

**RADAR RING.** Land, sea and air-based radar devices are depicted in this map of NORAD's vast coverage system.

## Continental Air Power

# What's the Score in NORAD?

ICBM defense is coming, but the Commander-in-Chief doesn't know when

Even before the outbreak of the Second World War it was recognized that Canada and the United States of America were committed to a system of joint defense.

Attack upon the North American continent seemed a remote possibility. Just the same, leaders of both nations gave notice to all the world that they would be united in defense.

This was strategically necessary in the days of conventional warfare when a country had to be virtually over-run to be conquered. It is even more essential today when the weapon of victory-through-annihilation can be projected from a pad 5,000 miles away—when any defense effort is contingent on early warning.

It is the early warning aspect which makes Canadian soil so useful to the U. S. On the other hand Canada, at her present stage of development, would be virtually naked from a defense viewpoint without combining her protective armour with that of the United States.

These factors are the basis for a mutual defense effort—for the evolution which has led to the establishment of the North American Air Defense Command.

The air defense systems of Canada and U. S. had been co-ordinated for some years before the formation of NORAD. In September last year the new command headquarters was established at Ent Air Force Base, Colorado Springs, with Canada and the U. S. participating as equal partners.

Complete operational control was vested in General Earle E. Partridge, of the USAF. As supreme commander of NORAD he is responsible and accountable to the joint chiefs of staffs of both Canada and the U. S.

### Questions On Control

Beyond this there has been no clear definition of operational control. Questions in the Canadian House of Commons as to whether there would be consultation with the Canadian government before the continent were

plunged into war do not seem to have been adequately answered.

Canada has representation at Colorado Springs in the person of Air Marshal C. R. Slemon, who is deputy commander-in-chief of NORAD. It would seem reasonable to suppose that the country's interests will be protected. Realizing that in the opening phase of any future conflict a delay of even minutes might be fatal, military commanders are understandably reluctant to accept the necessity for a political conference before they push the appropriate button.

General Partridge has said in interviews that as soon as hostile intruders are detected two things will be done: Strategic Air Command will be alerted and their program for retaliation set in motion; the intruders will be intercepted and destroyed.

He has been asked whether President Dwight Eisenhower's permission would be sought before any atomic weapons were used. He replied that the President had given his approval

to use, without reference to anybody, any weapon at our disposal if a hostile aircraft entered the NORAD area of defense.

Obviously then, the finger on the trigger is that of General Partridge, or, in his absence, Air Marshal Slemon.

General Partridge has pointed out that aircraft are scrambled more than 100 times daily to investigate blips on the NORAD system's radar screens. As yet they have not seen any Russian machines, although these have been detected patrolling over the Bering Sea. Russian and Canadian/U.S. planes have appeared together on the same radar scope.

Costs in what is now NORAD's operational sphere have been estimated by General Partridge at about \$61 billion for the 15-year period from 1950 to 1965. Division of the cost between Canada and the U.S. was not clearly defined but the General observed that Canada paid for part of the system, for instance all the Mid-Canada and part of the Pine Tree radar installations, plus operation of the nine RCAF interceptor units, with the U.S. footing the bill for the rest.

#### Canada's Allocation

Canada's defense budget for 1957-58 totals \$1,789,964,000. Of the amount allocated for air defense (\$844,758,000) only a portion goes to Air Defense Command, which is NORAD's Canadian operational component.

The \$61 billion figure does not include the cost of projected plans to counter the intercontinental ballistic missile. General Partridge has admitted that the continent is "naked" against attack from these weapons. But he says scientists have assured him that it is possible to come up with a defense. This will involve long range radar to detect the approach of the missiles, coupled with automatic anti-ICBM missile launchers. The General did not know when we would have these facilities.

With the radar defenses at their present pitch, warning of aircraft approaching via the polar route is received when they are about 1,200 miles from the Canadian/U.S. border, which would put the intruders over Canadian territory in the North.

Taking the example of a subsonic heavy bomber, this would provide about two hours in which to alert the more populated sections of Canada. But if the enemy was in possession of anything like the B-58 Hustler, this warning period would be halved.

Nerve centre of the North American Air Defense system is a window-

less concrete building at Colorado Springs. This is the combat operations centre.

Inside is a vertical plotting board measuring 20 ft. by 30 ft. Etched on this transparent board is an outline map of U.S. and Canada and portions of the North Polar regions. Plots are made on the back of the board by U.S. servicewomen reflecting information relayed from the land and sea radar sites surrounding the continent.

Split-second communication with the outlying sites is constantly maintained by a scatter system. All North American Air Defense Command units throughout Canada and the U.S., including Alaska and Newfoundland are also in direct communication with Colorado Springs. These facilities require something like 600 miles of communications wiring within the centre itself. All voice communications are recorded on tape, consuming over 70,000 ft. daily.

In addition, the headquarters has direct channels of communication with Washington, Ottawa, the European NATO countries and the Far East. The telephone bill last year was a little over \$24 million. It is expected to rise to about \$150 million a year in the future.

NORAD has been devised on the supposition that simultaneous, widely diversified air attacks may be directed against the major cities of the continent. To counter this and minimize the advantage of surprise, an alerting procedure has been established through which warnings can be flashed to all U.S. and Canadian cities in a matter of minutes.

Three stages of alert have been agreed upon between the defense

organization and the Civil Defense forces. These are: Warning Red, which means attack is imminent; Warning Yellow; attack is probable; and Warning White: attack is improbable.

An additional condition of warning is Air Defense Readiness. This demands that all elements of the air defense system remain at maximum immediate operational capability. Reason for this warning would be suspicious patterns of action, movement of unidentified aircraft, or indications of danger through intelligence.

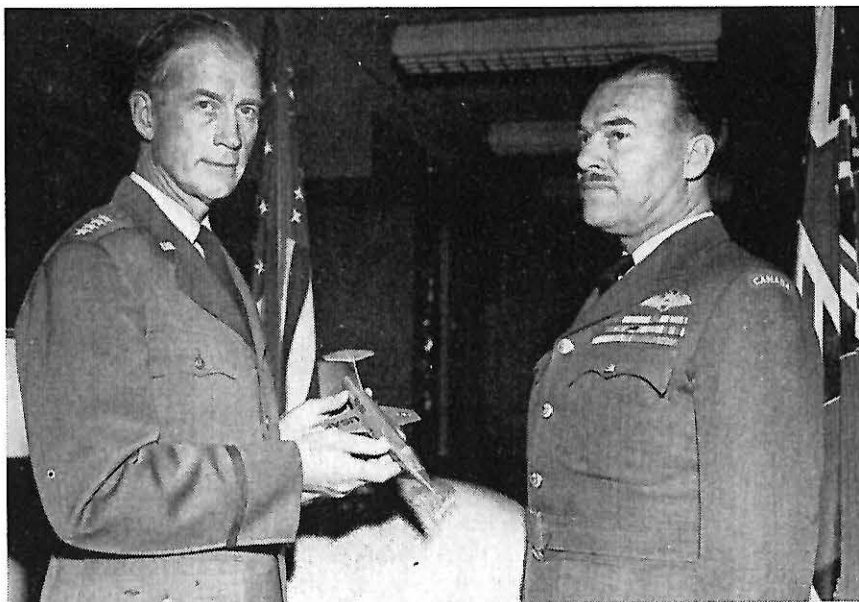
#### Security Air Control

In a tense political or military situation General Partridge has authority to declare a state of emergency. In addition to readying defense forces, this will be the signal for other actions including the security control of air traffic.

During a Warning Yellow, radio broadcasts and other electrical aids to navigation are controlled. Further, NORAD can put into operation its "SCAT" plan. This establishes procedures for the security control of civil and nontactical military air traffic during a military emergency. Object is to provide the maximum utilization of aircraft and airspace by military and civil agencies engaged in essential operations.

Intermingling of unknown friendly and hostile tracks would create an impossible identification situation without these restrictions. Friendly machines are no longer protected by the device of visual identification. All defense vehicles and weapons are now electronically guided to the target. It

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**PARTNERS.** General Earle Partridge (left), and A/V/M C. R. Slemon, pose for a picture symbolic of the partnership of Canada and the U.S. within NORAD.



# NORAD

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is not necessary nor should it be required in time of military emergency, that visual recognition of the target be obtained before the weapon is employed.

NORAD's current sting is provided by the RCAF's Avro CF-100s and the F-102A, backed up by other types. The supersonic ranks are being swelled by the addition of Lockheed F-104A and McDonnell F-101B interceptors. Eventually, the Avro Arrow will join the team, replacing the Canadian CF-100s.

Crews of these machines get plenty of practice in scrambling to investigate unidentified aircraft. They are directed by radar controllers to a point where they are able to identify the intruder.

If they find the intruder to be hostile, their's is the finger on the trigger. Modern warfare must inevitably mean split-second decisions involving immense responsibility.

Most interceptors employ air-to-air rockets or missiles. During last year the Command adopted nuclear air-to-air missiles. Fitted with proximity fuses these are at present the most effective airborne weapon against air attack.

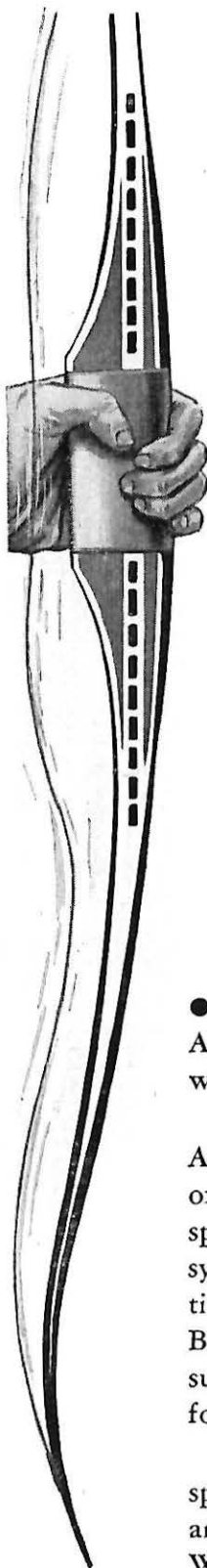
## Nuclear Warheads

Ground defense of North America is being greatly improved by installation of anti-aircraft guided missile sites close to major cities. Their use near Canadian cities is under consideration. The missile in use is the Western Electric Nike Ajax. The improved Douglas Nike Hercules, which can incorporate a nuclear warhead, will be phased into the system as it becomes available in quantity. The Boeing Bomarc will also be utilized for area defense.

The Nike Hercules, employing a nuclear warhead, will be capable of destroying whole formations of bombers at several times the range of its predecessor. This would seem to dictate that the old conception of raiders "darkening the sky" is gone forever.

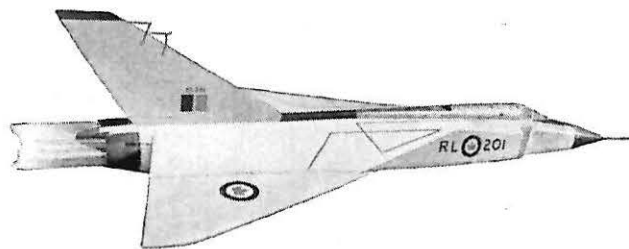
But the lone raider which succeeds in penetrating our \$61-billion fence can do more damage than all the bombs carried on one of the 1,000 bomber raids of the last War.

The Canadian Army's anti-aircraft forces are closely connected with the RCAF Air Defense Command. Headquarters of the anti-aircraft command are adjacent to those of the RCAF Air Defense Command. One Canadian Army artillery regiment has been designated a guided missiles unit.



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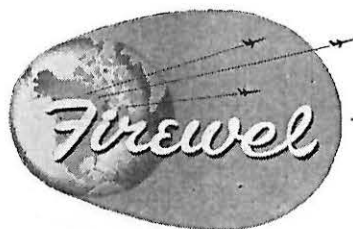
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