Canada's New Mint—How Our Coins Are Made

WITH the opening of the new mint at Ottawa recently, Canada is possessed of a building and equipment of great value and interest. That our own coins are now being made on our own territory, from metal mined in our own rocks, is a matter of justifiable satisfaction. In addition to this aspect of it the new mint affords a market for much of the precious gold and silver mined in Canada, which has been heretofore largely sold to foreign countries. A review of the history of coinage in the British Empire and in Canada, and a description of the plant at Ottawa, may not be uninteresting at this stage.

In addition to the Canadian branch of the Royal Mint which has recently been opened at Ottawa, there are three other branches of that institution in the British Empire, all situated in Australia. The oldest is the Sydney branch, which was established in 1853. The Melbourne branch was established in 1869, and the Perth branch in 1897.

There are also two British mints in India, but they are not branches of the Royal Mint. They are under the control of the India office, and are situated at Bombay and Calcutta, respectively.

Imperial standard coins may be minted at all the branch mints, as well as coins of the country in which they are situated; but Imperial standard coins are not minted in the India mints.

The Canadian branch is the first at which the coinage of silver and bronze and the manufacture of coinage dies will be undertaken. At the other three branches gold only is minted, the Royal Mint at London supplying the necessary coinage dies for that purpose. All the silver and bronze coins for use in Australia are also supplied by the London mint and are of the same denomination as those in use in Great Britain.

It has been proposed that the gold which is produced in Canada shall eventually be coined into either British sovereigns or Canadian gold pieces, whichever may be needed.

All the metals used for coinage (with the exception of the tin used in bronze coins) can be obtained in Canada. The silver which has already been purchased by the mint was obtained from Trail, B. C., where an electrolytic refinery for silver has been established. There is not at present in Canada an electrolytic refinery for the treatment of copper, and this metal is therefore shipped to the United States, where it is refined and then shipped back again to Canada. It is anticipated, however, that this arrangement will soon be altered, as there is a large and growing demand for copper in Canada; but unless this metal is so treated that most of the impurities are removed, it is very difficult to manipulate.

All the metals used for coinage purposes will be of a purity of 999 parts per 1,000, or over.

The demand for silver and bronze coin for use in the Dominion shows a marked increase since the passing of the British North America Act. For the ten years commencing 1870 the average annual demand was 284,000 dollars' worth. For the seven years commencing 1900 the average annual demand has been 502,428 dollars' worth; while the amount coined in England for the above service in the single year 1906 was no less than 850,460 dollars' worth. In spite of this large increase, there is every reason to believe that the demand for these coins will continue to grow. There is a very large amount of United States silver coin in circulation throughout the Dominion, especially in the West. The manager of one of the leading Canadian banks has informed me that when, in 1906, the government had allowed them a small commission for collecting and deporting the foreign silver, no less than 12,000 dollars' worth was collected by this bank alone, in a single day.

Now that the Canadian Mint has been established, it is to be hoped that all foreign silver will be deported, and replaced by Canadian silver coins. With the co-operation of the banks and the public generally, the mint will, after paying all running expenses, be a source of considerable revenue for the Dominion.

How large the seigniorage on silver really is may be readily seen when it is remembered that, with silver at its present market price, the face value of a silver coin is about 2 1-2 times its intrinsic value. A Canadian 50-cent piece contains nearly 166 grains of pure silver. One troy ounce, or 480 grains, of pure silver can be purchased for about 57 cents; so that the 50-cent piece contains only about 19 3-4 cents' worth of pure silver. The manufacture of bronze coins is even more profitable; the face value of a cent piece being about 4 1-2 times its intrinsic value.

Before the passing of the British North America Act the various parts of the Dominion had their own local systems of subsidiary coinage. Old Canada (Quebec and Ontario) had pieces of 20 cents, 10 cents, 5 cents and one cent, which were first introduced in 1858, and coined at the Royal Mint in London. In 1860, New Brunswick had its first local coinage. This was also coined at the Royal Mint, and consisted of bronze denominations as those of Old Canada. Nova Scotia had its first local coinage in 1861; but this consisted of bronze only, in the form of cents and half-cents. In 1871, the first local coinage for Prince Edward Island, consisting of cent pieces only, was executed by Messrs. Heaton & Sons, of Birmingham, Eng.

By the Dominion Act of 1871, the currencies of Nova Scotia, Quebec, Ontario and New Brunswick were assimilated, but it was not until 1881 that the provisions of the act were extended to Prince Edward Island and British Columbia.

The Ottawa mint is divided into six principal departments:

1. The mint office, into which all bullion is received for coinage purposes and from which the finished coins are issued to the distributing centres.

2. The melting house, in which the bullion is mixed, melted and made into coinage bars.

3. The coining department, where the finished coins are made from the coinage bars, and tested, ready for issue.

4. The assay department, where the fineness and standard of the ingots, coinage bars and coins are ascertained.

5. The die department, where all the coinage dies are made.

6. The mechanical department, where the power is generated, renewals made and repairs to the coinage machinery effected.

The metals used for the present coinage are gold, silver, copper, tin and zinc.

The Imperial gold coins are composed of eleven-twelfths of pure gold, and one-twelfth of copper (known in the trade as 2 karat).

The Canadian silver coins are composed of thirty-seventh-fortieths of pure silver and three-fortieths of copper (known in the trade as sterling silver). The bronze cents are composed of 95 per cent of copper, 4 per cent of tin and 1 per cent of zinc.

All the machinery throughout the mint is driven electrically. The power enters the building as an alternating current at a pressure of 2,000 volts. It is then transformed by means of transformers and motor-generator, into a continuous current of 220 volts, and this is used to drive all the motors which operate the machinery.

The fuel used for melting and annealing is crude oil, which is fed to the furnaces under pressure, and used in conjunction with an air or steam blast. This fuel is very convenient and efficient, and also very economical. A melting furnace requires only about 20 cents' worth of this fuel per hour, and can be lighted up or extinguished in a second or two.

The various processes through which the metals pass is being transformed from the rough metal into the finished coin are as follows:

The ingots, as received from the refinery, are placed in the crucibles with the necessary amount of alloy, and charged into the melting furnaces. Starting with gold furnaces, the first charge is melted in about 90 minutes, but only about 50 minutes are required to melt each of the subsequent charges.

When the metal is melted, the crucibles are lifted from the furnaces, and the metal is poured into cast-iron moulds, thus forming coinage bars.

These bars are about two feet long, two inches wide and half an inch thick. In the case of gold and silver, assay pieces are taken from the first and last bar from each crucible, and forwarded to the assay department, where they are tested. The bars are not passed into work until a satisfactory report has been received from that department, stating that they are of the correct standard. All bars which are found to be above or below the legal standard fineness are re-melted.

The good bars then pass to the rolling mills, where they are rolled into long, thin strips (technically known as fillets). These fillets are, when finished, about seven or eight feet long, and of the same thickness as the coins which will be produced from them. During the process of rolling, the enormous pressure to which they are subjected renders them hard and brittle. To overcome this brittleness, they are passed through the fillet annealing furnace, which softens them again. The fillets are passed about ten times through the breaking-down mill, and are then annealed. They are then passed about nine times through the thinning mill, and about six times through the finishing mill. In the case of silver and bronze, this treatment is sufficiently accurate, the finishing mill being adjustable to the one-five-thousandth of an inch. In the case of gold, however, it is necessary to be even more accurate than this, and gold fillets are therefore passed on to a machine called a draw-bench. The fillets are here drawn between two hard, fixed steel cylinders, which can be adjusted to one-ten-thousandth of an inch.

Gold being very dense detal, a slight difference in the thickness of the fillets would make a considerable difference in the weight of the resulting blanks. Gold being also a very precious metal, it is desirable that the coins shall be as near the legal standard weight as possible. In the case of a British sovereign, the legal standard weight is 123.274 grains, and the working margin allowed is two-tenths of a grain. If this margin be exceeded by even so little as the one-hundredth part of a grain, the coins are rejected, and re-melted. The hundredth of a grain is about the weight of a quarter of a postage stamp.

The fillets are next transferred to the cutting machines, where the blanks are punched from them. Each cutting press cuts out two blanks at each stroke, and can produce 300 blanks per minute. The skeletons of the fillets which are left after this process (technically known as "scissel"), are made up into bundles and re-melted.

The blanks are then taken to the marking machine, where a protecting edge is raised around each coin, and keeps it from being rapidly worn away when in circulation. The machine can mark 600 blanks per minute.

The marked coins are then softened by passing them through a blank annealing furnace; cleaned or blanched, washed and dried.

They are then ready to receive the impression which will be given to them by the coinage dies.

There are three coining presses, each capable of striking 100 coins per minute. The blanks are fed automatically to the dies, and, with one blow, the head, the tail and the milling are all impressed on the blank.

The coins are then tested by weighing and examined for possible discoloration and for other defects. All the defective ones are defaced and re-melted. All the gold coins, and the larger silver coins, are weighed separately on the automatic weighing machines. Each of these machines will weigh 20 coins per minute, and each is sensitive to the one-hundredth of a grain. The coins are separated, automatically, into three compartments, one for those of correct weight, a second for those that are too light, and a third for those that are too heavy. The good coins which have passed this test are then rung on an iron block to find if they have the correct ring. They are then ready to be issued.

The coins passed for issue are counted into bags by an automatic telling machine, which delivers into each bag an exact number of coins. The numbers to be so counted can be varied as required.

"General" Booth's Birthday

"GENERAL" BOOTH entered his 80th year yesterday, and the occasion was celebrated by a great gathering of Salvationists and other friends in the Queen's hall, says the London Times of April 17.

Mr. Bramwell Booth, chief of the staff, in offering the "General" the affectionate congratulations of his forces, said that they loved and trusted him not only as the founder of the Salvation Army, but because of the simplicity of his life and character, and the steadfastness of his purpose in these days of luxury and ease; and at a time of life when men might reasonably withdraw from such rigorous toil, he was still giving himself up to ceaseless labors for the benefit of his fellows. The "General" had that day received many hundreds of affectionate messages from all over the world. (Cheers.)

"Commissioner" Howard, who said that multitudes not enrolled in the Salvation Army owed everything to it, instanced a church in Northern Europe where of 200 members 175 were found to have come to God at the Salvation Army's penitent form. (Cheers.)

"Commissioner" Coombs, of Toronto, added the congratulations of the New World. He had asked the premier of the greatest province in Canada if he had any message to send to the "General." The reply was:—"Give him all the good wishes you can possibly think of, and say I feel much more than all of them put together." We heard of measures here and in other lands for the good of men; but the Salvation Army was helping to make that public opinion which made such great measures possible. In every part of the world people were looking to the "General" for guidance in working out many great problems. (Cheers.)

"General" Booth, who was received with enthusiasm, spoke for more than an hour and a half without flagging. That being a sort of family birthday party, he said, he felt more like a grandfather than a "general," and it might be proper to speak more of personal things than he would otherwise have been inclined to. Except for a little trouble with his eyesight, which the doctors assured him was only temperary, he felt as young as he had ten years ago, and he was able to do as much work or a little more. It was for them to say whether his mental force was abating. At any rate, judging by the requests coming from all over the world, there seemed to be an idea that he could still do something worth calculating on. As for his soul, it was still on the old foundation. He was sometimes asked what had been the most striking and formative events in his life. The first was his arrival in this world. (Laughter.) His "second birth" occurred about 65 years ago, when "all things became new to him." He was not there to boast—he had been more inclined to weep over his imperfections than to stand on that platform—but the new motive had led to a new life which had worn well. Many who argued against his methods and doctrines now had words of kindness for him. In an American city on his last journey, the Anglican and Roman Catholic bishops and the Jewish Rabbi had all appeared on his platform. Yet his march from Whitechapel to his present position began 43 years ago. It was a mistake, by the way, to suppose that his usefulness as a preacher began with the Salvation Army. Years before he had conducted campaigns in the north and in Cornwall; but the churches closed their doors against such special efforts, and, left without a platform, he drifted out of organized Christianity and commenced the operations in East London which culminated in the formation of the Salvation Army. After referring warmly to the quality of his officers and soldiers, the "General" went on to illustrate their work by statistics of the past week. In those seven days they had preached salvation in 32 languages, in 52 countries; had held 46,000 meetings in their own halls and 30,000 outdoors, with a total attendance of about 3,400,000! and had reached other 500,000 people by visiting. In seven days about 5,600 people had knelt at the mercy seat, including a hundred drunkards. The Salvation Army's night marches and other methods were now being imitated up and down the world, and he would rejoice if they were followed by the same glorious results. After describing the social and rescue operations, and saying they would continue the Christian-like work of feeding the hungry in London streets, despite the objections of some in high places (cheers), the "General" said that he had made up his mind to live as long as he could, but the same telegram that announced his death would proclaim his successor. He believed the Salvation Army would last as long as the sun and moon endured. It was learning all the time, and it believed in self-improvement. It was always crippled—that was, prevented from extending as it ought—by lack of money; and he was against going into debt. The members of the Army gave largely out of their poverty; but they must have a little assistance if they were to be the mighty aggressive force they ought to be. A gentleman had given him £1,000 and a lady had sent him £20,000, but these gifts were ear-marked for special objects, and rather increased than relieved the financial strain. He was said to have received £100,000 for small holdings; but it was only a loan, and he had had to pay it back. The training institutions alone cost £20,000 a year. They wanted help also for the work in the slums and among the multitude of fallen women; among the starving multitudes of famine-stricken districts in India, too. He appealed not only to outsiders, but to Salvationists themselves; and not only for support of that sort, but for more red-hot religion, to fill the world with a knowledge of the wonderful salvation of God. (Loud cheers.)

BROOK FISHING FOR TROUT

Three flies to a cast are too many; they are hard to handle, make too much fuss in the water, and are apt to foul your cast. Two flies are far better in every way and many crafty old fishermen use but one, especially in the summer when fine fishing is at a premium.

Generally speaking it is better to fish down stream in rifts or rapids and up stream when fishing pools. We will take the pools first. Here are nearly always found the largest fish and also the wisest. Approach the pool, if possible, from below and begin casting with as long a line as you can handle with perfect control. Do not overcast your water; it is the commonest and worst of faults. Begin just where the lip of the pool starts to break into the rapids below and gradually advance until you have searched the pool from side to side and up stream to about the middle of the pool. If you hook a fish lead him as quickly and quietly as possible down stream, where you can finish him at your leisure and without creating a commotion in the pool. Trout always lie with their heads up stream and can be most easily approached and securely hooked in this way. If unsuccessful get out of the stream, walk around the pool to its head, drop your flies where the water pours in and let them drift down and swing around into the back eddies. Should the result still be a blank and you have good reason to believe there are fish in the pool and that it has not recently been disturbed, get back out of sight, sit down for a rest or a smoke, change your flies, and after a few minutes try it again. Your flies should at all times strike the water as lightly as possible, and if you aim your cast at an imaginary point about two feet above the water, checking your cast slightly while still in the air, it will drop of its own weight and as lightly as a feather. Whenever possible, cast so your flies will strike the water first. This is easily accomplished by checking the cast with the tip of the rod held high. This causes the line to kink near the end of the cast and the flies will swing back a little toward you and strike lightly, while the line, in a reasonably short cast, may be held in the air and need not strike the water at all.

In Paris dogs are treated as well as human beings are. They wear automobile togs when they go motoring, they have a hospital, and they even have a good-sized cemetery, with monuments and headstones and inscriptions and mortuary wreaths

The New Point of View

THERE are few ardent sportsmen who have not been asked, "What is the fun of fishing?" "Don't you ever get tired of hunting?" or any one of a hundred variations of these questions. These "outsiders" can no more understand us than be can conceive of a healthy, otherwise normal man spending his vacation at a hotel, between a bar, a newspaper and a ticker, staying up half the night and sleeping away the best part of the day.

Scientists tell us that, excepting a few really abnormal people, such as geniuses on the one hand and degenerates on the other, human beings are very much alike. Now, what is the explanation of the fact that there is such a sharp dividing line between the pleasures of sportsmen and those of non-sportsmen, and that one class should think the other mentally deficient?

Perhaps I have solved the problem—and perhaps not. At any rate, it will be a whole day before this old Florida Special will land me in New York, so I simply can't make my pen behave and I shall try to put my theory into words.

Two years ago my wife was a "non," and I must confess that in her eyes I was crazy. Now, as partners should share each other's joys, I one day conceived a great idea. I brought home a pair of small rubber boots and announced to the madam that she was to accompany me for a couple of days' fishing at Canadensis, Pa. As it was not going to be any fun for her, my wife induced an old friend to go along for company "while crazy Will was fishing;" the madam was interested in birds; in fact, now she is very well posted on the birds of eastern North America. The beautiful little Broadhead, winding through mountains and fields, attracted her, the whole atmosphere of what I can only describe as the open got into her blood, and those girls spent two entire days up to their knees in the clear, cold water of the stream. Wet feet were forgotten, the lunch of sandwiches tasted good, and although the madam caught "nary a fish," she decided to leave the children long enough to give us a fortnight in the Temagami Reserve.

The following winter, when I went to the interior of Florida, she again accompanied me and we spent a week camping on the edge of Green Swamp collecting specimens. A trip to Newfoundland last spring made the madam perfectly "camp wise," and as I am writing this she has both boys at Mohawk, a little settlement in the "mountains" at the geographical center of Florida. The idea is to be where they can all be outdoors.

On the whole I am happy to say that the lure of the open has as strong a fascination for my wife as it has for myself. She has at the most caught two dozen fish, has never discharged a firearm of any kind and would never kill anything if she did know how to shoot; so her entire pleasure consists of seeing and studying the various birds, flowers and other manifestations of the Creator, and living the care-free life of the open.—From Forest and Stream.

THE "CAMP ROBBER."

The first living thing to welcome the camper to the wilderness is this bird; "moose bird," because found within the moose's range, or "tallow bird" on account of its decided partiality for grease. Others contend that it is a jay—"Canada jay" or "gray jay"—though it is neither boisterous nor does it disappear on Friday. It is always handy and very dignified and reserved in its vocal efforts, confining its cry to a short smothered monotone. "Meat hawk" only half fits, for, though pronouncedly carnivorous, it is anything but a hawk.

Fear it has no knowledge of; tricks it has never been known to practice, and if there is any attractive dainty in camp suiting its taste it flies straight down, quietly takes possession and industriously gratifies its appetite just without the reach of the incensed owner's fist. A loafer and a thief, some say, hence perhaps the "whisky john" and "camp robber" in the vulgar tongue. Classically it is known as Perisoreus canadensis.

Fresh meat is its obsession. Before the lucky hunter has time to gralloch the stag which he has bagged, this bird, crow or jay, quietly announces its arrival from the deer-slayer knows not where, and, without words, almost says:

"Hello! Good shot. Glad to see you. Nice stag we have. Let's see," and down it comes, "it's good and fat, too. I am very fond of fat; they sometimes call me the tallow-bird. Phew! That's a nice sack of tallow about that kidney. You're awful slow and I'm as hungry as a wolf," and the irrepressible jay proceeds to help himself at the rump of the carcass while the hunter is busy flaying the neck.

The impudence is more than the temper of the man will stand, and he makes a vicious whack at the voracious bird with his skinning knife, forcing it to retreat to a safer distance.

"Phew! what a temper," the indifferent bird chirps gently from an overhanging limb. "Your ugly disposition will spoil your shooting. I would not make such a to do over a little fat if I were a big strong man like you."—Forest and Stream.

The average annual consumption of tobacco in England is thirty ounces per head of the population.