

Radar, One of War's Revolutionary Weapons, Result of Years of Research

By J. W. FISHER

In thick fog and the black of night, a ship recently sailed through the narrow gut-like entrance to Toronto harbor on Lake Ontario, slipped safely past other ships anchored in the harbor, and eased itself without a hitch into its assigned berth.

From the bridge and deck the captain and crew strained their eyes to pierce the armor of gloom that surrounded them. They could see nothing. For anxious minutes they felt the steady, forward motion of the ship. But seated at the navigator's desk in the chart room was a young man equipped with magic eyes. He it was who guided the ship through the narrow channel. He could see what the others could not see. Clearly he could make out the other ships, lying stationary on the water, and without difficulty he piloted his vessel past them. Then, presently, on the screen of his "magic eye" there appeared the silhouette of the wharves along the harbor front, and he soon made out the berth to which he was to guide the vessel.

The "magic eye" through which the young man saw all those things was a radar set produced in the government-built Research Enterprises Limited plant at Leaside, Ontario, and one of the thousands turned out for the Department of Munitions and Supply in this plant since the early days of the war.

Radar has played its vital part in victory on all fronts. Now it is being applied to help man in his eternal war against the elements.

Radar, said Sir Stafford Cripps, chairman of the British Radio Board, "contributed to the winning of the war more than any other single factor." And truly, Canada's great part in the production of radar and the training of radar crews in the early days of the conflict was a major share of this contribution.

This nation has been the world's biggest producer of certain types of radar sets, and so pioneered in the building of these and the training of operators that at one time every radar officer in the larger ships of the Royal Navy Home Fleet was a Canadian; more than half the radar specialists in the Royal Air Force were Canadian, and many of the highest radar positions in the Royal Navy today are held by Canadians. In addition many American servicemen were trained in radar operations in a Canadian radar school.

Thousands of radar sets, built in Ottawa and Toronto, were supplied by Canada to the United States. The radar machines used in the defence of the Panama Canal zone were built in Canada at the request of the United States Signal Corps. When the Americans launched their great offensive in North Africa they were equipped with light, air transportable radar sets bearing the "Made in Canada" label. At Manila and Luzon the Americans watched every move of the Japs through Canadian-built equipment. When London fought with its back to the wall, intricate equipment made in Canada spotted Jerry and automatically directed the gunfire against him. Robot bombs on the southeast coast of England were brought down with the help of Canadian radar before they could reach their objective.

And now radar is going to work for peace. No longer will

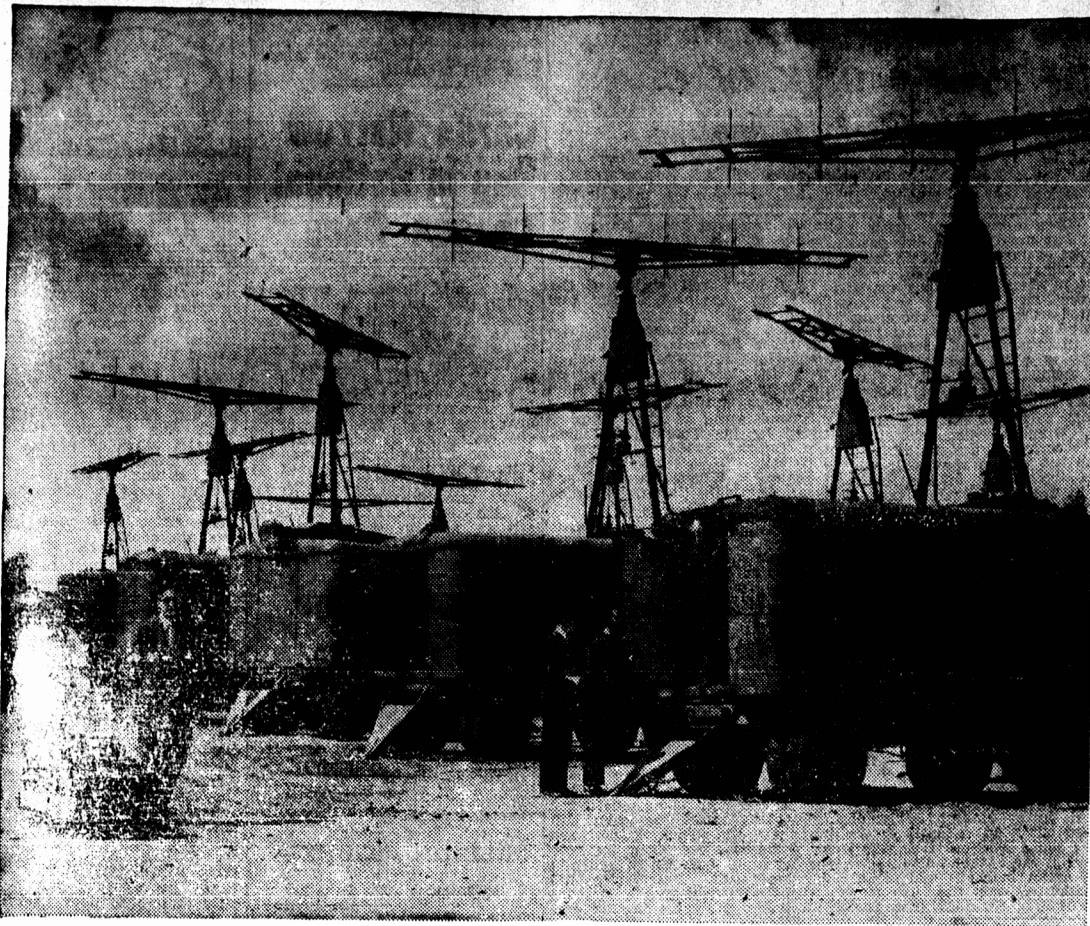
precious cargoes wait for days outside fog-bound harbors. Canadian fruits and bacon can be rushed across the oceans with no slow-downs for fog or icebergs. Radar tomorrow will save shipping companies millions of dollars in lowered insurance rates, and Canada's white elephant, the port of Churchill on Hudson's Bay, may yet be a great seaport, thanks to radar.

Using a Canadian-built coastal defence radar set off Halifax as a guide to ships at sea, the Royal Canadian Navy has claimed it saved the Canadian taxpayers about \$6,000,000 in the first few weeks of operations. Radar kept scores of convoy ships off the rocks outside the great Canadian port.

Now, too, Canadian radar is being turned to probe the unknowns of weather. Three powerful stations located at Ottawa, Montreal and Clinton, Ontario, are being used in weather forecasting, and by looking into the screen of the Ottawa set, the operator may see what's happening over an area of 86,000 square miles, providing, of course, that the object is above horizon level.

Storms as far away as 180 miles can be seen on the screen. Recently, in Ottawa, a radar expert telephoned Kingston, nearly 100 miles to the west, and informed his listener that it would start raining in Kingston within a few minutes. Before the telephone conversation had concluded, rain was falling outside the Kingston window.

Farmers and fashion will be other beneficiaries of peacetime radar. With radar peering into the upper reaches of the sky, meteorologists can be provided with the most accurate weather information, hitherto withheld from man. With the help of radar, farmers will know in advance when to cut their hay. Outdoor picnics, celebrations, golf — these will be aided by radar which knows exactly where and when a storm will break. Millady, before leaving for downtown, or the afternoon garden party, will simply turn on her radio and learn that it will rain at 11:45 exactly that day, and thus be forewarned as to what to wear for the occasion.



Truck-trailer units (above) are known as ZPI radar units and move in four pieces — two trucks and two trailers — with the spidery antennae whirling like Dutch windmills.

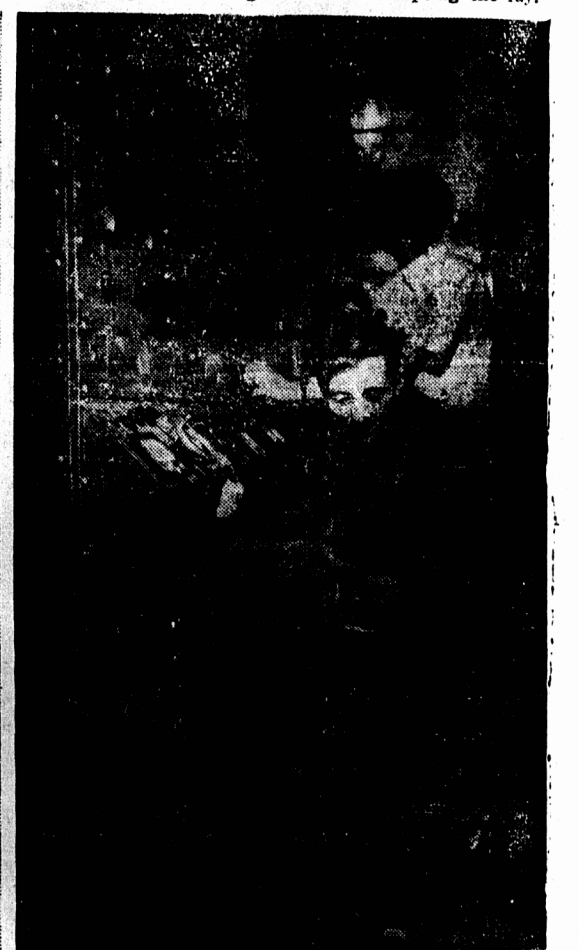
As the antennae revolve, this narrow light beam moves in a circular motion across the cathode-ray tube inside the trailer, bulges indicating aircraft intercepting the ray.



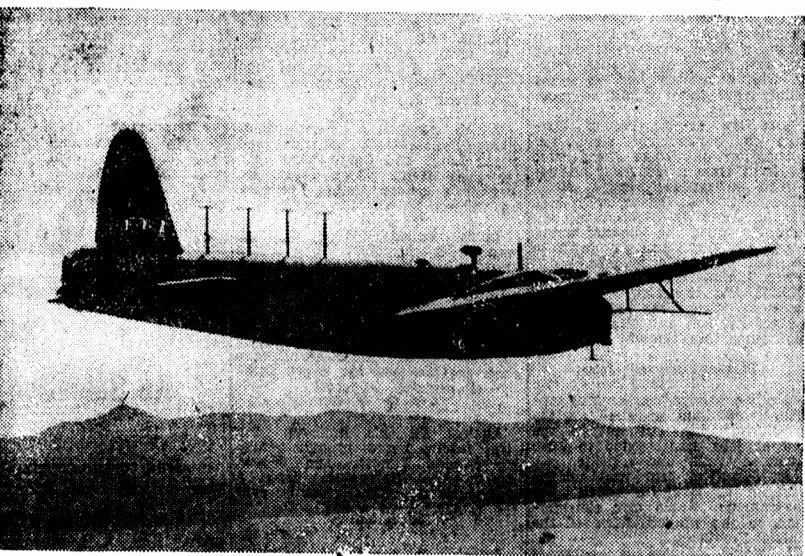
The exacting work of assembling the intricate mechanisms of radar units was one of the jobs assigned to Canadian plants, a job that demanded the utmost in precision and care. This girl worker is assembling RAW chassis components.



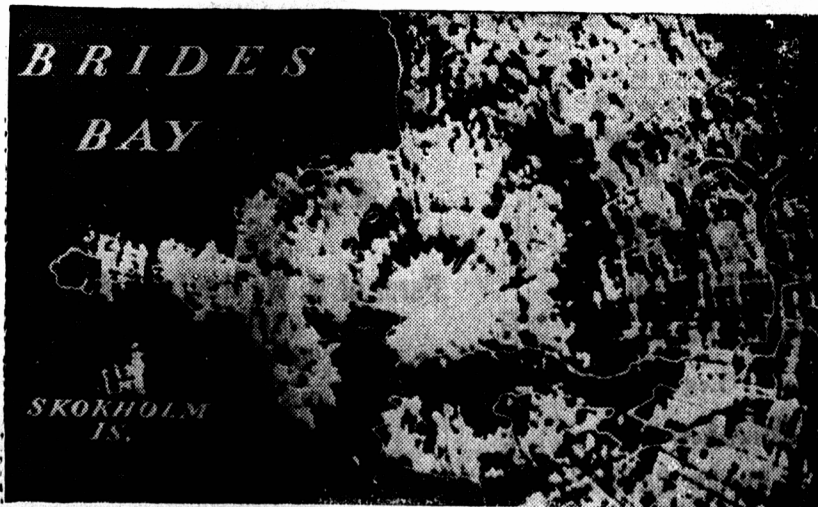
Canadian-made radar tent equipment like the above was on the African war front 72 hours after final inspection in Toronto. It was used for general alarm work in the field.



In the photo above, an expert Canadian radar operator is shown testing ZPI radio-locator equipment inside a trailer like those shown in the picture at the top of this page.



The slightest suggestion of radar was eliminated in all wartime photographs of aircraft and ships. This photo of a Royal Air Force Wellington bomber in flight shows the radar equipment on fuselage and beneath the starboard wing.



Except for names and the thin outline of the actual coast, this map of part of Wales was drawn by radar and photographed directly from the cathode-ray tube of H2S apparatus in an R.A.F. aircraft during a test flight at night.



This large-type radar station was used primarily for coastal defence work.



The equipment shown in the photo to the left is used with the apparatus pictured above, usually underground. These are Canadian radar experts testing the type of radar set vital to coastal areas. The cathode-ray tube at which the operator (left) is looking, reveals the exact whereabouts of approaching aircraft by bulges in a small, moving line.