Canada at War

NO 3—DOMINION'S GROWING SHELL PRODUCTION

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The Dominion Arsenal

In Quebec Province are many plants where ammunition and shells are being produced. The mother of them all however, is the Dominion Arsenal.

Situated in the heart of Old Canada is a fine old stone building, dating back to the eighteenth century. The walls are five feet thick, and from this building, the defenders of New France took their stand against the enemy. For the past thirty years or more this same building has been used in the defense of Canada, but instead of being the shelter from which guns are fired, it has become one center in which ammunition for the Canadian Army is made.

During the last war, this arsenal employed five to six hundred men and women. To-day, it is producing in 24 hours, more ammunition than in a whole month during the last war. More than a score of large buildings comprise the three main plants. One of these is situated in the country fifteen miles from the city, and a special train makes a round trip three times a day carrying 1,500 men and women to work on their respective shifts.

The Dominion Arsenal is considered the finest plant of its type on the North American continent. Not only is it equipped with the very latest in machines and tools, but the safety devices, and working conditions are the best possible.

Cartridge cases and bullets are produced from the raw material. The men attending the great crucibels have to wear shoes with wooden soles an inch thick to protect their feet from heat. The metal for shell cases is poured into moulds, and when cooled is drawn out until it is just the fraction of an inch in thickness, and nearly forty feet in length. The long spring-like coil of brass is then fed into a punching machine, from which thimble-like cups are punched out. These are the beginning of cartridge cases. They pass through forty operations until the complete cases are produced.

After the cartridge cases are completed, they are passed on to another plant, where the propellant is put in, the cap fitted, and the metal bullets clamped into place. This plant where the high explosives are handled, is one of extraordinary quietness, and cleanliness. There is no hustle or bustle here. Everybody wears special rubber shoes, and when walking about the building, every now and again, one touches a metal plate set in the wall to ground himself so that there may be no static generated.

Situated close to this plant is the proving ground. Here it is that guns made in Canada, using shells the size of a half inch and over, are proved. Not only are Canadian-made guns proved here, but guns from the American arsenals as well. The proving ground is operated jointly by the United Kingdom and Canadian Governments. A certain number of shells from each batch made are also tested during the proving of the guns.

Shells are fired from a platform into a sand bank. The shell passes through frames strung with fine copper wire electrically connected with very sensitive instruments, situated at some distance from the proving grounds. These instruments record to the split second, the time when the shell passes through the screens, and as the time is recorded from each frame, it is then an easy matter to work out the velocity.

Shells of all types and sizes are being made in Canada in ever increasing numbers in factories in both the East and West. The inspection departments of some of these factories remind one of huge wood yards. Hundreds of thousands of these shells are produced daily. Tall thin ones to feed the anti-aircraft guns, short stubby fat ones for field guns, ponderous looking shells for the guns of the British Navy.

Most of the plants had to swing over from domestic production of one kind or another. In some cases the existing machinery and tools were adaptable to the making of shells. In many cases, however, extensions had to be built and new machine tools installed before production could commence. Now the Canadian shell industry is getting into its full stride.

When we consider that a certain type of anti-aircraft gun now being made in this country can fire shells at the rate of 160 per minute, we begin to realize the tremendous number of shells necessary to feed all of the guns used by our army, airforce and navy.

A lot of work goes into the making of a shell. Exacting work it is, for every shell has to be perfect. Out of every lot of 500 shells produced, four are sent to the proving grounds. The record of one factory, which is typical of practically all those producing shells, is that there have been no rejects from the proving grounds. Every shell is checked by Government inspectors for inaccuracies of any sort, and this factory has a record for the past year of less than .01 per cent. rejected by these inspectors.

Shell manufacture usually follows what is called straight line production. In other words, the rough forging starts at one end of the production line, and at the other end, after a series of processes, emerges a finished product.

The rough forging of a shell to be used in a 25 pound field gun, weighs 29 to 30 pounds mean weight. After passing through the various operations necessary to turn the forging into a finished shell case, the weight has been reduced to 20 pounds, 10 ounces, 5 grams.

GUARDING QUALITY

A Woman worker in the Brownsburg, P.Q., small arms ammunition plant is shown inspecting shells. Canada is now turning out shells and bombs of all sizes in large quantities.

CANADA'S ANSWER

Shells by the thousands are streaming out of munitions plants in Canada. The workman shown in this photo is checking Howitzer shells preparatory to shipment.

Flying Over the Atlantic On a Magic Carpet

This is the second of a series of articles about conditions in Great Britain and other countries visited during six weeks spent in Europe. It is written specially for the Canadian Weekly Newspapers by the editor of the Fergus News-Record.

Flying across the Atlantic is pure magic.

There is no other way to describe it. No modern novelist has ever told the story. It is necessary to go away back to the Arabian Nights with its magic carpets, to Icarus with his wax wings and his unsuccessful attempt to fly over a much narrower body of water, or to Pegasus with his broad pinions. Clipper trips are more modern than our literature.

A writer in one popular American magazine recently tried to tell about the flight from New York to Lisbon, but he depended heavily on photographs. He did say, though, that those who had crossed the Atlantic by Clipper belonged to the most exclusive club in the world. The membership fee was $1,000 for less than a week and one requires "pull" besides to become initiated into this society. (Officially, the term is not "pull" but "priorities.")

Perhaps there is some truth to that, but it does seem a prosaic way to speak of magic.

In many ways, modern science improves on ancient fairy stories. I always had some doubts about the desirability of travelling by carpet high above the earth. The carpet was sure to be draughty. If one moved too near the edge, there was always a danger of falling off. And after all, the lady of the Arabian Nights and the other ancient story tellers knew nothing of the actual loveliness of the world far above the clouds and particularly at sunset, or the approach of a thunder storm, or when a rainbow spread itself into a full circle in front of the plane. Nothing they ever imagined could equal the beauty of that world and it is almost impossible to describe it to earth-bound readers.

Meeting the Other Editors

At New York, I met five of the other editors who were to make the trip to England. Three were from Ontario and two from Montreal: B. K. Sandwell and Bishop R. J. Renison of Toronto; Gratton O'Leary of Ottawa; Oswald Maryrand and Lionel Shapiro of Montreal. The last named lives much of the time in Washington and knows New York, which was fortunate, for we learned that a Portugese visa was necessary before we boarded the Clipper, and this required much running around and the payment of eight precious American dollars each to the Portugese Embassy before we embarked. (Later we learned just how much travellers through Portugal have to pay toward the upkeep of Dictator Salazar's government.)

The new Airways Terminal, opposite the Grand Central Station in New York, is surely one of the most beautiful and appropriate buildings in the world. The entrance is a semi-circle of inch-thick doors of plate glass or one of the new plastics. Inside the doors, the passenger ascends by a moving stairway into a great blue dome studded with stars. Circling across the dome are the signs of the zodiac and a bronze man with wings on his back. Not until the traveller reaches the top of the stairs does he see the offices of the various airways companies almost hidden around the horizon.

When the time comes to go, large motor buses rise through the floor at the rear of the building, coming up from deep cellars, and the trans-Atlantic passengers are hurried away by tunnels and roads to the airport.

The Dixie Clipper rides at anchor in the bay. It looks exactly like a whale with wings. The wings seem inadequate not at all the kind or size of wings that one would expect a whole to grow if it had to fly 4,000 miles or more in the next two days. But the four big Wright motors look efficient enough to drive their three-bladed propellors indefinitely.

A Six-Roomed House With Wings

Fifty-five passengers left New York in the Dixie Clipper that day but more than half of them stayed in Bermuda. They sat around in six rooms, most of them large enough for ten persons, for the Clipper is as large as a house inside, and upstairs the eleven men of the crew sat around in another room which the passengers never saw.

It took 20 minutes to get the Dixie Clipper up off the water. It taxied back and forth over the bay while the pilot tried the feel of the wind against the wings and manoeuvred for the longest run over the water. Once we passed three of Uncle Sam's new motor torpedo boats, each one with two machine gun turrets and four torpedo tubes. We were almost touching one of New York's marvellous bridges before we finally started down the bay at full speed. Spray flew up over the little square windows and soon the slap-slap of the waves against the bottom of the hull grew less violent and then disappeared—and the Clipper was in the air. It circled over the edge of New York twice, gaining height, and then turned east over the marshes and swamps and then the broad Atlantic. Two ships were nearing the coast. After that, nothing but waves and clouds in every direction.

Wonderland Above the Clouds

Flying the Atlantic, as I said before, is pure magic. One does not realize it at first. Flying was not a new sensation for me. I had been doing it for 20 years in planes large and small, but never for more than a few hours at a time. This was different. I sat on a sofa with two others. One was a young American girl who had saved her money for a luxury holiday in Bermuda: the other a Detroit newspaper man returning to Europe. The plane was heated and air-conditioned. Even the wall covering added to the feeling of luxury for it was a tapestry with maps of the continents and oceans. Dinner consisted of consomme, chicken salad, ice cream and coffee.

All these things were mere man-made attempts at comfort. The real magic was outside the windows. Every time I looked out, the long, slender, pointed wing was still there with its two whirring propellors. Far down below us were the clouds, for we flew at 6,000 to 8,000 feet where the air is still and there are few bumps. It was fortunate that we had clouds all the way across. The Atlantic, seen from that height, grows desperately monotonous when the air is clear but clouds are always changing shape and color.

The sun set behind a distant row of thick clouds which looked like a far-off mountain range. A long path of yellow light stretched over the whiteness of the nearby clouds. They looked like masses of spun sugar candy. As the sun dropped away, the sky flamed with color. In three-quarters of the dome of heaven, it was already night but out in the west the full range of the spectrum stretched across the sky, brilliant red at the horizon, going up through the yellows and the blues to the deep indigo of night overhead with a few stars, already brightly shining.

Lighting Around the Wings

Nearing Portugal, we met a high thunderstorm. This time, the Clipper seemed unable to rise above it. The clouds were close around and often we were in them, like a thick fog. The lightning was around us, too, sometimes just beyond the wings, but there was no sound of thunder above the roar of the motors. It was bumpy, too, and for the first time, two ladies felt sick and strapped themselves to their seats. For some others, men and women alike, it was just a new and enjoyable sensation.

At night, the steward made up the berths. That was after we had left Bermuda. There were 23 passengers then and room for them all to sleep. I had one of the worst positions—up close to the wing and number three and four engines—but the bed was comfortable and there was a rhythm to the noise that was soothing, so I slept well. Outside the window there was a tiny sliver of new moon and the very bright stars.

Magic Doesn't Always Work

Yes, flying the Atlantic is magic, but sometimes in the hands of hard-headed Americans the magic goes wrong. We should have left New York on Tuesday morning and have been in Lisbon on Wednesday night. But number four engine wasn't behaving too well even before we left New York. Out of Bermuda six houfs, the Clipper turned back because of bad weather ahead. On the second try, we reached the Azores, but after landing there for more gasoline, the ailing engine died as we were opposite the last islands of the group and we turned back to Horta, where the Atlantic Clipper came along and picked us up, taking us the rest of the way. Even food ran short at last before we dropped down out of the darkness on to the Tagus River at Lisbon on Friday night. We had been 47 hours in the air instead of the usual 23, and had gone some 2,500 extra miles of flying.

And the next morning, we were in the air again, this time headed for England.

CROTIAN MARRIAGE BAN

LONDON, (CP) - In German-occupied Crotia marriage with a non-aryan partner has been made punishable with six months imprisonment and loss of civil rights.

One Thousandth Of An Inch

British Glassmakers' War Achievements

England has opened the first training centre of its kind in the British Empire for teaching young workers glassblowing and glass instrument making.

From it they go on to a factory, built by Government permission since the war began, for the production of scientific glassware. Here are made all types of lampblown apparatus and graduated glassware from a carboy (a basket-covered flagon for corrosive liquids) to precision micro pipettes for blood counts, which are in considerable demand for blood transfusions after air raids.

They turn out chemical thermometers ranging in length from one inch to eighteen feet, circular thermometers with a bore as fine as a human hair, and other measuring instruments with division only one thousandth of an inch apart.

A new ceramics department is producing delicate enamel work for use in research and permanent fired enamelled devices like badges and identification labels.

Officials figures show that last year increases in exports of plate and sheet glass, glass containers, domestic and fancy glassware, and glassware for lighting ranged from 16 to 50 per cent. compared with 1939.

GET BRANDY RATION

CAIRO, (CP) — South African troops on service in "the Western desert" of North Africa are served periodically with a two-ounce ration of pure South African brandy.

DOMESTIC EXPORTS UP

Canada's domestic exports to all countries for the first nine months of 1941 reached a total value of $1,170 million compared with exports valued at $807 million for the corresponding months of 1940. Exports to both foreign and Empire countries increased in value by about 35 per cent. Although exports of agricultural products showed a substantial increase, the greatest export trade was in manufactured iron and steel products.—Current Review of Agricultural Conditions in Canada.