viewing the world's material development we should consider what would be left if her inventions were deleted, a greater void still would be found in this nobler field of conquest, for this island has also been the seat and throne of invention, the work not of the barbarous sword, but of the brain of civilized man. That development rests upon the steam-engine of Watt, one arm of which embraced the sea through the steamship of Symington, another

covered the land through the locomotive of Stephenson. Here is the great triad which has created the modern material world. This audience will not fail to note with satisfaction that all of these magicians were Scotch (the first two native-born, the last by descent)—a remarkable fact, and not to be readily accounted for except upon a hypothesis which national modesty prevents a born Scot from suggesting here in the presence of so many distinguished members of other nations. Arkwright, Hargreaves and Cartwright, through their inventions, brought economical spinning and weaving of textiles; those of Nelson and Cort, cheap iron; Bessemer, Siemens, Martin and Thomas, cheap steel, the most important article of all, since it is the basis of so many other articles. It is the inventions of these men based upon steam that have revolutionized the conditions of human life upon the earth, and, in passing, will you be good enough to note how many of these, and indeed of the supremely great in other fields as well, have at first worked with their hands? Whatever the future may have in store, nothing can rob Britain of the credit of having given to the world the means for its surprising development. Material Progress is Britain's child. At the time of which I speak, she was the only important manufacturing nation, for here naturally her inventions were first utilized. The reward obtained from this monopoly—for such it was—made her the richest of all peoples *per capita*. Her realized wealth is still unequaled. Forty odd years ago she made more iron and steel, manufactured more machinery, mined more coal, wove more cloth, than all the rest of the world. It



was Britain in the one scale, the world in the other, the world kicking the beam. In the dawn of this prosperity came Cobden and Bright, who insured cheaper food for the workers, which further stimulated manufacturing and insured Britain's pre-eminence. The theories of these great men and their school were justified in their day, one being that the various nations of the world were created with different qualities and resources, all so beautifully arranged that one was to supplement the other. Britain's destined part clearly was to manufacture the raw materials of other lands. Interchange of raw and finished and of different products, was evidently Nature's intention, thus uniting the nations in the noble task of supplying each other's wants. Nations were destined to be co-operating parts in one grand whole, and thus Commerce became the golden chain to bind the world in bonds of peace and good-will. There was only one flaw in the entrancing theory, but that was fatal—the various members were not satisfied with the parts assigned to them in the beneficent drama. On the contrary, each evinced the strongest desire to develop its resources and manufacture its own raw materials as far as possible. None relished being the mere hewers of wood and drawers of water to another nation: all wanted to play Hamlet, and as is usual in the most talented companies of performers, all believed themselves destined by nature for the great part. There came to the aid of the new ambitious lands, automatic machinery and scientific methods which largely solved the question of skilled labor. A few managing Britons, or Americans, can now readily be obtained to establish manufactures in any part of the world, and educate the natives to become satisfactory workers. In my travels round the world I carefully noted this weighty fact. I saw the peons of Mexico weaving cloth in factories, and engaged in iron and paper works, at two and three

shillings a day in silver, worth only one-half value in gold; the people of India, the Japanese, and the Chinese, all doing excellent work in cotton and jute mills; the negroes in the United States steadily rising in the scale and becoming good workmen in mines and in iron and steel works; the Russian, Hungarian and Italian, Swede and Norwegian, all making good workmen. Capital, management and skilled labor have become mobile in the extreme. The seat of manufacturing is now, and will continue to be, more and more simply a question where the requisite raw materials are found under suitable conditions. Capital and skilled labor have lost the power they once had to attract raw materials; these now attract labor and capital. The conditions are reversed. The cotton industry, for instance, was attracted from Old to New England, and is now attracted from it to the Southern States alongside the raw material. The jute industry, once centred in Dundee, is now also established in India, near the jute supply.

Another factor is clearly seen: the most patriotic people of every land consider it a duty to develop their resources. Hence Canada to-day gives twelve shillings a ton bounty for every ton of pig-iron produced, and Australia has a scale of bounties, and has just offered a large one for the manufacture of steel rails. They are not content to be dependent even upon the Motherland for manufactured articles. Germany, Russia and America give protection, and all the colonies tax your productions, thus giving their home producers incidental protection.

Another element enters. Business methods have changed in the past twenty years; manufacturing especially has been revolutionized by new inventions, improved machinery and new and enlarged demands. The old rule of thumb has given place to scientific precision. The Technical Schools furnish the young fore-



men and superintendents. Automatic machinery has developed a new class of workmen more intelligent than the old. The size of works has increased tenfold, and instead of partnerships devoted to one process, all processes, from the minerals in the mine to the finished articles, are combined in one. Railroads are constructed and fleets of steamships built and worked, all the needed materials are owned, the company is its own insurer, and everything entering into the product or needed to maintain the works is made by it. One by one subsidiary branches or new departments are added, and from a score of small streams of profit, unknown to the small producer of the past, the main stream is fed. So rapidly does one improvement follow another that some parts of the huge concerns are constantly undergoing reconstruction. Old-established works are seriously disadvantaged by the new order of things, especially if under joint stock ownership, because it is difficult to get from numerous small owners the capital needed for modern improvements. Hence the old countries, and particularly Britain the pioneer, have been disadvantaged, and the new American land, with a clean slate to begin upon, much favored.

The causes specified have already changed the positions of Britain and America as industrial powers. America now makes more steel than all the rest of the world. In iron and coal her production is the greatest, as it is in textiles—cotton, wool and silk. She produces three-fourths of the cotton grown in the world. The value of her manufactures is just about three times that of your own; her exports are greater. The Clearing House exchanges of New York are almost double those of London in amount. She furnishes you with most of the necessary food products you import. She has two-fifths of the railway mileage of the world. Thus she has become the foremost nation in wealth;

manufactures and commerce, and promises soon, in some branches, to occupy the position which Britain occupied when it was Britain *versus* the world. She already does this with steel. Although no Briton can be expected to see with satisfaction his country displaced from first place, there is yet cause for rejoicing that supremacy remains in the family. It is not altogether lost what the race still holds. Macbeth's fate is not Britain's. The scepter of material supremacy has been wrenched by no unlineal hand. It is her eldest son, the rightful heir, who wears the crown, and he can never forget, nor cease to be proud of, the mother to whom he owes so much.

The relative position of Germany has also changed. She has forged ahead, her product of steel being now second to that of the United States. In other departments her rate of increase is also great. She promises to run Britain close, perhaps by the end of the decade, for second place as a manufacturing nation. During the ten years previous to 1900 she added five and a half millions to her population, and almost doubled her production of iron, and increased that of iron ore from eleven to nineteen millions of tons.

In comparison with these three countries others are of trifling moment in the production of staple articles for export, always excepting that giant of the future, Russia, whose latent resources are enormous, and whose growth is so steady, not only through increase of population, but through accretions of contiguous territory. She must occupy a great position, but not in our day, nor perhaps in the next generation: if she hold together, she will be a continent under one government like the American Union, although, as far as known, not with comparable resources and conditions. She has employed more than one of my former assistants to construct and manage steelworks, and is vigorously developing her resources in



many lines. Her production of iron has doubled in the last twelve years. Coal mined in 1880 was six million tons, and in 1900, ten years, sixteen millions—an extraordinary increase. The cotton industry has also developed during the ten years. It is probable that she will soon supply many of her own chief wants, great as these are to be; but as these will be largely additions to present world needs, this will not greatly lessen the trade now tributary to other nations.

Belgium, for its size, is the most wonderful of all manufacturing nations, but too small and fully developed to play a greater part than now in the world's trade. One notes with surprise the magnitude of her commerce. Exports and imports *per capita* much exceed those of Britain, exports being as 11.4 per head to 6.14—almost double; even her imports are greater.

France occupies a unique position. She may be said to have, in the artistic quality, substantially a monopoly most difficult to break. Till women reach the height of wisdom attained by man and establish a uniform and unvarying style of dress, and as long as articles of luxury are in demand, and till men reach the wisdom shown by women in regard to French wines, so long will France remain in the first class of nations, although much further increase of her trade is not probable. I might also say that as long as the French people remain so industrious, frugal and free from the vices of other lands, gambling and drinking, so long her position is secure. It is significant that the silk trade of Britain has passed entirely into her hands, and that in motor machinery she is pre-eminent in Europe. The Swiss Republic may be included in what has been said of France. It is a wonderful little manufacturing centre. A splendid race the Swiss, who are often described as the Scots of Continental Europe, and very highly valued in America.

In our survey of the world the efforts of Canada and of Australia to manufacture were not overlooked. Nothing ever found or heard of in either of these lands was calculated to deter us from going forward without fear. If the United States had not transcendent resources, and an unequalled home market that enables it to sell its surplus to Canada cheaper than Canada can possibly produce, manufacturing might be established to some extent there. Under present conditions the outlook is not favorable. In Australia so little has been done, and, so far as I know, so little has been found of a favorable character, that it need not be reckoned with at present. Neither is ever likely, as far as yet seen, to be important factors as manufacturers for the world's trade.

In India, China and Japan the textile industry has taken firm root, and in the latter an attempt is being made to build warships from domestic products; but in none of these countries did I see much prospect of rapid or extensive development, except in textiles, one reason for this being that while the home market for these is great, it is small for machinery, steel, and other branches of our diversified industries of the West. The absence of a large home demand is a serious, almost fatal bar to the introduction of any new article of manufacture which must be produced upon a great scale.

From what has been said it will be inferred that the manufacture of staple articles for the world is to be chiefly conducted in our time and in the next generation by the three countries, Britain Germany and the United States, France retaining her own domain, although the smaller countries will increase their industries and supply a greater part of their own wants.

In the race for the world's trade between these countries several considerations are important. *First*—let this vital fact be noted—the most powerful weapon for conquering foreign markets is a pro-



fitable home market. It might also be taken as an axiom that the nation fortified by the best home demand for any article will finally conquer the world's trade in that article in neutral markets. In economic circles "the law of the surplus," as I have ventured to call it, attracts increasing attention. Manufacturing establishments are increased year by year until they become gigantic, simply because the more made the cheaper the product, there being a score of cost accounts divisible by product. By giving men constant employment, and having a reputation for never stopping, the best men are attracted and held—an important point. The manufacturer upon a large scale can afford to make many contracts in distant parts of the world, and even some at home, at a direct loss in times of depression, knowing that, upon the whole, the result will be less unprofitable by running full than running short time or stopping. Hence, those possessing the most profitable home market can afford to supply foreign markets without direct profits, or even at a loss whenever necessary. I speak from sad experience on this point, for during most of my life we have had to encounter Britain's surplus in our markets in times of depression here, to the great disadvantage of the home producer and advantage of the British manufacturer. This position the United States now in turn occupies toward Britain and other manufacturing countries, since it has the greatest and most profitable home market, not only for steel but for most articles. Invasions of Europe, and especially of Britain, by American manufacturers are not to be apprehended to any considerable extent, except at rare intervals. It is not the amount imported, however, that discourages the home producers; the knowledge that he is open to serious competition from abroad, a small amount of which will break his market, is what makes him loath to invest the great sums sometimes necessary to keep him in the

front, and robs him of the do-or-die resolve, which often is of itself the secret of victory in the struggles for life.

*Second*, the question of population bears directly upon the industrial development of nations, since increased numbers expand the home market. There are to-day 78,000,000 of people in the American Union. More than 600,000 immigrants from Europe will have landed on her shores this year. Her rate of increase between 1880 and 1890 was just about three times that of the United Kingdom. Last decade it was not so great, although more than double, having fallen, because of five years of depression caused by an agitation upon the standard of value, the most disturbing of all economic questions. Nevertheless she added 13,500,000 to her population. This decade, even at no greater native rate of increase than the last, will add more than 15,000,000. Every morning the sun rises it greets more than 4,000 new faces added to the Union.

Germany's population is 56,000,000; she added 5,500,000 last decade. The increase of the United Kingdom was 3,600,000. It is a serious disadvantage to Britain in the contest that her home market cannot expand as rapidly as the American, or even the German. Size of productive territory, as affecting population, is a prime factor in the race for the first place among nations in material production.

*Third*, we see proofs of another important law. Just as raw materials now attract capital and labor to any part of the world, so untilled fertile soil increases and attracts population. We note the rapid increase in the Mississippi Valley, and that America is consuming more and more of its own food supplies. It already manufactures as much of its enormous total cotton crop as Britain imports, and not more than 10 per cent. of all its field crops, except cotton, are ever exported. Wherever food products can be grown



profitably people will increase until the limit of food supply is reached. Where exceptional conditions exist, such as valuable minerals, population may remain in excess of the food supply, as with this favored island; but permanently to maintain population beyond food supply, a nation must be able to supply needed articles to so much better advantage than the purchasing nations can produce or procure them as to enable it to endure the disadvantage of higher cost of food.

It seems clear that the spread of manufactures will be so general that the leading nations will finally supply most of their principal wants—at least to a much greater extent than hitherto. It follows that exchange of articles between nations, "Foreign Commerce," is not to increase as rapidly as exchange of articles within nations, "Home Commerce." But the unceasing growth of the world will nevertheless probably keep British, Belgic and French foreign commerce and manufacturing at their present figures.

There is a great difference between a home and a foreign market, which is not much dwelt upon in Europe, to which I invite your attention.

Exchange of products benefits both buyer and seller. With British home commerce both are Britons; with foreign commerce one only is a Briton, the other a foreigner. Hence home commerce is doubly profitable. And this is not all. When the article exported, such as machinery or coal, for instance, is used for developing the resources or manufactures of the importing country, and enable these to compete with those of the exporting country, the disadvantage of this foreign Commerce to the seller, except the profit upon the sale, is obvious. How different when the machinery is sold at home and develops home resources continually.

Here is another important point. The relative importance of the two markets is often lost sight of. The home market of America takes ninety-six per cent. of

all manufactured articles, only four per cent. going to foreign markets. Even Britain's home market takes four-fifths of her manufactures, only one-fifth going abroad. Politicians give far too much attention to distant foreign markets, which can never amount to much, and far too little to measures for improving conditions at home which would increase the infinitely more important home market. If the people of the United Kingdom could spend even one pound per head more per year her home commerce would be increased more than the total value of her exports to all of Australasia, British North America and China combined. Truly foreign commerce is a braggart always in evidence, home commerce the true king.

In studying the industrial positions of nations, imports and exports are misleading. The undue attention still generally bestowed upon these by writers upon economics here is surprising. Arguing as they do who judge of a nation's prosperity by its foreign trade, America's prosperity to-day is lessened because her manufactured exports have for the day declined, which is, on the contrary, the best proof of extraordinary prosperity, for America at present needs all its manufactures in some branches for its own development. Happy country whose steel builds railroads, ships and other structures in its own territory. It is not what is exported, but the amount produced, that shows a country's condition, and what is not exported but put to profitable use at home is, as we have seen, doubly profitable.

The habits, conditions, intelligence and spirit of the masses are important elements in the industrial race, and we gave close attention to these as bearing upon our task. The German, as we know him at home and in the United States, is a valuable man, steady, sober, methodical, thorough, self-respecting, of fine domestic tastes, an admirable workman and super-



intendent. Thanks to the conscription of Germany, among other causes, we had many thousands of Germans in our service, of whom at least four whom I recall became partners and earned the millions of dollars they obtained. They fled from the conscription of their sons, and to-day the son of a German who left his country largely for the same reason is at the head of the greatest manufacturing corporation in the world. We owe a valuable invention to one of these men. The value of the German element to America can scarcely be believed except by those who, like myself, know it by experience. The total emigration from Germany and Austria-Hungary has about equaled that from Great Britain and Ireland. It may be accepted that if ever Britain resorts to conscription, the Republic will be still more enriched than it has yet been by one class of emigrants who will come in greater numbers than ever, even more valuable per man than the German—the Scot; and that many more than ever of the most valuable men of England—a splendid strain when they reach the “open mind”—will leave their shores for the land which knows not conscription.

One is not wrong in believing that it is the ablest and most ambitious who leave their own land—men who have saved enough to enable them to reach and to start in the new; that they have saved being the best possible proof of their value. One such emigrant is worth to America a score of inert stay-at-homes. One census showed that more than half the total number of Scotch emigrants were engaged in manufacturing. The three most celebrated pioneer manufacturers of iron in the United States were Scotch—Burden of Troy, Dickson of Scranton and Chisholm of Cleveland. The American is efficient beyond other men because compounded of the best of other nations and developed in a climate under political and social conditions all stimulating beyond any to be found elsewhere.

In comparing Britain with the Continents of Europe and America, much is seen unfavorable to Britain's industrial position and to the comfort and happiness of her people, both employers and employed. The former fail to give business the unremitting attention and to display the energy and enterprise of the founders of the practical monopoly of the past. They generally regard it as only a means to win entrance to another rank of society. The employed think too much of how little they need to do, too little of how much they can do. Both classes still take life easy in this day of competition which only the day of established monopoly could support. Employers would find it much to their own interests to give to their ablest employees shares in the business. The more given in this form the more would flow to the employer. The great secret of success in business and of millionaire-making is to make partners of valuable managers of departments. The contest between the old and the new lands to-day resembles that between professionals and amateurs. It is in their workmen that the Continent has one of its chief advantages over Britain, and America over the Continent, for even the German has to yield the palm to the compound British-German which makes the man of the more stirring New World. He could not be more thorough or methodical than the German, but he is more active and more versatile. Wages of skilled labor, though higher in Britain than in Germany, are not so much so as to rank in importance with the factors stated; the difference between the two is trifling as compared with that between Britain and America. It is not the lowest, but the highest paid labor, with scientific management and machinery, which gives cheapest products. Some of the important staple articles made in Britain, Germany and America are produced cheapest in the last, with labor paid double.

The two continents have another decided advantage over Britain in the



sobriety and regular habits of their workmen. The broken days of Britain both handicap the employer and injure the workman.

In viewing the immediate future of Britain without misgivings, as far as maintaining her present trade is concerned, I count upon the inherent qualities and capabilities of our race, which, lulled to drowsy inactivity by prosperity under highly favorable conditions, are bound to be again aroused by adversity, more or less severe, under strong competition. There is such wide scope for improvement that the most despondent may be encouraged; nor does the reform imply want or suffering, or less desirable conditions of life for either employer or employed. Far otherwise. That the drink bill of this country, now reaching the incredible figure of £160,000,000, should be cut in half, or only a quarter or less of it left, or, better still, if only £20,000,000 were left, implies not the degradation but elevation of the people. That the sums risked by both masters and workingmen in gambling, and the greater injury wrought in the waste of their time and thoughts, should become evils of the past, would improve the poor slaves of this habit. That they should smoke less would not render life less happy nor health less robust. There are now spent upon tobacco per year £32,000,000: better if half or more were saved. And so with many of the rude sports: better if these were abandoned. From these evils the Continent and America are comparatively, and in some cases almost entirely, free.

The peace expenditure and debt charge of the four principal Powers stand thus *per capita*:

	Expenditure.	Debt Charge.
United Kingdom....	£3, 10s.	8s. 6d.
Germany .....	2, 1s.	1s. 7d.
Russia .....	1, 15s.	5s. 2d.
United States .....	1, 8s.	1s. 10d.

Germany's position financially is remarkable; that of Britain in contrast deserves careful attention.

That Britain's present population, wealth or trade in the aggregate are to decline is unlikely. I believe these may even increase somewhat in the immediate future. Her wealth, climate, geographical position and resources are superior to those of any country in Europe, some of which, because of these very advantages, are allowed to furnish her with products which she herself could produce. They get the crumbs which fall from her more luxurious table. That busy hive, Belgium, for instance, sends her articles to the value of £21,000,000 yearly, £3,000,000 of this being cloths and yarns, £1,500,000 iron and steel. Germany is permitted to send £1,000,000 worth of cloth goods and £1,000,000 worth of butter and eggs. France sends silks and woollens to the value of £18,000,000; leather goods, £1,750,000. Little Denmark, with a population not much exceeding 2,000,000, supplies Britain to the extent of nearly £12,000,000—almost as much *per capita* as your total exports. Denmark receives £7,000,000 yearly for butter and £3,500,000 for bacon and eggs. The latter item equals the total value of all you send her. Norway, Sweden and Holland send her £1,500,000 worth of butter, and the latter also sends gloves and glassware valued at £1,000,000. Here are £60,000,000 worth per year of foreign supplies, most of which Britain could herself produce, and will produce if ever she fails to find more profitable occupation for her own people, as she now does, or if ever her people become as industrious as those of the Continent, thus obtaining a permanent home market almost equal in amount to one-quarter of all her foreign exports.

Thus Britain alone among European nations holds in reserve an important home market capable of yielding profit equal to at least one-third or more of all



her present export trade, since home commerce is doubly profitable. Here lies an untouched mine of wealth. She has in her unrivaled supply of coal, as far as Europe is concerned, another mine of vast wealth.

There is one dark cloud upon her horizon which cannot be ignored. From the best information I can obtain, in twenty or twenty-five years the supply of Cleveland iron-stone will be practically exhausted at the present rate of production, except that two concerns will then still have sufficient for some years longer. The Cumberland supply is already nearly exhausted. This will bring dearer iron and steel. Without cheap iron and steel the construction of ships and machinery of all kinds, and of the thousand-and-one articles of which steel is the base, would tend to decrease; but the loss in this trade may be compensated for by increase in other branches, caused by the ever-growing wants of the world. Britain is not alone concerned in the iron-stone supply, for, as far as I know, the supply is soon to become precarious in some of the other manufacturing nations before many decades pass unless new sources of supply are discovered. Even the United States has a proved supply of first-class ore only for sixty to seventy years, and a reserve of inferior grades which may keep her supplied for thirty years longer, say for a century in all, unless the rate of consumption be greatly increased. The enormous extent of territory in the Republic over which ore can hopefully be looked for encourages the belief that new deposits are sure to be found. It is upon new discoveries that Britain depends, the outlook in her case being less hopeful. Germany has to-day, as far as proved, the most enduring supply, although its ore is not nearly so rich as the American.

Years of painful lessons may be, and probably are, before the people of Britain, but the discipline will be salutary, leading to their improvement and eleva-

tion, and hence to make life here truly happier because freer from degrading tastes than ever before.

The evils of poverty receive unceasing recital, but there are evils of long-continued prosperity of no mean order which pass without the attention their poison warrants. The decay of great States is traced, not to poverty and want, but to the reign of luxury and the vices it breeds. A Britain filled with people possessed of the valuable qualities of our race, and becoming as temperate and industrious as the French, German or American, has nothing to fear in the struggle for maintenance of a place among industrial nations. She needs no sympathy since her destiny is in her own hands. Fortunate, indeed, may be the verdict of her future historian, if sheer necessity at this epoch in her history compelled her to discard the vices engendered by a long season of extravagant gains, and consequent spread of the evils which luxury brings in its train, and led her once again to tread the toilsome path of self-improvement. A nation's position often depends upon the character and attainments of the leaders it produces—the exceptional men who lift their fellows. May it be the part of the historian to record that in inaugurating, and by example, precept and exhortation, conducting, this great campaign for the improvement of the habits of the people, rich and poor, noble and commoner, rulers and ruled, there was one body of men distinguished above all others for the enthusiasm, labor, ability and sacrifice displayed in every part of the field—the students, graduates and alumni of Scotland's oldest university.

To summarize in one paragraph the laws bearing upon the material position of nations, as described, may not be amiss:

(1) The chief nations of the world have greater capacity to supply their own wants than was supposed.

(2) Skilled labor has lost its power to attract capital and raw materials, which



under favorable conditions now attract capital and labor.

(3) Nations will develop their own resources to the greatest possible extent as a patriotic duty, offering inducements to the enterprising to risk time and capital in the task.

(4) The country with the largest and most profitable home market has an invincible weapon for the conquest of foreign markets, as the "law of surplus" operates in favor of the largest producer in competing for the trade of the world.

(5) As nations are more and more to supply their own wants, home commerce is to increase much more rapidly than foreign commerce.

(6) Nations tend to increase in population according to their capacity to produce cheap food.

The tendency to enlarge areas under one government must continue, otherwise the small nations become mere pygmies industrially and play no part in world-wide affairs.

These laws have already given some proofs of their sway, to which I beg to direct your attention.

We hear of huge industrial combinations on land and sea, but the combination of forty-five States, some of them larger than the United Kingdom, forming the American Union, which promises soon to equal Europe in the production of many of the staple articles, and is already producing more than the rest of the world of the article of prime importance, is a portent of infinitely more consequence to the world than any possible industrial combinations; the latter being trifling in comparison. At the present rate of progress America will, in the lifetime of many present, have a population equal to that of Europe to-day, excluding Russia.

The influence of a united Continent upon the separate smaller nations of the world is already felt. Europe sees its art treasures and its shipping lines and the

centre of finance passing to the new land as primacy in manufacturing; in wealth and in commerce have already done, under the law of gravitation, which operates in every field, even in that of literature. Eight copies of the *Encyclopædia Britannica* find their home in the new land for every one in the old land of publication. The manufacturers of the new land invade the old and compete in the world's markets. These facts have not escaped the attention of the nations. Austria's Premier was among the first to direct attention to the situation, and he has been followed by others in authority. Europe is alarmed at the threatened consequences, and the search is now directed to the discovery of countervailing forces. The first necessary step in this task is to compare the two continents and note the points of difference which create the dangers feared. We have treated of the positions of different nations hitherto; now we must contrast Europe and America as units—continent against continent.

There are some portentous contrasts.

*First*, we find Europe an armed camp, every man's time and labor for years taken for military training, not merely unproductive labor, but labor costly to the State. Nearly 9,000,000 of men are thus called to military duty. The American Union, on the other hand, has only an army of 66,000 men, and there is no conscription. Its men are in the industrial, not in the military army, constantly adding to the material wealth of the country. She is further enriched through the operation of conscription in Europe.

Europe has 410 battleships, cruisers and coast defense ships; America, 35.

It would be difficult to overestimate the effect of this contrast upon the industrial development of the two continents.

*Second*, America is one united whole at peace with itself, and enjoys immunity from attack by neighbors, or even by Europe, since she supplies so many parts of it with necessary food products that



non-exportation of American products would produce not only famine prices, but actual famine itself, and compel peace. Hence industrial development has one indispensable condition—peaceful security. In Europe this is lacking, for it is divided into hostile camps. That its huge armaments cannot go on unceasingly growing is evident—an explosion must come. That this is considered imminent is evident from the measures taken by the nations to protect themselves from its consequences. If rulers and statesmen did not see the inevitable result impending over their heads—a Damocles sword—they would strain less violently in preparation. It is impossible for industrial development to proceed satisfactorily under the shadow of this dreaded catastrophe. There is nothing so timid as capital.

Until these contrasts cease, anything approaching equality of power between the industrial armies of the old and the new worlds is unattainable.

*Third*, since his continent has less than thirty people per square mile, the American has a constantly expanding home demand, urging him to extensions, and justifying costly improvements and the adoption of new processes. He has also a continent under one government. He establishes his several works at the centres of the various markets. If a needed ingredient be found in one State, another somewhere else, if it be desirable to construct works for one part of a process here, or there, or ply ships, or build railroads in any part of this broad area, he proceeds without hesitation, dreading neither interference with supplies, hostile legislation, nor national antipathies. "No pent-up Utica contracts his powers": more the boundless continent is his, as are all its markets, free from tariff. His operations are free from start to finish.

The result is that every process of manufacture in the Union flows naturally to the localities best adapted for it, there

being no barriers to free selection. The best places also are selected for assembling materials, raw or partially prepared, for their final forms. In short, it is free, unrestricted trade in everything under the same conditions, same laws, same flag, and free markets everywhere over an expanding continent—advantages which only those experienced in industrial trade will estimate at their full value.

The European manufacturer finds obstacles to such varied expansion in a continent divided into hostile and warring States with different laws and exactions and tariffs at every boundary, the fear of war overhanging all. He is almost compelled to confine his investments and works to the small area of his own country and its small home market.

One of many telling advantages which industrialism receives from political union in America is that a great home demand for any article from one united people occupying a continent evolves standard forms, the evolution of the best types, which justifies the manufacturer in erecting special machinery and running it exclusively upon each part of the type. Railway, electric, harbor, bridge—engineers in these and other branches adopt the standard forms: hence whenever a huge bridge, for instance, is needed promptly in any part of the world—Egypt or India—America is applied to: the steel-maker has his bridge construction and bridge erection departments managed by specialists who know what is best much better than any general engineer can possibly do. The proper plans for the standard bridge required are taken and the work begins instantly. Note here that the steel-maker is also the bridge contractor: a vital point. The bridge is probably open for traffic before the European engineer could have submitted plans and the bridgemaker had contracted with the steel-maker. A new bridge in Europe is a new creation in which several separate contractors have participated; in America



it is from standard patterns evolved from experience and completed from start to finish by one contractor.

In greater or less degree this exists in the manufacture of the principal articles of which America is now the greatest producer. Consider agricultural machinery. One of the leading English manufacturers once told me that he had been compelled to abandon foreign markets and finally to cease business. The American manufacturer had triumphed. While here three or four hundred machines were sufficient for the season's demand, his friend in America put in hand seven thousand. Megalomania again. This output justified the automatic machinery used in every process of manufacture. If my memory be correct, it was twenty-two men in Britain for two men in America in one of these processes—that is, the machinery did twenty men's work. Why, then, not adopt it in Britain? you say. Small home demand is the adequate reply, and that demand itself open to the American competitor.

Here is an illustration of different character. The Republic has now more than ten thousand miles of connected river and lake navigation which supplies the cheapest inland transportation of materials in the world. Having one government, these lakes and rivers were easily improved and joined, harbors deepened, and rivers rendered navigable by means of movable dams and locks. The work still goes steadily on under government naval and military engineers. Some years £12,000,000 have been devoted to it. In one day recently 226 barges, containing 200,000 tons of coal, passed through the Ohio River lock at Pittsburg for Western and Southern cities. All articles can be thus floated or towed to points three and even four thousand miles distant for a few shillings per ton.

The iron-stone from Lake Superior mines is transported over part of this water system to the coal of Pennsylvania

for nine hundred miles at a cost of two shillings per ton—one of several elements in the making of cheap steel. So much for water transportation through the action of government; now consider land transportation by railroad through private agency. There is free trade in railroad building—five men in Pennsylvania, for instance, can meet and organize a company under the general railroad law by satisfying the county court that it is a bona fide enterprise, and that the capital is subscribed and one-tenth paid in: a charter issues costing eight shillings, and the work begins. Railway traffic rates per mile do not average over one-half, sometimes one-third those of Europe for long distances—often for three thousand miles merchandise is carried by rail in bulk, without transfer, at rates that would surprise you.

Pause to consider for a moment what such facilities by land and water mean as bearing upon the area of the home market which the gigantic producer of any article can reach and supply—and then carefully note how impossible to acquire these except through the action of one central government, disregarding of the rival claims of its petty parts, and dealing with the problem solely from the national point of view, always intent upon developing one unbroken system of transportation.

Let us go to Germany for another proof that magnitude tells. She is supreme in speed upon the Atlantic: no steamships like hers. And why? Because these monster ships start from Germany after draining the passenger travel of Northern and Eastern Europe. Not content with this, they touch at Southampton and compete for British travel, and still unsatisfied cross to Cherbourg and drain France and Southern Europe. On their homeward trips from New York they are filled with passengers for all these ports. It is not subsidies which enable the Germans to conquer here, for their lines are not



paid more than half what British lines on the Atlantic receive. It is magnitude. The 250,000,000 people the German lines serve is equivalent to a great home demand. This justifies their ocean greyhounds as the American home market justifies unequaled manufacturing establishments. Since these lines were penned strong proof has come of the law of surplus. The Britain, the smaller market, has been compelled to pay \$150,000 per year for two Atlantic greyhounds, while the greater market, Germany, has four of these supported by the greater demand of the greater market.

Germany, in herself, furnishes proof of the necessity in this age for consolidation of small areas. As long as she was cut up into petty divisions, with different laws and tariffs, she had no international position industrially—it was impossible she could have. United into one empire, with free trade over the whole area, giving a home market of 56,000,000 people, she only needed to encourage the development of her resources, which was wise statesmanship, to become the dangerous rival of Britain, and even to outstrip her in the most important article of all, steel.

One more illustration. Switzerland was the land of watch manufacture by hand. America introduced machinery, having an enormous home demand—there being scarcely an American adult without a watch. Now one concern there makes more watches than all of Switzerland, as one American constructor makes more locomotives than any European country, and one agricultural implement maker makes more machines than all Britain.

Another proof of the value of home demand can be given from Britain. One important department in Europe is unequaled by the American—shipbuilding, which also obeys the law of great home demand. Since Britain has been the great exporter and importer of the world and the greatest naval power, naturally the building of ships has taken firm root

there; and in the world's market she remains supreme. Having the enormous home demand, she conquers the foreign.

More and more clearly must the truth be realized that the industrial struggle among the nations is bound up with the political, the question of magnitude being at the bottom of supremacy in both. A nation cannot be small in size and in population and remain great in material products or material power. To maintain first rank industrially, commercially or financially small nations must merge with others and become prosperous parts of one great federated power. Once the race was between separate nations, henceforth it is between continents.

Ask yourself this question. If America had been composed of petty, independent, jealous States, as Europe is, each afraid of the other, and armed to the teeth against expected attack, and had erected tariff barriers against the products of each other, would Europe ever have heard of the American Industrial Invasion? To ask the question is to answer it—never.

The deepest and most powerful of all contrasts between the two is that the one continent is one harmonious, peaceful, co-operative whole, its power and energy directed to industrial progress; the other divided into hostile camps—the power and energy of each directed to military protection and commercial isolation.

Ask yourself another question. Can Europe, as long as she remains divided into hostile camps, ever hope to conquer foreign markets or even to repel the American invasion? That question also answers itself—never.

Such are the chief contrasts between the two Continents and their effects bearing upon Industrialism. What must Europe do to dispel them? There is only one answer. She labors in vain until she secures some form of political and industrial union and becomes one united whole, as the American Union is in these respects, for this is the only foundation



upon which she can ever contend successfully against America for the trade of the world, or each of her separate nations hold its own home trade in manufactures, except under a system of protection which must handicap her in the race for the trade of the world. The load of militarism would cease to press upon her, for a very small percentage of the cost of the present defensive armaments of the Powers would suffice to protect her from foreign attack. Europe is a body whose members war against each other; her enemies those of her own household. A sorry spectacle.

The consolidation of Europe has proceeded apace within a century. Napoleon abolished more than a hundred independent centres of quarrel in Germany alone. In our own day we have seen Germany emerge, through Federation, into one of the strongest of powers and reach the front rank industrially, Italy reconstructed and enlarged, France adding Savoy and Nice. Several smaller changes in territory have taken place, but no student of international affairs assumes that Europe has yet reached its final forms. It is still in a state of flux. Hence the great Powers sleep upon their arms, mistrustful of each other, and in every successive budget devote huge sums to increase their war power, thus from year to year giving that fearful note of preparation which keeps capital alarmed and prevents rapid and thorough scientific industrial development and free exchange. No end can be safely predicted to the struggle once begun. Twenty wars and peaces may find Europe still in flux, if its final forms are to be determined by the sword. Fortunately consolidations have reduced the centres of disturbance until to-day there are only five in Europe, and, as a result even Europeans are now sometimes permitted to rest from the slaughter of each other for a generation, guiltless of their neighbor's blood, and this although Europe is an armed

camp and the Powers still busy increasing their destructive agencies. We should hail the Triple and the Dual Alliances, since these are defensive agreements, and reduce war-making centres practically to two, a contest between which would be of such stupendous magnitude as to give the most reckless gamester pause. But the merely negative influence of these alliances is clear. They cause not one moment's cessation in the race for additional armaments—proof that the Powers still fear each other in spite of these consolidated agreements, and dread the coming of an inevitable struggle, which is to end only when the map of Europe is greatly changed. Hence the military army exacts its conscripts from the industrial army, and progress halts in all the fields of peaceful development. Security is absent. Some have predicted that no permanent peace is possible until the division among the great Powers be effected substantially upon racial lines. Such drastic reconstruction means generations of strife, or of preparation for strife, almost equally disastrous to industrial progress, and would still leave three rival Powers. Such a solution should not be thought of. One exclaims instinctively, "Take away the sword—States may be saved without it." The most important gain of all to the cause of peace among men is to be credited to the enlightened and peace-loving Emperor of Russia. The Hague Conference, called by him, established a permanent tribunal composed of the ablest and best men of the various nations, a selection from which can be made by nations to settle their differences.

Its value has not been realized. Wars in South Africa and the Philippines arose and absorbed attention. In both of these our race was offered by its adversaries arbitration through this agency, which was ultimately rejected, but the time comes when we shall begin to appreciate what the world has gained thereby. Two



international disputes have already been submitted to this high court of humanity, and the example once set is bound to be followed and crystallized into custom. A thousand years from now the historian will probably cite as the most important event of the century the first creation of a tribunal whose object was to banish from the earth its deepest stain, and from human beings their most inhuman practice, the settlement of international differences by the killing of each other. Such the part played by the present Emperor of Russia. Such his unimpeachable title to rank with the few supreme benefactors of men. It is something gained that Europe might relieve itself of internal wars among its parts, as if by magic, by simply agreeing to appeal to this tribunal.

The three leading powers, Russia, France and Germany, took joint action in regard to a question in the far East, and more recently Britain joined them in joint action in China, the United States co-operating to some extent. These are all cheering signs, indications that perhaps the era of continuous joint action is not so far distant as might be feared. The Triple and Dual Alliances, or a new grouping of parties, might guarantee the *status quo* and agree to cease increase of armaments, which would not change the relative positions of nations. Perhaps a second resolve might soon follow that these should be ratably decreased, but this being a positive, not a negative measure, would be more difficult. Still, much seems possible in the direction of peace, since there are now only two organizations to be harmonized.

"A great man has arisen in England, Sire, called Cromwell," said Richelieu to the King. We might say "A great man has arisen in Germany, the Emperor." It is impossible to follow his doings without feeling that here is a personality, a power potent for good or evil, in the world. So far he has given Germany a much-needed stimulus to industrial action.

Both on sea and land his influence has been decisive. The German ships are first in speed upon the Atlantic. The inland watercourses of Germany, according to his plans, are soon to play a more important part in her internal development. She is now second in the world as a manufacturer of steel, which means much, since that is the basic element of a thousand articles, and her product of iron is soon also to be second. The Emperor's head and hand and heart, too, are in all these triumphs. He is at once the Emperor and the vital force of the empire. One wonders whether, after having proved the efficiency of the German Constitution, he may not devote himself to its further extension. All that Germany has gained by consolidation into an empire Europe would gain, and more, if merged into one. A combination of the German and American Constitutions, satisfactory to most, if not all, European nations, seems not impracticable, and the union only of the most important is required to insure peace. France, Germany, and Russia would suffice, and these have taken joint action already against Japan. Why are they not to do so hereafter in the greater issue? Under both the German and American systems small nationalities are sacredly preserved as in the Union of Scotland and England; hence the perfect welds. The Kings of Saxony and of Bavaria are German. Every State in the American Union is in itself sovereign with its elected Governor. Wherever suppression has been tried trouble has arisen. Imagine the effect of an attempt to destroy Scotland's nationality and stamp out the sentiment which lies in the core of every Scottish heart, which no words can ever express but "Scotland forever." With this precious national patriotic sentiment properly recognized and protected, consolidations of nations will be easy and wholly advantageous.

The coming century is to look back upon the present petty political divisions



of Europe with the feelings we of to-day entertain for the one hundred and fourteen little States of Germany and their pygmy monarchs of the past century, with their thirty-four tariff barriers to commerce and travel on the Rhine, resembling the Likin of China.

The Emperor of Russia having taken the first step toward the peace of the world in The Hague Conference, the other mighty Emperor might some day be impressed by the thought that it is due to himself and to Germany to play a great part upon the wider stage of Europe as her deliverer from the incubus which oppresses and weakens her, the appalling and paralyzing fear of a war of ruin between the members of her own body. Seldom comes to the world one who is both Emperor and ruler, and the few known to history have made their mark upon the world, from Cæsar and King Alfred to Charlemagne. No ordinary task contented them. One cannot help believing that "one of the supremely great" in the Emperor's position could influence the few men who to-day control Europe to take the first step, not to federate, but by alliance to insure internal peace, which is all that can be expected at present. What the separate nations of Europe—Russia excepted—have to look forward to in the not distant future, if they do not agree so far as to enjoy peaceful security and free trade among themselves, and act in wars, military or industrial, as one power, is to revolve like so many Liliputians around this giant Gulliver, the American Union, soon to embrace two hundred millions of people of the English-speaking race, capable of supplying most of the world's wants, both in manufactures and food products, at lowest and yet to it profitable prices. The most sanguine predictions in regard to her advantages and coming triumphs industrially and commercially are, in my calm judgment, probably to be exceeded. Even if European nations were reconciled

to play the subordinate role indicated, there remains the impossibility of their enduring forever the present military strain under which some already begin to stagger. The loan must sooner or later prove too great and force reconstruction.

Let us therefore assume that Continental Europe will be finally compelled, after greater or less sacrifice, through ruinous wars or peaceful negotiations, if not to federalize in some form, yet to adopt means to insure peace among themselves which would lead to some form of federation under free trade. It would then be continent against continent—Europe *versus* America: with the former relieved from militarism there would be equality so far and both could prosper with a large home market and participate in the ever-increasing trade of the world. There is little room to-day for operations upon a small scale either in industrialism or in nationalism—nation against nation was once well enough. Britain and France, Italy, Germany, Austria-Hungary were each once of sufficient size to rank as great powers, but the American Continental Union—forty-five States in one, has changed all that. The solid mass of this great body in action will by mere momentum force its way through small industrial warring units into opposition. There is also huge Russia to be reckoned with, which likewise threatens to overshadow the small nations.

The closing paragraph of Morley's "Life of Cobden" is most pertinent to to-day's conditions:

"Great economic and social forces flow with a tidal sweep over communities that are only half conscious of that which is befalling them. Wise statesmen are those who foresee what time is thus bringing, and endeavor to shape institutions and to mold men's thought and purpose in accordance with the change that is silently surrounding them."



The question arises, what would Britain do if Continental Europe be thus relieved from internal dangers and under free trade possessed of the indispensable home market, and were finally to be federated into one Zollverein or great power? Would she remain a small separate island nation of forty-five or fifty millions, against the hundreds of millions of the Continent? Or, if invited, become a member of the European consolidation—our race submerged by Slav, Teutonic and Latin races? Or would the mother-heart, beating fast within her, turn her gaze longingly to her children across the sea, then hundred of millions strong, and, grasping their outstretched hand, murmur, "Whithersoever thou goest I go; thy people are *my* people": the English-speaking race thus becoming again as it was before—for offense never, for defense ever—one and inseparable.

It is for essays upon this momentous question that I shall offer the usual Rector's prizes.

Students of St. Andrews:—My subject has been the Industrial Ascendency of the World, once yours, and now passed to your lineal descendant, who bears the industrial crown. But, gentlemen, in this audience, assembled in Scotland's oldest university, the thought that fills your heart and appeals to mine, is, of what value is material compared with moral and intellectual ascendency, supremacy not in the things of the body but in those of the spirit! What the barbarous triumphs of the sword compared with those of the pen! Peace hath her victories much more renowned than those of war: the heroes of the past have been those who most successfully injured or slew; the heroes of the future are to be those who most wisely benefit or save their fellowmen. What the action of the thews and sinews against that of the God-like reason, the murdering savage armies

of brutal force against the peaceful armies of Literature, Poetry, Art, Science, Law, Government, Medicine, and all the agencies which refine and civilize man and help him onward and upward! Shakespeare and Milton, Burns and Scott, Newton and Hume, Bacon and Locke, Cromwell, Hampden, Pym, Sidney and Russell, Burke, Gladstone, Bright, Tennyson, Browning, Arnold, Carlyle, Ruskin, Darwin, Watt, Symington, Stephenson, Bessemer, Arkwright, Hargreaves, and others of the past; and all the leaders of to-day who march in the train of the white-robed angel of peace and good-will among men.

There is no ascendency of the world and that the highest, where neither unbounded fertile territory immense store of minerals, nor numbers, nor aught material, are of value, where megalomania reigneth not. For the crown of this realm you have no cause to struggle; it is already yours; it has never been lost; it remains here in the old home. Nor has the blast yet blown of any challenger from either of the four winds of heaven. The crown of the material world physical reasons prevent you wearing, although man for man you may remain the equal or superior of any. There is no reason why you should lose the other. See to it that you do your best to guard it against all comers, men of St. Andrews, for precious it is beyond all others, and blessed among and beyond all other nations is she whose brow it adorns.

Let other nations therefore distribute among themselves as they may the victories of materialism. Precedence for Britain, the dear old home of our race, is the thing of the spirit, the modern Greece, and more than Greece ever was to her world, at whose shrine all that highest and best of the nations of the world will dutifully attend to testify their gratitude, admiration, reverence and love.



# THE IMPRESSIONS OF JANNEY CANUCK ABROAD

By EMILY FERGUSON

## CHAPTER X.—(Continued.)

London, Jan. 15th.

EVERY Thursday, I go to the City Temple, to hear Dr. Joseph Parker, and each time I am more impressed by his trenchant utterances and strong personality. A craggy, leonine head, with a tawny mane of hair, a massive outline of countenance upon which sixty years have printed their tale, and a broad majestic forehead give him a great dignity of appearance. He is dramatic in gesture, and speaks as one having authority. Sometimes his voice drops to a whisper, and again, it is raised in ringing emphasis. He has a vigorous vocabulary, and a sense of most exquisite irony.

Yesterday he preached on Eccles. vii., 25 and 29. "Men," he said, "have always sought to know a reason. It was so in a memorable interview, in a memorable garden. Ah, Eve! nothing between you and complete success, *but just one mouthful of fruit*. Yes, Eve! You will know all about metaphysics and physiology and psychology. You will get behind the north wind. Eat and be defied! Man has always sought a philosopher's stone, a lost key, a missing link. He is a foolish man who prys too much into the reason of things. Light is only one syllable, but it holds all literature as a dewdrop holds the sun. We cannot explain God: He comes to us in condescension. He lays His glory by, that we may not be afraid. Comprehend God! We cannot measure beyond our arithmetic, and at times it goes mad, and our minds fail to comprehend its jibber and jabber, and immeasurable cipher. We try to

climb the stars when we have no ladder. Why not say, 'I am five feet high, and beyond that I cannot reach, except part of the length of my own arm. If ever I walk on the stars, it will be God's good time, but in the meanwhile, life is duty.'"

"True, God is a mystery, but a mystery of supreme light, but we must choose between a mystery of light and a theory of darkness. The negative is more troublesome than the positive. No prison is so awful as darkness. God did not say there was a God. He would have belied His credentials. He assumed God. He did not say, 'You must pray.' He assumed the religious nature of man and said, 'When ye pray.' We degrade the sanctuary when we preach regarding the existence of a God. We satisfied ourselves of that before we built the church. We did not build the church to prove it. In the dim path of the search for truth, the place for us to halt, is Faith, 'Lord increase our faith.'"

Dr. Parker sent us away with the words of this benediction ringing in our ears: "Mercy, Truth, and Faith, the threefold gift of the Triune God, teach us to know the reason of things." The congregation, which is made up of all sorts and conditions of people, frequently applauded his burning words. The singing is always hearty. Indeed, I am constantly struck with the singing powers of the chapels as compared with the churches.

The pulpit, which was presented to the Temple by the Corporation of the City of London, is a beautiful thing of colored alabasters, lapis lazuli, cornelian, and malachite. The stained windows do not display the usual saints with impossible drapery, splay feet, goggle eyes, and dis-



torted heads. One is a copy of Holman Hunt's "Light of the World," and another is dedicated to Dr. Livingstone, which recall the lines of *Punch*, the burial in Westminster Abbey, of this famous explorer.

"Open the Abbey doors and bear him in  
 To sleep with King and statesman, chief and  
 sage,  
 The missionary born of weaver kin  
 But great by work which brooks no lower wage.  
 He needs no epitaph to guard a name  
 Which men shall prize while worthy work is  
 known,  
 He lived, he died for men, be this his fame  
 Let marble perish—this is *Livingstone*."

A stroll westward from the City Temple brings you to Giltspur Street, so called from the knights who wore gilt spurs riding that way to the jousts in Smithfield, once the scene of quintain, tournaments and miracle plays. At Smithfield too, were held the Bartlemy Fairs, with their bull and bear baiting, acrobatic performances, prize fights by women, shows of dwarfs, monstrosities, and tigers pulling feathers from live fowl. However, the most popular amusement was the burning of witches and heretics, hence it was known as "Ruffian's Hall." It was in Smithfield that the Lord Mayor killed Wat Tyler, and in 1305 William Wallace was here beheaded.

This Golgotha will always be a blot on England's escutcheon, and on the memories of those apostles of religious bigotry, and blinding fanaticism who here lit the torch and whetted the blade. Two hundred and seventy-seven persons were burnt before, in the words of Fuller, "the hydropical humor, which quenched the life of Mary, extinguished also the fires of Smithfield."

Here, the flames licked up the life of the beautiful Anne Askew, she having been brought hither in a chair, because forsooth, my Lord Chancellor Wriothesley, "stockish, hard, and full of rage," had almost torn her body asunder on the

rack, and so she was unable to stand on her poor dislocated feet. To this spot too, came John Bradford, John Rogers, and a host of other "Holy men who died here martyr'd and hereafter glorified." It was a hard problem the church had to solve, for what could she do with men who passed to their death with light steps, and the words on their lips. "This is life eternal." Their bones, with scarce a semblance of humanity, were buried where they fell, and now a tablet marks the spot.

To the memory of these saints, and that of my own good ancestors, I laid a wreath of laurels on the stone, all the while repeating mentally some lines, the burden of which was, "Lest we Forget."

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## CHAPTER XI.

### THE CHURCH MILITANT.

London, Feb. 1.

Last night we attended a Protestant demonstration in the Royal Albert Hall, held under the auspices of fifty societies.

Deputations were brought from Ireland, Scotland, and Wales, by special trains. Although we had tickets of admittance, we found it hard to get in, and had to push our way through the elbowing crush that filled the vestibule. Already ten thousand people (six hundred of them clergymen) were seated in the great amphitheatre.

The chairman, Lord Kinnaid, said this meeting was the greatest demonstration of modern times. From four o'clock that day, he had received 685 telegrams from all parts of the world, one from Nottingham said, "We the undersigned English men and women, loving civil liberty, heartily support your efforts to maintain the grand cause of Protestantism to which England owes her greatness." To this telegram were appended 3,333 names, every one of which was telegraphed.



At the close of the meeting, a number of his admirers called for a speech from Mr. Kensit. The chairman declined to voice the request, but they persisted for fully five minutes, till Mr. Kensit rose, and in heated words said, that by a disgraceful arrangement he had not been allowed to speak. It is quite evident that Mr. Kensit has been cold-shouldered by the Evangelical party. They object to his designating the Protestant movement as "The Kensit Crusade," and to his self-imposed task of leadership. Privately, the Evangelicals speak of him as an unknown, presumptuous commoner, a bugbear, an incubus—their "old man of the sea." It is true that he is not a gentleman, even in the widest stretch of that very elastic term, but still it was by these same objectionable traits that he brought the flagrant violations of the Clergy prominently before the public.

The Evangelicals look to Prebendary Peploe as their head. His master mind dominates the whole movement. He thoroughly understands the subject, is a quick and accurate disputant, and his words have a manly ring.

London, February.

The Archbishop of Canterbury preached yesterday at St. Bride's. His face is gaunt-muscled with the record of hard thinking writ roughly all over it, and his head might have been modelled with an axe. His sermon was along the line of "definite religious teaching," in which the clergy tell us from time to time we are lamentably deficient. It was a hard-headed essay on the well-worn topic of Baptismal Regeneration. His elucidation of the question was what rude Dissenters would term the exquisite elaboration of a lie. His Grace preached with the aid of an excessively ornate staff, which in no way improved a monotonous discourse. He could not, even by the

most charitable, be considered a popular preacher: indeed, I have a shrewd suspicion that a Canadian parish in the back counties would probably starve him out.

Having cast this little stone of criticism, I might say that our Archbishop has the uncommon merit of not erring on the side of prolixity. He is logical and concise in expression, a man of enormous erudition and of rugged mental strength. His position at the present crisis is no sinecure. Stormed at with shot and shell from all quarters of the Church Militant, he holds a true balance. When the smoke of battle clears away, it will be seen that with sanity of nerve and brain, he kept a steady finger on the pulse of the body ecclesiastic. He is a man of sturdy rectitude, has a depth of charity that is not easily provoked, and a width of vision which can see more sides than one of any mooted question—He needs it all!

In pursuit of pulpit celebrities, I betook me to hear the Rev. W. Hay Aitken. In personnel, Mr. Aitken is tall and dignified. He has a masterful carriage, a well-poised head and a thin, sensitive face. A Yorkshire yokel was once asked if Mr. Aitken used much ritual. "Ritual! naw, 'im just sings a 'im and sez a prayer and then goes *bang* at 'em." While this illustrates Mr. Aitken's practical activity, the great mission preacher is also a man of wide culture and intensity of feeling. He possesses a remarkable knowledge of human nature, and a faith that is clear, sharp-cut, and well-defined. He has the power to fuse his thoughts into subtle words that have a spell in them. Words are to him what colors are to a painter. He thinks well, and so speaks well. Mr. Aitken's audiences cannot fail to be impressed with the fervour of his earnestness and the glow of his holiness. He is a master of assemblies and his words are as nails.



# THE HOME

BY JANEY CANUCK

LOOSE LEAVES FROM THE DIARY OF A TYPHOID PATIENT.\*

WHAT do you think about shut up here alone?" queried the Doctor.

"I have never been ill and often wonder what are my patient's thoughts."

What do I think of? I lie and pray *Eugene Aram's* prayer as he watched the school-boy close his book:

"Oh God, could I so close my mind  
And clasp it with a clasp!"

What do I think of? In a broader sense of the word I am a "free-thinker." Like Macaulay, I find I have forgotten nothing that I have ever heard, seen or thought. What a medley of mind-and-heart experiences in one day! The children of the brain are wild and foolish, crooked and volatile, great and noble, morbid and lawless. They scheme, invent, combine and contradict. There is no estoppel to their flights of imagination.

The head is like a mill ever grinding and still grinding. Sometimes a bit of gravel is mixed with the grain and the mill clogs. Who can tell the pain when our tempest-tossed thought-craft floats at the mercy of wind and tide, and the sufferer has no strength to grasp the helm, man the oars and direct its course? An old writer says that Queen Catherine Parr died of thought.

Yet so it must be. The head gives artillery, the heart powder. Ideas are the arrows and the body is the bow that sends them home, but when health goes the gun is spiked and the bow-string is on the slack.

One tries like Milton in his blindness to open the eyes to the luminous vision of God, or like Bunyan shut up in prison, to

cross the portals of the Palace Beautiful so to cool the hot temples in the breezes of Paradise that blow from the River of the Water of Life.

But alas! the flying is dull and low till at length we are snared in the thickets.

September 16th—

"Be the day weary,  
Or be the day long,  
It ringeth at length  
To Evensong."

September 20th—

The world may be divided into two classes—the people who lift and the people who lean.

'Tis harder to lean.

September 21st—

Words of sympathy are short armed to relieve the pressure of agony in the sordid hours when pain drags you through its slime!

September 23rd—

I got a note to-day. It was only six words: "*No suffering need be only suffering.*"

September 25th—

Who has ever told the rage of thirst? The first cry of the new-born babe, and the wail of the shipwrecked mariner are of thirst and in the lingering agonies of Calvary, His life-blood ebbing away, it was thirst that wrung from the Nazarene the gasping cry that has curdled the blood of the ages with horror.

September 28th—

Sometimes in my fever dreams I am *Annabel Lee* shut up in her sepulchre.

\* These unique confessions were dictated from a bed of pain for THE NATIONAL MONTHLY.—*Edi/or.*



The sepulchre is always the cave at Banff. There is a vacuum in the air. I breathe but am not satisfied. The waters are greener than ever and hotter. Dim phantoms of gigantic size glide away in the darkness and there are coiled things and clammy and things not to be thought of.

More often I live in Louthenborough's picture entitled *The Last Man*. It is an awful picture—one that confounds the heart and preys on the soul. The background of inky blackness is scarred with jagged glares of lightning that stab the night. The ocean has burst its bounds and "sea covers sea, sea without a shore." Humanity is in its death throes, for a jar has shuddered through the quiet frame of nature and a night of death rages over a world surrendered to its doom. In the foreground, upon the pinnacle of the last rock, the last man clings to the last shrub which is surely being uprooted with his weight. His face is contorted with despair and dumb agony. His wife has slipped from his tired grasp and is sinking out of sight.

Sometime I am the man, more often the woman and the maw of the hot, hungry waves engulf me.

*October 2nd—*

It seems a far cry back to the lost heights. How easy it would be to slip away to "the desired haven!"

*October 3rd—*

There is a troublesome "other self" always with me. I must first put her to sleep before I go. How I hate her. The Padre says it is the flesh lusting against the spirit, for they are contrary, the one to the other, and so indeed must be.

*October 4th—*

The pain is all gone to-day, and that is why my heart sings

"The broken wing of a swallow  
He binds in the middle air."

*October 5th—*

My nurse has been writing on her final examinations. To-day the subject was *Materia Medica*. One of the questions asked was how much of a particular drug she would give under certain circumstances. She left the question unanswered. I asked her why she did not guess, anyway. Then she told me the story of a medical student who was once asked a similar question in an oral examination. He replied "a teaspoonful." Before leaving the room he requested leave to re-consider the answer. "It is too late," said the examiner, "your patient has been dead fourteen minutes."

*October 6th—*

Every nurse speaks of her sweetheart as "My John." The nurses tell me that they are strictly forbidden to be engaged or to have "Johns." The reason of the inhibition is not quite clear. It may be on account of the discovery recently made in Paris that love is a bacillus containing a malignant poison. Eminent professors have announced it to be one of our most dangerous inheritances from the dark ages, one that has been kept alive and fostered by polite literature. They advise that it should be kept under the control of a board of health possessing full police authority.

Ah well! an old Scotch proverb asserts when the gorse is not in bloom love is out of fashion, which, being interpreted, means that love and marriage are eternal. Certainly, in spite of all the medical locksmiths the institution of love is in high favor with the nurses.

*October 9th—*

Disease signifies lack of ease. It is the designation of a negative condition. It is a deficiency, a degeneration.

The German word for "sick" is *Krank*, and so mankind tries to hunt for a "scapegoat" outside. We like to shift the responsibility, but our own ignorance,



receptivity and crookedness have carelessly opened the door to it.

In the ideal or abstract fever is not a good thing, but it is useful just at the time it appears, for it never comes unnecessarily. Its terrors are only the resistance produced by the quick rush of vital energy to do its cleansing and wholesome work.

Pain indicates life and its acutest pangs tell of a sharp-edged sensibility and an ardent vital force which are working to correct our errors. It is the whip of God. The Pain-Missionary with all its scowling features is in reality a ministrant spirit in disguise who is more friendly to us than we through our ignorance are to ourselves. Even though it present a drawn sword, it is really a guardian angel to turn us away from the sensuous Eden of ignorance.

Physical suffering is a reminder that we are tenants of the body at will and not by right; pensioners of an hour. It is the closing up of the right of way—a warning that life is lent and not given.

#### October 10th—

It is grim work a nurse has to do and there is little romance about it. She has no time to "rust unburnished," but must ever "work, work, work as prisoners work for crime." We hear much of the beautiful feet upon the mountains that bring tidings of good peace, but nothing of the beautiful tired feet on the hard hospital floors carrying balm and comfort to hurt humanity.

When at night Florence Nightingale walked the wards, carrying a lamp, the wounded soldiers turned to the wall and kissed her shadow as it fell there, and since then the trained nurse has found her representation in "The Lady with the Lamp"—a fitting escutcheon for this noble type of heroic womanhood.

Seeing her for the first time in her own corridor, gowned in an immaculate uniform, one little suspects that beneath

her calm features there lies a depth of inexhaustible mental resource that has been stored up by the severest tests and ordeals.

Follow her through the wards to-night! An operation patient is crying out in fretful uneasiness because of wounds that sting and smart. An abandoned woman has staggered in and handed her something wrapped up in a newspaper. It is an hour-old baby and this is its mother.

On this bed, the inexorable imbecile mower has laid hands on a young man, and as the chilling tides of death rise higher and higher the nurse hovers near to stimulate and comfort. In another room lies a man nailed to the cross of his own sin. He is writhing in the agonies of *delirium tremens*.

A woman patient has been seized with an epileptic fit and the nurse hastily summons the house-surgeon to her aid. A petulant girl is threatening to complain of neglect, but still our brave little woman must look pleasant and apologize.

In her spare moments the nurse is copying out lecture notes on the arteries, nerve centres or physiology. A little bright spot comes at midnight, when she is released for an hour and there is a merry supper in the kitchen and often a sly prank or two.

#### October 11th—

My Doctor is a lineal descendant of George Washington, at least in so far as he cannot tell a lie—straight. If I ask him a question about my condition which he prefers not to tell, he evades it, but in such a way that I have no doubt of his opinion. Such veracity is unusual in "the learned professions." Men are more truthful than women anyway. They can lie—do lie—lie even on a gigantic scale, but the supreme liar is always a woman. The real liar—especially the woman liar—is born, not made.

The Doctor is a big man, big physically and big mentally, yet no nurse can enter



the room so quietly nor any understand the patient with such unerring instinct.

It is no use to pretend you are better. He understands all about you. Perhaps, this is because he is so truthful.

*October 16th—Thanksgiving Day—*

Am I thankful? On first thought, "no." For four months I have been "a shut-in." First, helping to nurse a typhoid patient, then one myself. It is a long time to take out of life.

On second thought, "yes!" The year has had more sun than clouds—much more, and so I shut the door on the whole sulking, frowning crew of ugly feelings. I will hold my joy cup right side up and catch the drops of gladness that, like the high-priest of old, wherever I go I may carry golden bells to make music for me.

*October 21st—*

In my cravings for food, the nurse says I am like the little boy who went to his father for a jack-knife. He wanted *awful bad*, and he wanted *now*.

*October 26th—*

I am going home to-morrow. I whisper it over and over. The nurse says it depends on how I keep, but her words mean nothing. Only a police corps and a *habeas corpus writ* will hold me longer.

I was strong when I left home—strong enough in my fever to kick over chairs and tables—strong enough to be cross, but now I am just a tired baby.

*October 28th—*

In my own room—a big bed, no hospital wails, no bells, no red-tapeism, a trance of happiness! Like the old woman in the nursery rhyme, I pinch myself and say, "This is surely none of I."

There was a *sortie* from the front door, a precipitate attack on the ambulance—kisses, little secrets, greetings, stored-up grievances and more kisses, all in one breath. Then the big ambulance policeman carried me in. How gentle he was. Only a giant can be gentle. Tenderness is an inflection of strength. When the dwarf that attended *Ivanhoe* at the tournament lifted the bleeding knight, he stumbled over the weight and caused the sufferer intense pain, but the giant of the brawny arm and unconquered heart came and lifted him like a feather-weight and bore him away to a hiding place for healing and rest.

Some one was playing and singing "When *Janey Canuck Comes Home*." It was a home-coming that overbalanced the pain. And now the hours are a continual *Te Deum* without one *Miserere* to mar their perfect peace.



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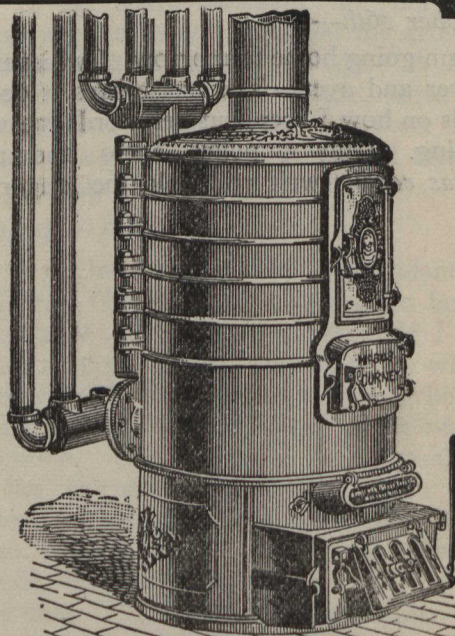
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**CONTENTS, VOLUME I.**

**JUNE, 1902**

The World's Progress  
Our Own Country  
Cecil Rhodes, the Empire Builder  
Blunders in Advertising Canada  
A Residence at Toronto  
The Impressions of Janey Canuck Abroad  
Literature : The Home : Finance

**AUGUST, 1902**

The World's Progress  
Our Own Country  
Principal Grant and His Work  
A Great Canadian School  
The Expansion of Canadian Commerce  
Ship and Railway Projects in Canada  
The Canadian Pacific Railway  
The Impressions of Janey Canuck Abroad  
Sidelights on Cecil Rhodes  
Education : Literature : Finance

**SEPTEMBER, 1902**

The World's Progress  
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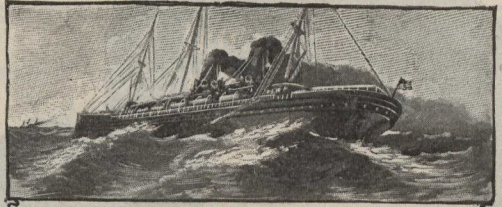
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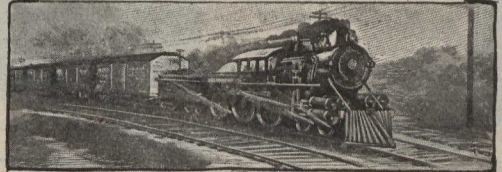


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Second-hand Machines, all makes, cheap.

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## Sectional Filing Cabinets

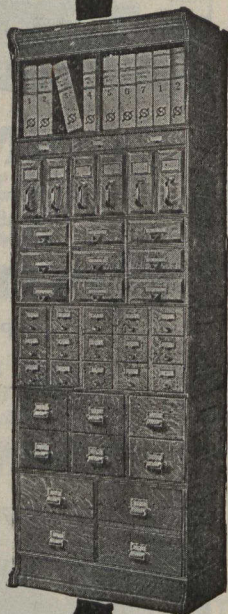
### One Section

or a dozen—all one kind, or each different, depending upon your **exact needs to-day**. No figuring ahead for future wants. No big expense for large cabinet that you are not sure **you'll ever need** all of. As you need more filing space for any system, simply get **just that one section** and your cabinet is always complete and ever finished. All sections are interchangeable and can be stocked in singly (like cut) or any way to suit your space.

Send for Catalogue, No. 229.

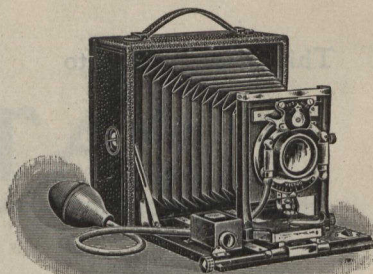
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All Cameras



at cut prices

**LATEST IMPROVEMENTS**

**Darkroom Lamps, 25 cents up.**

**Rochester Plates**

make good negatives, and so do

**Stanley Plates**

**The W. A. LYON CO. Limited**

130 and 132 Bay St. TORONTO

Ye Old Firm of Heintzman & Co.

## The Artistic Touch

Loses all its magnificence on an ordinary key board. How much more does an ordinary performer need a good instrument? We offer you the best in the piano world to-day.

"I had not the slightest idea that such a magnificent instrument as the Heintzman & Co. Concert Grand Piano was manufactured in Canada. Its sympathetic richness and brilliancy of tone and its wonderful singing quality, combined with the delicate ease of touch, easily place this instrument in the front rank of the leading manufacturers of the world."

Handsome Piano Warerooms

115-117 KING ST. WEST, TORONTO.

Ye Old Firm of Heintzman & Co.

## A Piano Bargain.

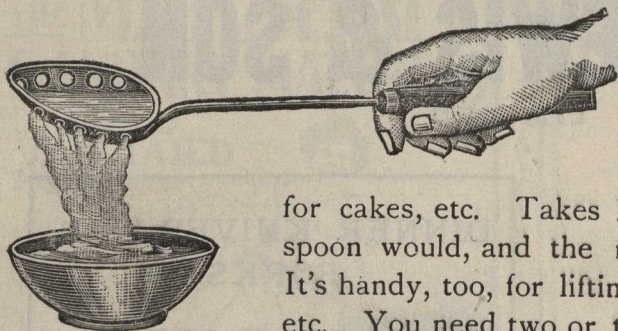
We offer readers of the NATIONAL MAGAZINE a very special bargain in a handsome Howard Piano, made in Cincinnati. This instrument stands 4 feet 8 inches high, in a beautiful walnut case,  $7\frac{1}{3}$  octaves, 3 pedals. It is a brand-new piano for which manufacturers would charge \$375. We make it a special at \$285—\$10 cash and \$6 a month.

Handsome stool and scarf free and freight paid to any station in Ontario, with special arrangements to more distant points in Canada.

Handsome Piano Warerooms

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Spoon, is the best thing you ever saw for **mixing batter** for cakes, etc. Takes **half the time** an ordinary spoon would, and the result is a **lighter cake**. It's handy, too, for lifting vegetables, poached eggs, etc. You need two or three in the kitchen, so send **15 cents** in stamps and we will mail you a sample, if you can't get it at the store.

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# RICE LEWIS & SON

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Fine  
Cutlery...



DINNER KNIVES AND  
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DESSERT SETS

GAME AND FISH  
CARVERS

ROAST HOLDERS

Corner King and Victoria Streets, TORONTO

## 10<sup>TH</sup> ANNUAL STATEMENT

OF THE

# York County Loan and Savings Company

(INCORPORATED)

.... OF ....

TORONTO, CANADA, DECEMBER 31, 1901

Since organization, ten years ago, this Company has paid in cash to members **\$1,530,311.02**. All **withdrawals** have been **paid promptly**. Every dollar paid in, with interest, being returned to the withdrawing member when the required period has been reached.

### ASSETS.

Mortgage Loans on Real Estate	\$642,954.04
Real Estate	513,955.38
Loans on this Company's Stock	70,051.60
Accrued Interest	7,785.70
Advances to Borrowers, Taxes, Insurance, etc.	3,136.74
Accounts Receivable	1,050.97
Furniture and Fixtures	6,690.93
The Molsons Bank	27,408.43
Cash on hand	9,774.47
<b>Total Assets</b>	<b>\$1,282,808.26</b>

### LIABILITIES.

Capital Stock Paid in	\$1,013,590.17
Dividends Credited	37,079.34
Amount Due Borrowers on Uncompleted Loans	1,771.14
Borrowers' Sinking Fund	42,675.48
Mortgages Assumed for Members	11,300.00
Reserve Fund	45,000.00
Contingent Account	131,392.13
<b>Total Liabilities</b>	<b>\$1,282,808.26</b>

THOMAS G. HAND,  
G. A. HARPER, } Auditors.

JOSEPH PHILLIPS, President.  
A. T. HUNTER, LL.B., Vice-President.  
R. H. SANDERSON, Building Inspector.

V. ROBIN, Treasurer.  
E. J. BURT, Supervisor.

HEAD OFFICES: CONFEDERATION LIFE BUILDING, TORONTO, ONTARIO.



**The MARSHALL SANITARY MATTRESS**

*The only VENTILATED Mattress Made*



HEALTH COMFORT AND DURABILITY

GUARANTEED FOR 5 YEARS  
USED BY THE BEST PEOPLE EVERYWHERE  
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unsurpassed.

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Canada's Best in Mantels

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Everything  
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Of all Descriptions

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**OPALITE GLASS TILE**  
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Dominion Gov. Deposit, - 91,250.00

ISSUES THE FOLLOWING POLICIES

- Accident.
- Accident and Sickness combined.
- Health (with or without Accident Insurance).
- Elevator.
- Employers' Liability and General Liability.
- Workmen's Benefit.
- Fidelity Guarantee.

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Managers for Canada

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ENGRAVING  
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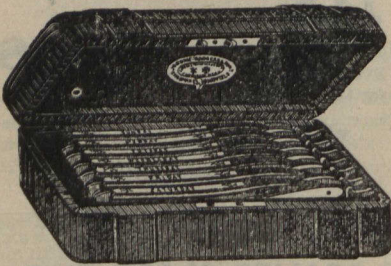


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**Surplus, May 1st, 1902 - \$5,433,539.40**

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Office for France, 31 Rue Tronchet, Paris

Office for Norway, Porsgrund

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SUCCESS HAS BEEN ESTABLISHED:

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EQUITABLE METHODS  
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# THE SOVEREIGN BANK OF CANADA

Authorized Capital	- - - - -	\$2,000,000
Subscribed Capital	- - - - -	1,300,000
Reserve Fund	- - - - -	300,000

PRESIDENT: H. S. HOLT, ESQ., MONTREAL.

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RANDOLPH MACDONALD, ESQ., TORONTO

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DIRECTORS:

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