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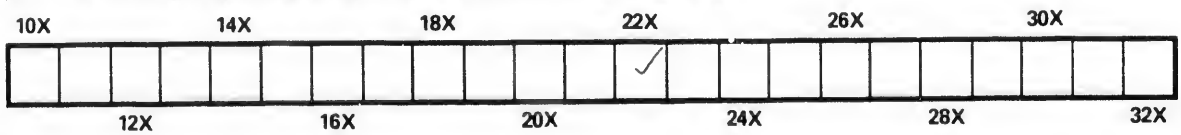

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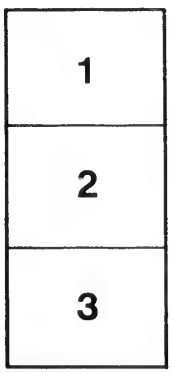

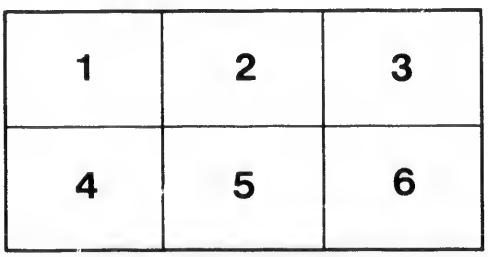

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CANADA AS A PRODUCER OF THE PRECIOUS METALS

BY

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TORONTO
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1899

CANADA AS A PRODUCER OF THE PRECIOUS METALS

ELFRIC DREW INGALL

Associate R.S M., Chief of Section of Mines, Geological Survey of Canada

IN writing on the subject set forth in the above heading, it will be impossible in the time and with the space at the disposal of the writer, to deal with the question in great detail. It may be interesting however to bring out some points illustrative of the present position of our country in comparison with the other contributors to the gold and silver output of the world and to compare it with that held in the past as well as to attempt to form some opinion as to what rank we may possibly take in the future.

The figures used throughout this article are, for the Dominion, those issued by the Mines Section of the Geological Survey of Canada. For the rest of the world the annual volume issued by the Engineering and Mining Journal of New York, entitled the "Mineral Industry" has been adopted as authority. The data given in the latter represent probably as close an approximation as it is possible to attain in such figures, especially

as in the case of several of the large producing countries no accurate official statements are available. For Canada the information is collected, checked and compiled with great care, and probably represents the actual output as accurately as that can ever be arrived at.

CANADA'S PLACE IN THE WORLD

In 1898 Canada produced, as nearly as can be ascertained, some $13,700,000 worth of gold, thus bringing her to fifth place amongst the countries of the world with a contribution of 4.79 per cent of the total. Going back to the commencement of the present decade, we find that in 1890 Canada occupied the eleventh place in order of contribution, being credited with about 1 per cent of the total.

The year 1897 is the last for which corrected figures are available at the present moment, and the growth of the country in regard to the rest of the world will be well shown by the figures in the following tabulation of the two years.

WORLD'S PRODUCTION OF GOLD

	1897		1890	
	per cent.	per cent.	per cent.	per cent.
Australasia	22.4		24.7	
British India	3.0		1.6	
Canada	2.5		1.0	
British Guiana	0.9		0.9	
United Kingdom and other	0.5		0.1	
BRITISH EMPIRE	—	29.3	—	28 3
Witwatersrand	21.7			
Other African	2.2			
AFRICA	—	23.9	—	8.2
UNITED STATES		24.8		27.3
Mexico	3.0		0.6	
Colombia	1.6		3.0	
Guiana Dutch / French	0.8		0.8	
Brazil	0.6		0.4	
Chili	0.6		1.2	
Venezuela	0.4		1.4	
Other South American, less than ¼%	0.5		0.4	
AMERICA (except U.S.A.)	—	7.5	—	7 8
Russia	9.0		21.1	
Austria Hungary	0.9		1.2	
Germany	0.8			
Other less than ¼%	0.2		0.2	
EUROPE	—	10.9	—	22 5
China and Corea	3.1		5.0	
Japan	0.3		0.4	
ASIA	—	3.4	—	5.4
		99.8		99.5

In the above table the figures are given only to the nearest first decimal, so that although not quite accurate, they show the relative importance of the contributing countries sufficiently well. Whilst, however, the improvement there shown in Canada's ranking is very gratifying, it is well for us to remember that we have yet much ground to cover before we can proudly rank ourselves with the really large producers. Thus in 1898, four countries, viz: the Witwatersrand district of South Africa, (25.7 per cent.); the United States, (22.5 per cent.) and Australasia, (21.5 per cent.) are to be credited collectively with nearly 70 per cent. of the whole; Russia coming in fourth with 9 per cent. Still when we reflect that in 1886 the production of the whole of Africa, which is now over $79,000,000, or nearly 28 per cent of the whole, was less than $1,500,000 and that the present position of that continent is mostly due to the discovery of one small district, the chances are good for Canada with its large areas of as yet little known mineral-bearing formations.

During the period from 1890 to 1898 the world's annual production of gold increased from nearly 120.5 million dollars to over 285.75 million dollars or about 137 per cent., the increase for 1898 over 1897 being nearly 20 per cent.

Turning now to Silver, we find that Canada produced in 1898 over 2½ million dollars' worth. This was a decrease in value of over 22 per cent. as compared with 1897, although the quantity decreased but a little over 20 per cent.; a result due of course to the falling price of the metal. The only data available for the world are those for the latter year, and taking the same period as for gold, the figures are as below:

WORLD'S PRODUCTION OF SILVER

	1897		1890	
	per cent.	per cent.	per cent.	per cent.
Australasia	8.96		6.17	
Canada	3.10		0.30	
United Kingdom	0.16		0.22	
BRITISH EMPIRE	——	12.22	——	6.69
UNITED STATES OF AMERICA		31.48		40.56
Mexico	30.14		28.98	
Bolivia	5.85		7.20	
Chili	2.62		2.96	
Peru	1.04		1.57	
Colombia	0.92		0.48	
Central America	0.90		1.15	
Argentina	0.18		0.35	
AMERICA (except U.S.A.)	——	41.65	——	42.69

	1897 per cent.	per cent.	1890 per cent.	per cent.
Germany	8.03		4.35	
Spain	2.34		1.23	
France	1.26		1.70	
Italy	0.68		0.20	
Austria Hungary	0.47		1.21	
Russia	0.16		0.08	
Norway and Sweden	0.12		0.23	
Turkey	0.03		0.03	
EUROPE		13.09		9.03
ASIA (Japan)		1.39		1.02
		99.83		99.99

Consulting the tabulation given above, we find that the Dominion has advanced not only in production of gold, but also in that of silver, and that her position amongst the countries of the world is, similarly, greatly bettered. In 1890 she produced a little over $419,000 worth "commercial value" of the white metal, and fourteen other countries ranked above her. In 1897 she is credited with over $3,300,000 worth and stands sixth.

In this connection it must not be overlooked that the value of the world's production of the metal has fallen off very considerably since 1890. In that year the average price of bar silver was nearly $1.05 per ounce, whilst in 1897 it had fallen to about 59.8c., and in 1898 it was about 58.3c. This does not, of course, affect comparisons of the different countries one with another. It is however interesting to note that on account of this fall in price the total value of the world's production in 1897, viz., nearly 107.2 million dollars, was under 62 per cent. of that of 1890, viz., nearly 173.75 million dollars, notwithstanding that the quantity in 1897 was over 33 per cent. larger than in 1890. For Canada, the production figures of 1897 were nearly eight times those for 1890 in value, and nearly fourteen times in quantity.

CANADA'S PLACE IN THE EMPIRE

It will be interesting to note also Canada's place with respect to the rest of the Empire. In the tables already given it has been shown that in gold the British Empire taken as a whole ranked higher in 1890 than any other contributor, outdoing the next in rank, viz.: the United States by one per cent. In 1897

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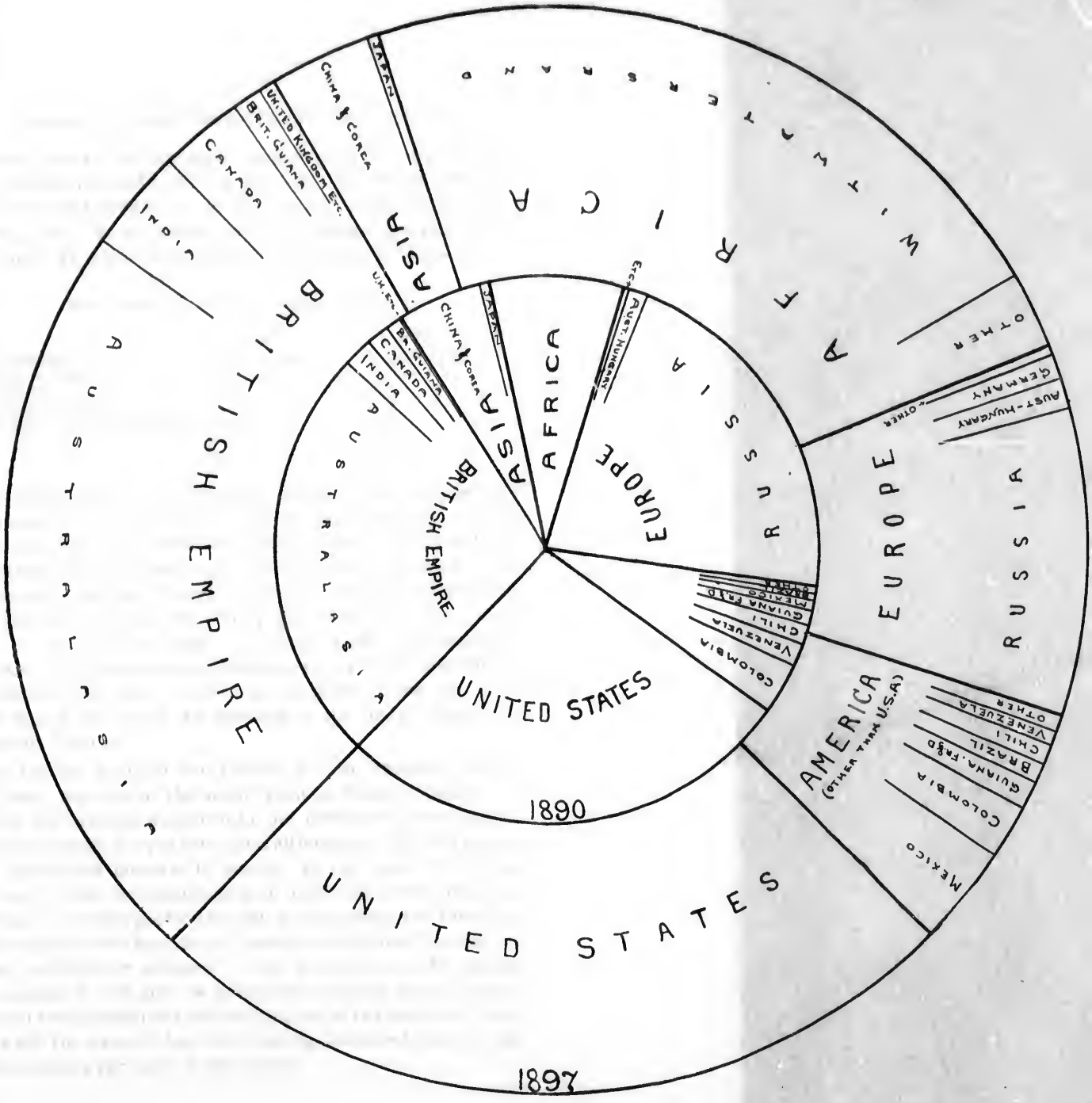

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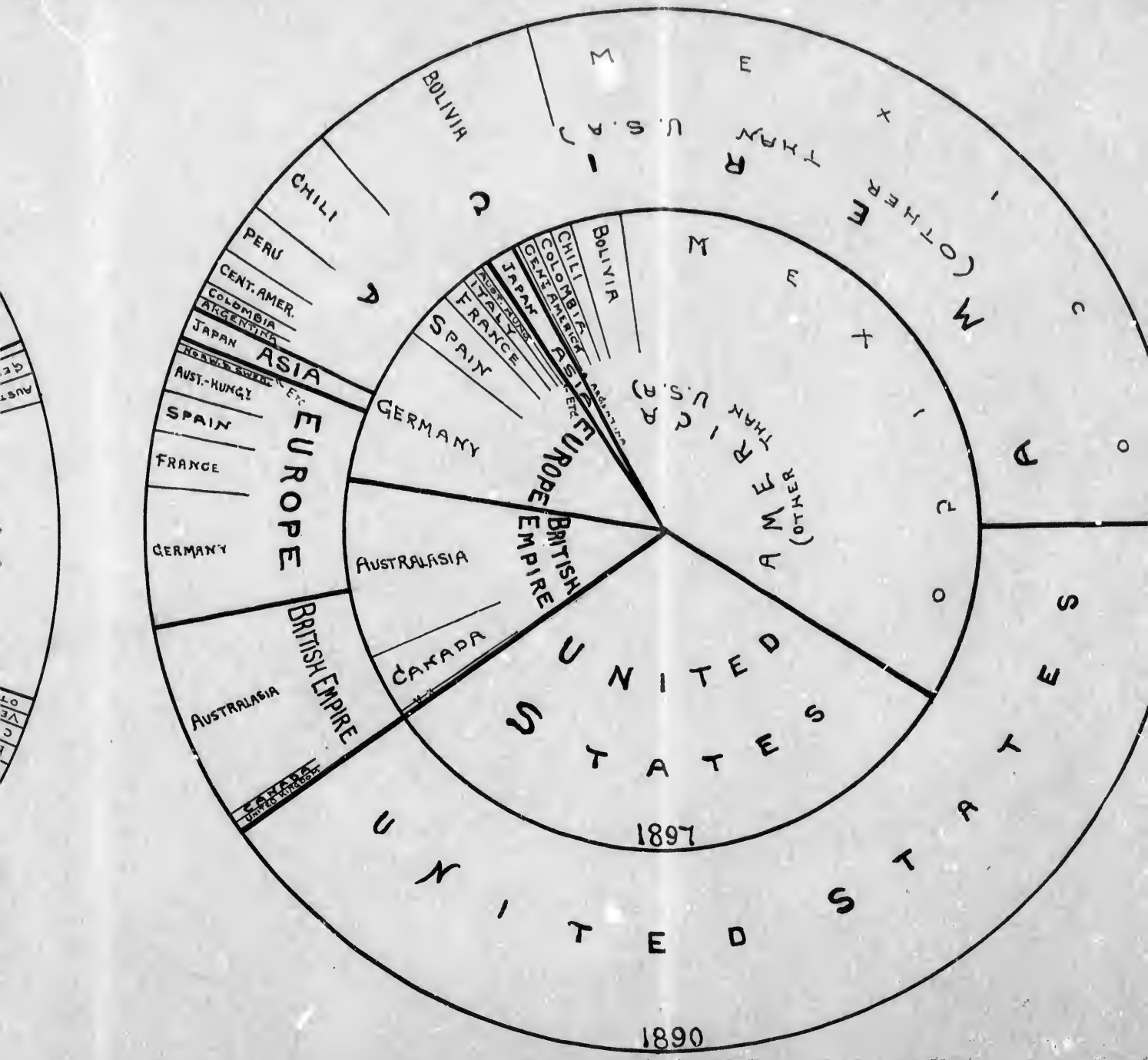
WORLD'S PRODUCTION

1890 - 1897



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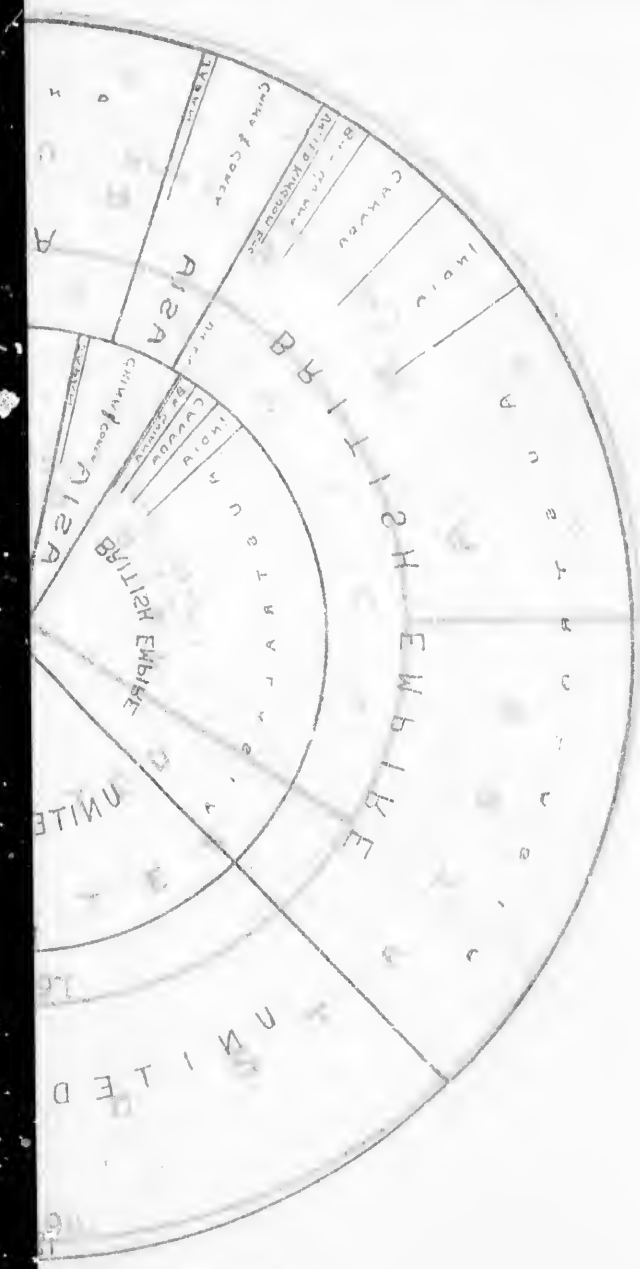
1890 & 1897



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the latter country still occupied second place, but the Empire had increased her lead to over 4 per cent. Of course the great bulk of the gold product is to be credited to the Australasian Colonies, but Canada has more than doubled her percentage contribution as will be seen from the figures given below.

GOLD PRODUCTION OF THE BRITISH EMPIRE

	1897	1890
Australasia.....	76.4 per cent.	87.3 per cent.
British India.....	10.2 "	5.6 "
Canada	8.5 "	3.5 "
British Guiana	3.1 "	3.2 "
United Kingdom and other	1.7 "	0.3 "
	99.9	99.9

In 1898, taking the preliminary figures, which are the only ones available at present, the Empire kept its lead. Of the total production of the world estimated at about 285.75 millions the British possessions are to be credited with 30 per cent. In this she maintains her leading position, overtopping Witwatersrand, the next highest by over 4 per cent., and the United States by about 7 per cent. Canada again advanced her position in the Empire very considerably over 1897, contributing now nearly 16 per cent. This large increase in one year is, of course, nearly all due to the working of the placer deposits of the Yukon District.

As a silver producer the British Empire occupies a much more lowly position in the world than in respect of gold. In 1890 she was credited as shown in the tabulation already given with a little under 6.7 per cent., and although in 1897 the figures show a gratifying increase to nearly 12¼ per cent., this is still very much below the contribution of the large silver producing countries. As with gold by far the largest amount of the silver produced within the bounds of Greater Britain must be credited to the Australasian colonies. This is shown by the figures below, where it will also be noted that Canada has materially improved her position within the Empire in the period of years dealt with, the value of her share having increased from 4.5 per cent. to over 25 per cent. of the whole.

SILVER PRODUCTION OF THE BRITISH EMPIRE

	1897	1890
Australasia	73.3 per cent.	92.2 per cent.
Canada	25.4 "	4.5 "
United Kingdom	1.3 "	3.3 "
	100.0	100.0

HISTORY OF CANADA'S PRODUCTION OF THE PRECIOUS METALS

So far the output of the precious metals has only been spoken of in its proportional relationship to the rest of the world. A statistical study of the subject would hardly be complete, however, without giving the actual figures. These are given below for the forty-one years commencing 1858. The annual totals are compiled from data taken from the reports of the Section of Mines of the Geological Survey Department.

PRODUCTION OF GOLD IN CANADA

1858	$ 705,000	1879	$1,582,358
1859	1,615,072	1880	1,304,824
1860	2,228,543	1881	1,313,153
1861	2,666,113	1882	1,246,268
1862	2,798,774	1883	1,113,246
1863	4,186,011	1884	1,058,439
1864	4,126,199	1885	1,148,829
1865	3,987,562	1886	1,413,196
1866	3,153,597	1887	1,187,804
1867	3,013,431	1888	1,098,610
1868	2,773,527	1889	1,295,159
1869	2,123,405	1890	1,149,776
1870	1,724,348	1891	930,614
1871	2,174,412	1892	907,601
1872	1,866,321	1893	976,603
1873	1,536 871	1894	1,128,688
1874	2,022,862	1895	2,083,674
1875	2,693,533	1896	2,754,774
1876	2,020,233	1897	6,027,016
1877	1,949 444	1898	13,700,000
1878	1,538,394		

The record as given above begins with the year 1858, when gold was first seriously mined in British Columbia. About 1846 gold mining was commenced on the Beauce placer gravels in Quebec, but the work done was slight, and practically no figures of production are on record before 1863, and even after that date the figures available are known to be partial and unreliable. Thus the totals given from 1858 to 1862 inclusive are those for British Columbia, the only contributor. From that time

until 1885, the production of Quebec being relatively so slight, Nova Scotia and British Columbia stand practically alone as gold producing districts in the Dominion, the former contributing to the total, amounts varying between about 5 per cent. and about 38 per cent. Taking then the figures as given above we notice, firstly, that from 1858 to 1863 we have a sudden increase, from under three-quarter million dollars to nearly four and one-fifth millions. This was mostly due to the discovery of the very rich placers of the Cariboo district in British Columbia, although after 1862 Nova Scotia contributed a small but increasing proportion. The banner year previous to 1897 was 1863 both for British Columbia and for the Dominion, the one following the other owing to the western province being, until quite recently, the preponderating factor. Since that year the output of the placers of British Columbia has shown a steady falling away and with it that of the Dominion. The year 1871 showed a slight tendency towards returning to the standard of 1863, due to the discovery and working of the Cassiar placers, and from 1873 to 1875 we also find an increased output as well as a slight augmentation in 1886. With these exceptions decrease was the rule till in 1892 and 1893 we find the output of both British Columbia and the Dominion at their lowest, the latter being credited with but $907,601 in 1892, the former arriving at its minimum, viz: about $379,535 in 1893.

During the period of years above described fresh discoveries of shallow placer ground in British Columbia were made from time to time, but they served, as stated, but to modify the falling away and occasionally reverse that condition for short periods.

The contributions from the Nova Scotia quartz mining industry, although until recent years comparatively small compared with that of the Pacific Province, has been an important and steadily increasing factor. True the record has not been one of absolutely unvaried increase. Following its highest record in 1867 there was an average falling away in the years that followed up to 1881, when it touched bottom at nearly $210,000, but since then the production curve has shown a steadily rising tendency.

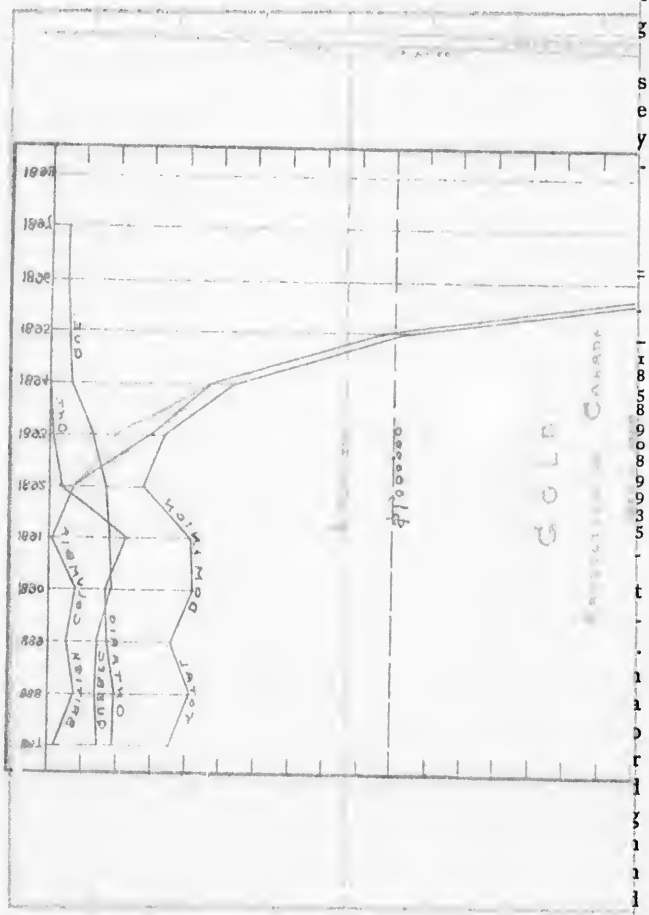
Until 1885, with the exception of the very slight and spasmodic output of the placers of Quebec, already alluded to, Nova

Scotia and British Columbia were the only producing Provinces. In that year, however, the placer gold of the Saskatchewan washings and the Yukon District began to be an appreciable if variable quantity. Owing to the discovery of the Klondike the gold out-put of the North-West Territories has been of increasing importance, until in 1897 it takes first place. British Columbia was then outdistanced, notwithstanding the rapid increase in her product during the few years preceding 1897 due to the working of the ore deposits of the Southern Kootenay section. In the early nineties Ontario began to appear on the scene with the gold of her quartz mines and has steadily improved her standing with regard to the Dominion output as a whole. The relative position of the various Provinces in 1892—the year of Canada's lowest production of gold—was as follows: Nova Scotia, nearly 43 per cent.; British Columbia, about 44 per cent.; North-West Territories and Yukon, about 10 per cent.; Ontario and Quebec, a little over 2 per cent. In 1897 we have the North-West Territories and Yukon, about 42 per cent.; British Columbia about 45 per cent.; Nova Scotia about 9 per cent., and Ontario about 3 per cent.

In 1898 the proportions had changed to the following: Yukon and North-West Territories, as per nearest attainable estimate, about 72.9 per cent.; British Columbia, 20.6 per cent.; Nova Scotia, 4.4 per cent.; Ontario, nearly 2 per cent.

By reference to the before given table of Canada's gold production the results of these increases in all the provinces are evident in the very large proportional growth in the figures of late years. In 1892, her lowest year since 1863, she had sunk to a total output of a little over $900,000 of gold. In the five following years, to 1897, the figures show an increase of 564 per cent., and the country had regained all the ground lost in the 34 years since 1863, and overtopped that year by about 44 per cent. The increase of late has been very rapid, from 1894 to 1895, 84.5 per cent.; from 1895 to 1896, 32.2 per cent.; from 1896 to 1897, 118.7 per cent., and from 1897 to 1898 over 127 per cent.

In value the silver product of Canada ranks far below that of gold. In 1898 the latter constituted over 36 per cent. of the total mineral output of the Dominion, taking first place, with coal second, whilst the value of the silver produced was but a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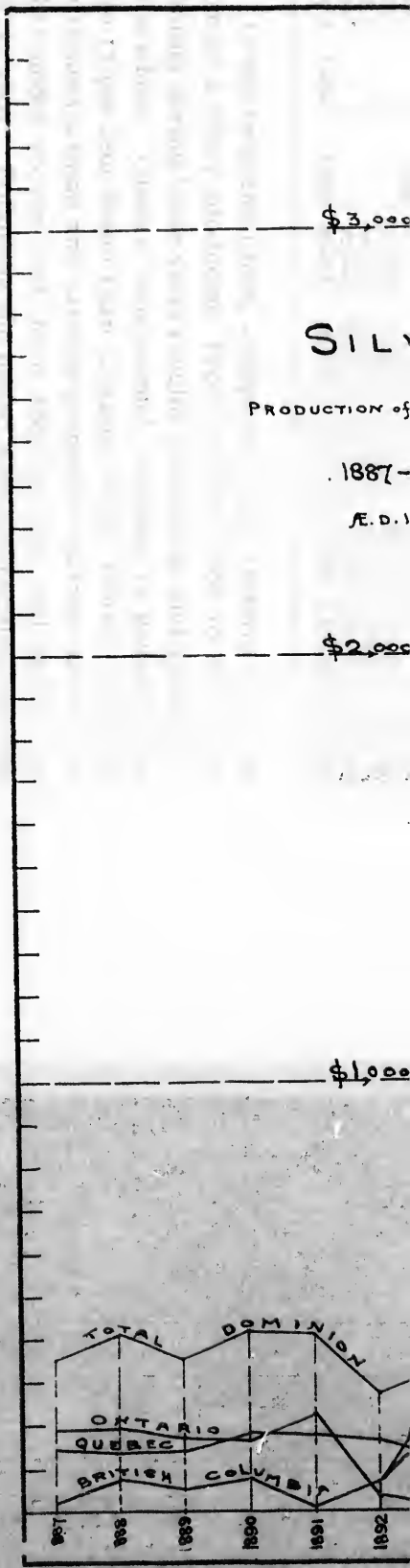
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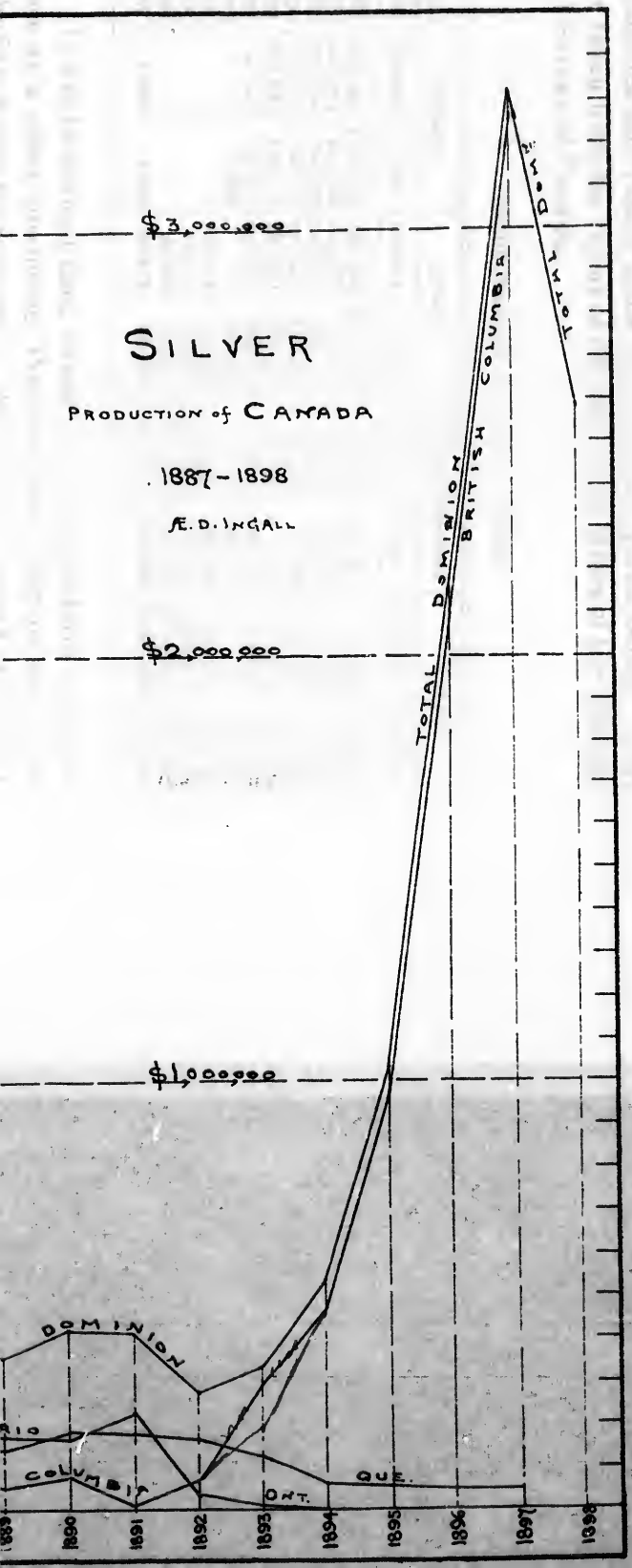
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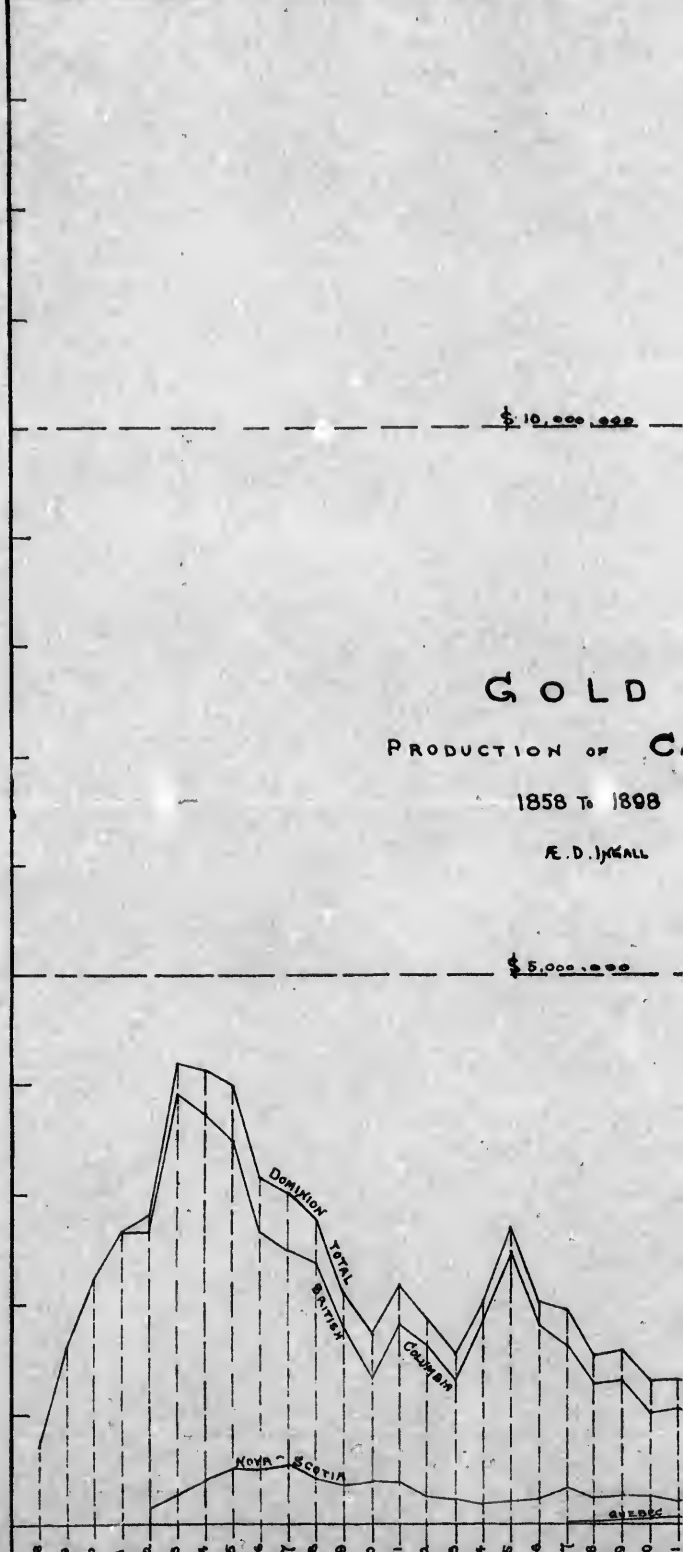
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Calendar Year	Ounc
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1888	208,0
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1890	158,7
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1892	41,5
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1897	5,0

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little over two and-a-half millions or nearly 7 per cent. of the whole. It thus ranked fourth only in importance, being overtopped by the estimated value, doubtless too low, of the building material credited to that year.

Previous to 1887 there are no complete and accurate figures of the production of this metal for the whole of Canada, but the quantities and values since that year are given below. They are taken from the report of the Section of Mines of the Geological Survey of Canada.

PRODUCTION OF SILVER IN CANADA

Calendar Year	Ontario		Quebec		British Columbia		Total	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
1887	190,495	$186,304	146,898	$143,666	17,690	$17,301	355,083	$347,271
1888	208,064	195,580	149,368	140,425	79,780	74,993	437,232	410,998
1889	181,609	169,986	148,517	139,012	53,192	49,787	383,318	358,785
1890	158,715	166,016	171,545	179,436	70,427	73,666	400,687	419,118
1891	225,633	222,926	185,584	183,357	3,306	3,266	414,523	409,549
1892	41,581	36,425	191,910	168,113	77,160	67,592	310,651	272,130
1893	..	8,689	..	126,439	..	195,000	..	330,128
1894	..	..	101,318	63,830	746,379	470,219	847,697	534,049
1895	..	..	81,753	53,369	1,496,522	976,930	1,578,275	1,030,299
1896	..	..	70,000	46,942	3,135,343	2,102,561	3,205,343	2,149,503
1897	5,000	2,990	80,475	48,116	5,472,971	3,272,289	5,558,446	3,323,395

It will be noticed that, except for 1890, Ontario held first place as a silver producing Province from 1887 to 1891, contributing during those years roughly between 40 and 55 per cent. of the whole. Quebec came second, running, in general, from 10 to 13 per cent. lower than Ontario, whilst British Columbia contributed a small and variable proportion of from about 5 to rather under 20 per cent. from 1887 to 1890, and under 1 per cent. in 1891. Following the period already described, we find Ontario falling away suddenly in 1892 and finally disappearing entirely in 1894, contributing nothing until 1897, and even then a very small amount. Quebec also shows a decrease, until in 1897 it is credited with less than 1½ per cent. of the total, and to British Columbia is practically due all the rest.

It will be noticed that in 1892 the value of the silver output of Canada was at its lowest ebb, amounting to but a little over one-quarter of a million dollars, whilst in 1897 it had risen to nearly three and a third millions dollars worth, increasing

about 12¼ times. This result is practically due to the development of the ore deposits of Southern Kootenay in British Columbia, and especially to the opening up of the argentiferous galena mines of the Slocan district. The silver credited to Quebec represents the small proportion of that metal, amounting only to a few ounces per ton, contained in the cupriferous pyrites ores mined in the Eastern Townships. These are mostly shipped to New Jersey and used as a source of sulphur in acid making. Thus in this case the metal can be counted simply as a by-product, and during the suspension of work on the silver veins of the Thunder Bay district of Ontario the Pacific province was left as the only silver producer proper in the Dominion.

From about 1868 to 1878 the Thunder Bay district occupied a prominent position. The famous Silver Islet mine with its wonderfully rich ore, was at the zenith of its career, and from its discovery in 1868 to 1884, when it closed down, it turned out about $2,250,000 worth of the metal. Other mines nearer Port Arthur were also worked for periods of several years about this time, but the district fell off decidedly after the first few years of prosperity, and for a time the silver production of Canada, which was practically that of this district, dropped to little or nothing. About 1885, however, several other veins were discovered south-west of Port Arthur, in the same formation and with similar ores, and the revival due to the working of these mines is evidenced in the figures for 1887 to 1893 given in the table. These were practically closed for several years, and it is only during the last two years, 1897 and 1898, that any ore has been taken from this district.

In 1898 British Columbia still contributes the great bulk of the silver values, being responsible for nearly 92 per cent., the balance being due to the operations in Quebec and to the re-opening of one of the silver mines near Port Arthur already alluded to.

CANADA'S POSSIBILITIES IN THE FUTURE

So far we have dealt with Canada in her relationship to the rest of the world and with her present and past position as a producer of the precious metals.

Naturally this leads one to ask what of the future? She has apparently started in the past few years on a course which is rapidly bringing her to the front. Is it likely this will continue?

We enter here into the region of surmise and the role of prophet is a position neither easy nor gratifying to fill. Still there is a certain amount of geological and other evidence available upon which one may justly base some general conclusions as to the possibilities for the future, always remembering that the element of chance is a very dominant factor in prospecting, which can by no means as yet claim to be an exact science.

The causes affecting our future are both economic and geological. In regard to the first a moment's thought will make them evident.

Firstly we have a population of only about five million, with considerable areas of territory, the mineral possibilities of much of which are fairly certain, and still larger areas where less is known, but where the probabilities are great. Eliminate from our consideration the very large proportion of the population and of the local capital of the country, which will necessarily be busied with other pursuits, and we have but a handful of the people left, wholly inadequate to prospect and work even the more accessible portions of our mineral territories.

Thus it is evident that should we desire to see still more rapid advancement in the future we shall be largely dependent upon outside assistance, especially in regard to capital, and in many districts for a supply of prospectors. The discovery of exceptionally rich, shallow, placer ground, as in the Klondike, may from time to time bring us more rapidly to the front for short periods of years, but for permanent growth we must look rather to the extension of our operations in the systematic exploration of our veins and other mineral deposits, and of our less rich and accessible, but more extensive gold bearing gravels. These industries, however, requiring a considerable expenditure of capital, are necessarily of slower growth. On them must be based, however, our hopes for the permanent prosperity of our mineral industries.

A good instance of this is found in the history of British Columbia previously mentioned. Here, in the early sixties, we had discoveries of very rich placers at various places, much of

it comparatively shallow; a rush of prospectors; a few very rich creek beds worked for a few miles in length, yielding startlingly large returns; a rapid growth of the national gold output and continuance of the same for a few years, followed by a gradual decline broken only by the occasional discovery of other rich spots, serving to revive our prosperity for a time. Then after some years, as a secondary result of the previous development, discoveries of veins and other deposits of rich ores of the precious metals, and as the country became opened up and accessible, the development of a permanent and steadily growing mineral industry.

The growth in our output of gold and silver on the latter basis will evidently be slower, but it will be steady and certainly of greater and more lasting effect on the prosperity of the community. A much larger proportion of the wealth produced remains in the country, not as in the Yukon, where so large a percentage of the value is carried away by alien prospectors to be expended outside of Canada.

Even in vein mining, however, with our large areas where the possibilities are good, it is not unreasonable to hope for the discovery of exceptionally rich deposits and districts, and there is no reason to regard as impossible a repetition to a greater or less extent of the history of South Africa already alluded to.

A further consideration, rendering probable a great and permanent increase in our mineral industry in the immediate future, is found in the fact that outside capital not only in England but in the United States has begun to realize the great possibilities of the country. The increasing regard in which Canada is being held as part of the Empire will also undoubtedly cause greater enquiry from the Old Country as to the chances here for profitable investment. Such inquiry can be given a satisfactory answer.

In the east we have the numerous gold veins of Nova Scotia worked as yet to comparatively slight depths and with small capital, and yet for about 35 years yielding steadily, as a whole, the most satisfactory returns on the capital invested. Judging from the results of the work being done there by the Geological Survey and considering the very favorable situation of these districts for easy access and cheap working, it would seem as if

the province offered a fine field for the investment of a much larger capital than is at present involved, and that exploitation at much greater depths and on a much more extensive scale is likely to yield the most satisfactory results.

In Quebec, it is probable that something might yet be done to revive the working of the placer gravels of the province, and perhaps the last word has not been said as to the quartz veins of the surrounding district.

In Eastern Ontario the gold-bearing veins worked many years ago, and then idle for a time, are now again receiving attention, and the difficulties formerly experienced in economically treating some of the refractory ores will doubtless be overcome by improved methods. In Western Ontario, in the Lake of the Woods, Rainy River, Seine and other districts southwest of Port Arthur, as well as in other areas of Huronian rocks, situated around Lake Superior, numerous gold-bearing veins are being exploited, a number being on the producing list.

There are numerous other areas of these rocks in this part of the province, the existence of which has been proved by the explorations of the Geological Survey, and doubtless good mines could be opened up in many of these which are as yet unprospected or only partially searched. The work of the Survey, both in the eastern and western districts, in further delimiting these Huronian areas and in studying the geological associations of the veins, will doubtless prove an important element in the progress of further discovery and development.

Throughout all the Eastern Provinces argentiferous galena deposits have been found from time to time in past years and worked to a greater or less extent. None of these are being exploited at present and they have not so far proved to carry so high a content of silver as those of British Columbia, but being mostly more accessible and in districts where labour is cheap, some of them will probably be eventually worked at a profit.

The mines in the areas of Animikie rocks around Thunder Bay have yielded in the past silver ores proper of an exceptionally rich grade. Some of that taken out of the famous Silver Islet mine was fairly held together by metallic silver and thereby rendered difficult to extract. Although but one of

these mines is being operated at present, areas of similar rocks are known to exist elsewhere in Ontario, and one may fairly hope for further discoveries.

Passing westerly across the prairie lands, we come to the range of mountainous country, constituting British Columbia, which is known to be highly metalliferous through the length of two continents. The occurrence of gold, even if not always in payable quantities, in so many of the rivers running from the eastern slopes of the Rocky Mountains, is a most encouraging sign. For some distance along the North Saskatchewan River, near Edmonton, gold has been washed from the river bars for years, and with the advent of dredges now being put in operation this and other rivers should become of much greater importance.

The rich gold gravels of the Klondike and other tributaries of the Yukon River extend our gold-bearing areas far into the North, and even if one must regard as unreasonable the conception lately indulged in by the public, of one vast placer deposit extending southward from thence to the known gold placers of British Columbia, we may justly believe that many rich districts will yet be located at points along this stretch of over 300 miles.

In British Columbia, to the north of the Canadian Pacific Railway, lies an area of mountainous country about 800 by 400 miles, which is very difficult to travel, being opened up by but few trails, and although fairly well prospected for the shallower gold gravels, it may yet be regarded as mostly an unknown territory with all its possibilities before it. This may be said to be especially the case in regard to veins and other deposits of ores of the precious metals, and to the poorer and deeper gravels suitable only for hydraulicing, as well as to any river bed deposits so situated as to require to be dealt with by dredging. The era of placer mining by these methods can, however, now be said to have begun with good chances for great expansion in future years.

To the south of the Canadian Pacific Railway the province is fairly well opened up, and the railways projected and in construction assure favourable economic conditions in the future. In the operations in the Trail Creek, Slocan, Nelson, Boundary Creek, East Kootenay and other mining camps, exist the begin-

nings of a new stage in the mineral development of this province, and we may expect to find numerous other similar camps started in the region to the north as the opening up of the country leads to new discoveries and renders vein mining possible.

In the United States, the mining districts which are the largest producers of the precious metals, lie along the extension southward of the mountain ranges which are found in Briti h Columbia, and although this does not necessarily assure the existence of equal mineral wealth in our portion of these ranges, the fact has very important bearings.

The views of Dr. G. M. Dawson, the director of the Geological Survey, carry especial weight in this connection, he having spent so many years in studying the geology, etc., of this province. His conclusions will be found in the following quotation from his report on the "Mineral Wealth of British Columbia," published by the Geological Survey in 1887. The ten years that have lapsed have served but to prove their correctness.

"In preceding paragraphs particular attention has been "drawn to certain notable differences between the better known "and more fully developed regions of the southern part of the "Pacific slope and those of the Province of British Columbia, "chiefly as a note of caution against the rash assumption of "complete uniformity in conditions too often made without due "investigation. The salient fact of the general identity of the "structural features of the Cordillera region south and north, "however, remain, and is such that from this alone, even with-"out taking into consideration the numerous and important "discoveries already made, we should be justified in predicting "an eventual great development of metalliferous mining in the "province. It has already been stated that British Columbia "includes a length of over 800 miles of the most important "metalliferous belt of the continent, and adding to this the "northern extension of the same belt, beyond the 60th parallel, "we find that within the boundaries of Canada its entire length "is between 1,200 and 1,300 miles. This, as I have elsewhere "noted, is almost precisely equal to the whole length of the "same region included by the United States from our southern "line to the northern boundary of Mexico, and after having

"enjoyed exceptional opportunities of investigation, I feel no "hesitation in recording my belief that the northern moiety of "the Cordillera will ultimately prove to be susceptible of a "development corresponding in importance to that which has "already been attained in the southern."

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"With respect to vein-mining proper, we have as yet to "chronicle merely the first steps, but in the southern part of "the province the completion of the Canadian Pacific Railway "has at length afforded the necessary impetus in this direction, "and it is very gratifying to find, as an immediate consequence, "that this part of the country is rapidly beginning to prove its "valuable character and to justify the confidence which those "best able to form an opinion on the subject have always felt, "and frequently expressed. Everything which has been ascer- "tained of the geological character of the province as a whole, "tends to the belief that so soon as similar means of travel and "transport shall be extended to what are still the more "inaccessible districts, these also will be discovered to be "equally rich in minerals, particularly in the precious metals, "gold and silver."

Regarded then as a producer of the precious metals, Canada would seem to have a bright future before her. Even if in the past she has not held a very prominent position, the progress recently made has been very rapid and encouraging, whilst a study of all the conditions seems certainly to justify the belief that she will yet hold her place amongst the larger producing countries of the world.