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news on the dot

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COVER

Birds of a feather . . . See story "Airports are NOT for the BIRDS", page 5.—Des oiseaux qui se ressemblent . . . Voir, en page 8, l'article intitulé «Les aéroports ne sont PAS pour les OISEAUX.»

EDITOR

Yvonne McWilliam

NEWS ON THE DOT is a Department of Transport staff magazine published under the authority of the Minister, Hon. J. W. Pickersgill, by the Information Services Division.

Preview Of Things To Come

As this issue is "put to bed" (i.e. goes to press) we are busy assembling the July/August one. It will feature an article about ship registration.

Sound dull. The fact is it's anything but.

Did you know that Canadian registry of shipping records antedate Confederation by many years. Those for the Port of Sydney, N.S. date from 1783, Quebec's from 1787 and so on.

We have all heard the terms "gross tonnage" and "register tonnage" and possibly know that they don't mean weight in 2,000 pound units but rather refer to measurement in cubic feet. But, did you know that the word "tonnage" originated in the early days of trading across the English Channel when transporting casks of spirits from France to England was a brisk business?

The French word for these casks was "tuns" and the capacity of a vessel came to be rated by its ability to carry "tuns" or "tunnage" which later came to be "tonnage".

Does a story about ship registration still sound dull? We could tell you how Queen Elizabeth I and Sir Walter Raleigh fit into the picture or tell you about the privileges of being a British Ship (which, incidentally all Canadian registered vessels are) or—but no, we'll say no more or we will give the whole story away.

Ship registration is not all you will read about in the July/August issue. There will be a first hand account of the recent visit to Russia by Assistant Deputy Minister, Marine Gordon W. Stead and six other Canadian government people.

The group visited marine installations and research facilities in both Russia and Finland during their three week Spring tour.

And more letters . . .

In recent issues of News On the DOT we have let you take a peek at some of the letters received by the department.

We believe that these have caused you to chuckle as heartily as we did when we received them. Here are a couple more, brought to our attention by the meteorological people.

A PETERBORO STUDENT wrote to the public weather section:

"S.O.S. I'm in a real jam (mess)! Next Wednesday we have a science project on weather to be handed in. I have not yet started and as this counts much toward my final mark I've pushed the panic button. Our teacher takes half the marks off for each day we're late so I'm pleading maybe even begging PLEASE SEND ME SOME MATERIAL. I need material badly! Anything, at all to do with weather, maps, diagrams, charts and pictures. Some things we have to include are clouds, precipitation four types—how man's activities are limited because of weather. This is mainly pictorial and have no pictures so far at all. I realize there will be a cost so make the total no more than \$1.00 Thanks. Please hurry—Thanks a bunch of millions. I'll be real grateful. Please Hurry! Urgent. P.S. Please include ough on end of Peterborough or natives get restless—Thanks again."

A LIVERPOOL, N.S., MOTHER who watches the daily weather telecast wrote to the chief forecaster at Halifax telling about an incident with her son:

"This morning my six-year-old wanted to know if he should wear his rubbers to school. I told him we'd have to wait and see if the weatherman said it was going to rain. I also told him he should wear them anyway because sometimes it rains when the weatherman says it won't."

"Yes", he replied, "guess God doesn't hear what he says."



FROM THE MINISTER'S DESK

No department of the federal government touches the Canadian people at more points than the Department of Transport. Everything we do is done to serve the public and we want the people we serve to feel pride as Canadians in the Department of Transport and all its employees.

Creating good public relations, or what it is now fashionable to call a favorable image, is not an easy task. It sometimes requires patience and forbearance to accept sharp and often unfair criticism without retort, and to seek to meet even those demands that seem unreasonable.

Nevertheless, every member of the public is entitled to courtesy and willingness to help on our part. At times our public image is in the hands of one employee. As Minister of Transport I hope we will all accept the view that those we serve should always be assumed to be right.

That, I believe, is the attitude which should prevail throughout all the 15,000 D.O.T. and ancillary employees, such as members of the RCMP and Corps of Commissioners who work with us. This is particularly important in the case of those who meet the public on a regular basis.

In the places I have visited I have found evidence that D.O.T. is putting its "best foot forward." But there is always room for improvement.

A friendly attitude and an obvious desire to help revealed in direct contacts, telephone conversations and correspondence will pay rich dividends for the department and each one of us. Goodwill emanating from a desk or a counter will be reflected in an understanding public.

Good public relations are not limited to the few people in D.O.T. who are employed to impart information and service. Good public relations, the good name of the department, depend on the attitude of each and every one of us. Let us always strive to make Canada proud of our service.

A handwritten signature in dark ink, appearing to read "J. W. P. ...". The signature is written in a cursive style and is underlined with a single horizontal line.



LE MOT DU MINISTRE

Aucun ministère fédéral n'a plus de contacts avec le public canadien que le ministère des Transports. Tout ce que nous faisons sert le public et nous voulons que ces gens que nous servons soient, en qualité de Canadiens, fiers du ministère des Transports et de tous ses employés.

Il n'est pas facile d'établir de bonnes relations avec le public, c'est-à-dire de nous montrer sous un jour favorable. Il faut souvent de la patience et de l'indulgence pour accepter des critiques acerbes et souvent injustes sans répliquer et même pour essayer de satisfaire à des demandes qui semblent déraisonnables.

Toutefois, chaque membre du public a droit à notre courtoisie et à notre bonne volonté. Parfois, l'image que le public se fera de nous est entre les mains d'un employé. J'espère que nous accepterons tous le principe que le public au service duquel nous sommes est toujours censé avoir raison.

Je crois que cette attitude devrait être celle des 15,000 employés du ministère des Transports et des employés des services auxiliaires comme les membres de la Gendarmerie royale et du Corps des commissionnaires qui travaillent avec nous. Cette attitude est tout particulièrement importante dans le cas des employés qui sont régulièrement en contact avec le public.

Dans tous les lieux que j'ai visités, j'ai constaté que les employés du ministère des Transports font de leur mieux, mais il est toujours possible de s'améliorer.

Une attitude amicale et un désir évident de rendre service se manifestant dans les relations directes, les conversations téléphoniques et la correspondance rapporteront des dividendes intéressants tant au Ministère qu'à chacun de nous. La bonne volonté que manifeste l'employé à son bureau ou à son guichet se reflétera par une attitude compréhensive de la part du public.

Le souci d'établir de bonnes relations avec le public ne doit pas se restreindre aux quelques employés du ministère des Transports dont la tâche consiste à informer et à servir le public. De bonnes relations extérieures et le bon renom du Ministère dépendent de l'attitude de chacun de nous. Faisons en sorte que le Canada soit fier de notre service.

airports are NOT for the BIRDS

by Yvonne McWilliam

For centuries birds, especially pigeons, have shown their contempt for man's finest architectural achievements (Nelson's nose in Trafalgar Square is a choice example). Now they have taken issue with jet aircraft, with the results in some cases far more serious than unsightly, indeed, perhaps even fatal.

The problem is called bird strikes.

In the early days of the rag and stick aircraft bird collisions were rare, and even when they did occur a propeller aircraft could ruffle enough feathers to win its freedom!

But the introduction of the jet aircraft brought other problems: almost immediately the number of strikes rose significantly, and damage on a world-wide basis became, in contrast to the "recip" era, alarming.

Because of air intake and the design of the jet engine, birds are ingested whole instead of being fought off by propellers. The meal is often incapable of digestion in the complex turbines and can cause considerable damage and power loss.

The high speeds of jet and turbo prop make it virtually impossible for birds flying lemming-like courses to avoid collisions with aircraft. Also, of course, they hit harder with greater resulting damage.

Greatest bird danger is the loss of engine power at or just after take-off. A Lockheed Electra at Boston crashed after ingesting starlings. A Vanguard at Turnhouse, England, managed to circuit and land on an engine and a half after swallowing seagulls. A DC-8 at Vancouver lost two engines on the same side after sucking in pheasants during its take-off roll. (Luckily this take-

off was aborted.) A crash occurred near Baltimore when a majestic swan on a Roman galleon-like ram course sheared off part of a Viscount's tail.

The military, too, have a file of bird collisions that is alarming. In fact, on many military aircraft the only reason for the bullet-proof glass is protection against birds.

Complete cost figures to Canada, however, are not easy to compile. Interrupted flights, provision of replacement aircraft, unearned revenue from standby planes, all amount to a considerable, if hard to estimate, amount. In the last two years the tab for bird damage to Canadian civilian and military aircraft was about two million dollars.

Three Types of Solution

The cost can be accepted. But the possibility of fatal crashes is not so easy to dismiss.

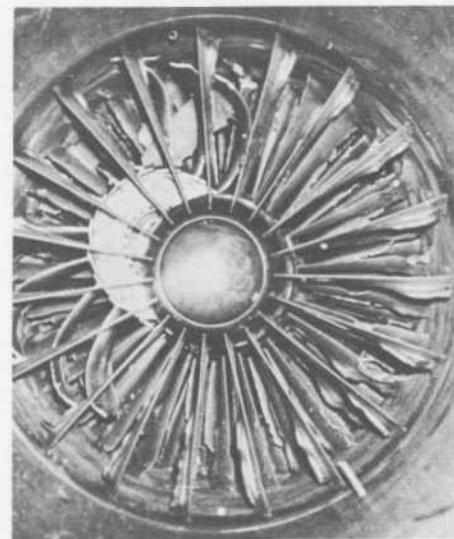
What to do about it? Generally there seem to be three types of solution:

Built-In Birdproofing: This solution would make aircraft invulnerable to damage from bird strikes. It is a neat answer, theoretically. But such built-in characteristics are beyond our present knowledge. The necessary modifications to existing aircraft would impose too many weight, performance and economic penalties. Regarding models still on the drawing boards, unless existing design criteria and tests are made comfortable the world over, there seems little hope for a "total solution".

However, efforts are being made through ICAO (International Civil Aviation Organ-

ization) to convince governments and aircraft manufacturers that birdproofing should be included as a criterion in the design of all future generations of aircraft and that components should be subjected to standard tests to make sure they can stand up to hazardous damage from bird strikes.

Keeping Aircraft out of the Way of Birds: Even if a relatively birdproof plane should be conceived, it is unlikely that it would be able to fly through big flocks of birds, such as ducks or geese in the migration season without damage.



Jet engine damage caused by pheasant ingestion. The zero stage of the low pressure compressor was torn off shaft.

Research has been done to see if migrating flocks can be picked up on radar. If they can, and their movements are proven predictable, then pilots can be warned.

Through time-lapse photography, such flocks have been spotted and scientists are hopeful this technique will teach radar operators how to recognize bird targets. Notams warning of mass bird movements could then be issued and airlines advised regarding routing and scheduling.

Keeping Birds Out of the Way of Aircraft: This approach allows for the most to be done right now to reduce the bird/plane collision statistics.

Canadian figures show that nearly 80 percent of all civil aircraft strikes occur at or near airports. This then is the obvious place to attack the problem—by reducing the number of birds in airport areas. Since D.O.T. owns and operates most major and many minor Canadian airports, the department is vitally concerned with the problem.

NRC Committee Formed

A little more than a year ago, Deputy Minister Baldwin asked the National Research Council to undertake a study of the bird problem.

From all that's been said so far it's obvious that such a study was to be no easy task. A good deal of research and a great amount of work lay ahead of the committee.

The first step was to line up a good work force. Drawing its members from organizations and companies that already had a great deal of knowledge of the problem, the Associate Committee on Bird

Hazards to Aircraft was formed along the lines of other NRC committees. Being advisory, it cannot enforce its recommendations but there is little doubt that most of them will be implemented. In fact, as outlined further on, many already have.

The committee—made up of representatives of the Canadian Aeronautics and Space Institute, Canadian Pacific Airlines, the Canadian Wildlife Service, Rolls-Royce of Canada Limited, RCAF Directorate of Flight Safety, Trans-Canada Air Lines, NRC and D.O.T.—attacked the problem directly by using the theory that birds will not frequent or remain in areas where food, water and shelter are scarce. The wildlife experts were asked to come up with ways to remove the "goodies".

Smorgasbord Specialties

In the summer of 1963 they started an ecological survey of several airports to find out where and how much of a problem the birds are in any particular area. It will be a year or so before all the facts are in, but in the meantime many of their recommendations are already being carried out to eliminate the "attractions" from a five mile radius around airports.

Bird menu could vary from vegetable crops, to grain and cereal crops, to berry bushes, garbage dumps, piggeries, sewer outfalls, seedbearing weeds, worms, mice or insects. Home sweet home might be in trees, weeds, aquatic vegetation, hedgerows or old buildings. And water, of course, could settle in any depression in the ground, in culverts or gulleys.

People flock to good restaurants and birds are no different.

Among the "advertised" specialties of various airports are mice which inhabit the area bordering flight strips. They attract owls, blue herons and other birds.

Again, sometimes it's an abundance of grasshoppers which serves as an appetizer for the birds. In still other instances, nice fat juicy earthworms coming up for air after a heavy rainfall provide a delicious smorgasbord for our fine feathered friends.

By eliminating such attractions the department hopes to make its airports biological deserts—a sort of a scorched-earth policy for birds.

Our Man On The Job

The man who represents D.O.T. on the NRC committee and brings its recommendations back to the department is J. L. "Jud" Courtney of the Airport Operation section.

Much of his time lately has been spent visiting airports from coast to coast instructing their personnel in the ways to rid the airports of bird attractions—spray programs for insects and worms, clearing of brush and weeds, draining of water-filled areas and so on. As well, he has talked to many municipal officials to explain how they can help by relocating garbage dumps or, by long term planning in relation to undesirable use of adjacent airport lands.

A success story which can be attributed to such talks is what happened at the Lakehead.

Flocks of gulls numbering from 500 to 1,000 have hung around the Lakehead airport for years. A garbage dump within 200 yards of one of its runways attracted the herring gulls.



Airport Attractions—Farming operations close to airports offer many delicacies for birds. At left, clover, providing nesting facilities and food for pheasants, is thrashed at Vancouver International Airport. A Chinese market garden on Sea Island (centre) furnishes ample food for ducks, pheasants, blackbirds, starlings and others. Old pilings (right) in river south of Vancouver Airport attract nesting swallows, as well as gulls and herons, which roost on the pilings.



This garbage dump, within 200 yards of one of the runways at the Lakehead Airport, attracted hundreds of gulls daily until the municipality began burning the garbage instead of dumping it.



At Victoria International Airport Wildlife Service and D.O.T. people, along with Falconer Frank Beebe (right), view a young peregrine falcon in pursuit of a gull.

Local officials, after hearing Jud Courtney explain D.O.T.'s policy stopped dumping edible garbage last July 28. From then until August 6 the number of gulls sighted dropped from around 1,000 to less than 200. On August 6 the municipality was forced to resume dumping when they had difficulties with the incinerator. For the next month garbage was dumped and the incidence of gulls ranged from 100 over weekends to 1,000 or so daily during the week.

The incinerator was repaired and dumping finally stopped on September 4. During the next four days the number of birds declined from 100 to less than 25 and ever since there have been few if any on the Lakehead's runways.

Yarmouth, Nova Scotia, is another place with virtually the same problem—a dump, an airport and an overabundance of gulls. As this article is being written the town fathers are planning to relocate the dump as a result of D.O.T.'s "five-mile radius" policy. Other cities which have been asked to consider such projects include Calgary, Windsor and North Bay.

Falcons As Jet Age Aid

Bird hazards exist right across the country. At Patricia Bay Airport, Victoria, the committee is experimenting with peregrine falcons to chase gulls away. The peregrines, which come from the nearby Queen Charlotte Islands, were bought by NRC and trained under a Canadian Wildlife Service contract by local Falconer Frank Beebe.

The birds are all young females and it is hoped that after this year's training they will be adept at ridding the airport of gulls—perhaps not completely, but at least significantly.

Tests conducted last October went like

this: A flock of 100 or more gulls was seen on the runway and a falcon released. It went after them and the birds took to the air. The falcon didn't appear willing to finish off the attack but followed the flock flying through it time and again.

The gulls milled about, "towered" and left the area and the falcon was recalled easily.

Substantially the same thing happened on four later tests. The falcons were anxious to press the attack but seldom made a strike or kill. It is known that a kill makes gull-scaring even more dramatic and may have a longer lasting effect, but since the peregrines used in the experiments were only five months old they may not have been sufficiently mature. As experiments continue it looks as though the falcons will be making their contribution to the jet age.

From Bizarre to Blitzkrieg

Scaring methods and devices range from the almost bizarre to blitzkrieg. They include dogs to disperse birds in much the same manner as the falcons do, the plain old-fashioned scarecrow and a vast variety of psycho-acoustic equipment—distress cries, alarm cries, shot shells, cracker shells, Very cartridges, thunderflash, and acetylene exploders.

In all these things a basic understanding of the reactive behaviour of problem species is vital to success. Like humans, some birds are intelligent, others rather stupid. Some react to one form of stimulus, others to another.

One interesting piece of research which might soon be carried out could be termed an electronic Mickey Finn. It is the use of wave frequencies on flocks of birds.

If a wave generator powerful enough to affect birds some distance ahead of an aircraft can be developed, it could be

mounted on a plane's nose to clear a path. It is known that birds disturbed in flight by an unseen or unknown stimulus tend to dive or fold their wings and drop toward the ground. With such a generator disturbing or alarming them, bird flocks would need to drop only a few feet to be out of the collision path.

But, perhaps the biggest breakthrough—next to ridding the airports of birds—in the fight to avoid strikes will come from tracking their movements on radar and scheduling aircraft flights accordingly.

This, of course, would only be practical when large numbers of birds are migrating and biologists can accurately predict their path according to weather fronts. Right now not all airborne radars are suitable for bird detection but the time might not be too far off when air traffic controllers will be able to perform this task and contribute even more than they already do to the safety of the sky.

Bird Talk

Canada is not alone in its war on the birds. Most countries have similar problems and the full international exchange of information that is continuously taking place is most important.

However, even this has its difficulties such as one of language. People of various nationalities understand each other—translators and interpreters take care of that—but it's the birds that don't.

It seems birds from different countries "speak" different languages. For all we know, migratory birds wintering in Florida tweet with a southern twang. It is a fact that distress calls recorded in Holland fail to alarm birds of the very same species here in Canada.

Perhaps the committee should turn to the Royal Commission on Bilingualism and Biculturalism for that problem!

les aéroports ne sont PAS pour les OISEAUX

par Yvonne McWilliam

Depuis des siècles, les oiseaux, et tout particulièrement les pigeons, ont montré leur mépris pour les plus belles réalisations architecturales de l'homme (le nez de Nelson dans le Trafalgar Square en est un exemple frappant). Maintenant, ils s'en prennent aux avions à réaction et les résultats non seulement ne sont pas beaux à voir mais, ce qui est plus grave, ils sont parfois mortels.

Ce problème est celui de la collision avec des oiseaux.

Au temps des «cages à poules», les collisions avec les oiseaux étaient rares et, lorsqu'il s'en produisait, les hélices pouvaient ébouriffer assez de plumes pour se libérer.

Mais la mise en service des avions à réaction a créé d'autres problèmes: presque tout de suite, le nombre de collisions a augmenté considérablement et les chiffres, à l'échelle mondiale, sont devenus alarmants.

A cause de l'entrée d'air et de la conception des réacteurs, les oiseaux sont avalés tout ronds au lieu d'être repoussés par les hélices. Les turbines ne peuvent digérer le repas et il s'ensuit des dommages et une perte de puissance.

En raison de la grande vitesse des avions à réaction et des avions à turbo-hélices, les oiseaux qui effectuent des vols suicides ne peuvent éviter la collision et, naturellement, le choc est plus violent et cause plus de dommages.

Le plus grave danger que présentent les collisions avec les oiseaux est la perte de puissance du moteur au décollage, ou peu

après. A Boston, un Lockheed Electra s'est écrasé après avoir ingurgité des étourneaux. A Turnhouse (Angleterre), un Vanguard a réussi à exécuter un circuit et à atterrir avec un moteur et demi après avoir avalé des goélands. Un DC-8 perdait deux moteurs du même côté pour avoir aspiré des faisans durant sa course de décollage, à Vancouver. (Fort heureusement, il n'a pas décollé). Un écrasement s'est produit près de Baltimore lorsqu'un majestueux cygne évoluant à la manière d'un galion romain arracha une partie de la queue d'un Viscount.

Les dossiers des services militaires contiennent aussi des chiffres alarmants sur les collisions avec des oiseaux. En fait, sur nombre d'avions militaires, la seule raison d'être du verre à l'épreuve des balles est la protection contre les oiseaux.

Il n'est pas facile, toutefois, de déterminer exactement ce qu'il en coûte au Canada. Les vols interrompus, la nécessité d'avoir des avions de remplacement, la perte de recettes des avions immobilisés, constituent un montant qui, s'il est difficile à estimer, est certainement considérable. Au cours des deux dernières années, la facture des services aériens civils et militaires du Canada au titre de dommages causés par les oiseaux s'est élevée à environ deux millions de dollars.

Trois genres de solution

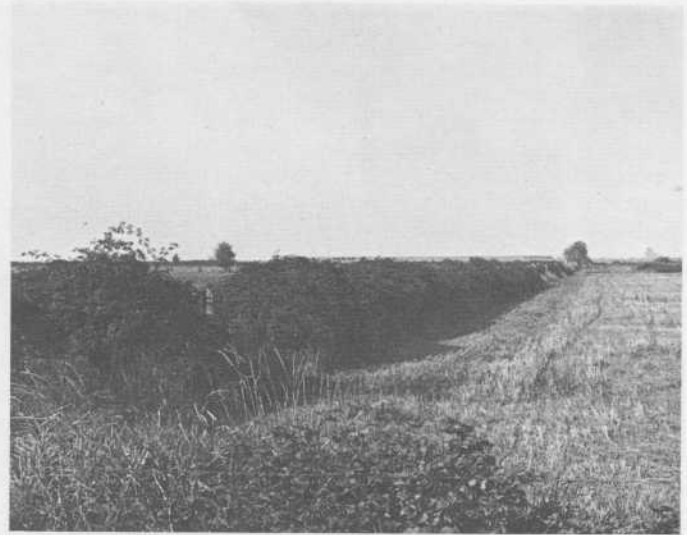
On peut accepter les frais mais on ne saurait écarter aussi facilement la possibilité d'écrasements pouvant entraîner des pertes de vie.



Grand héron bleu se tenant sur une voie de circulation à l'aéroport international de Vancouver. Les hérons sont attirés par les souris qui vivent dans les longues herbes en bordure des pistes.



On débarrasse de toute végétation les bassins collecteurs ou réservoirs situés près des aéroports afin de permettre un drainage approprié et de détruire les abris des canards.



Avant d'avoir été supprimées, les haies de mûriers et de rosiers sauvages, près de l'aéroport de Vancouver, offraient une excellente nourriture aux faisans ainsi qu'un abri pour couvrir leur retraite.

Quoi faire alors? Trois genres de solutions semblent possibles:

Protection contre les oiseaux incorporée à l'avion.—Cette solution rendrait les avions à l'épreuve de tout dommage causé par les collisions avec les oiseaux. La solution est simple en théorie, mais de telles caractéristiques incorporées dépassent nos connaissances actuelles. Les modifications qu'il faudrait apporter aux avions actuels demanderaient trop de sacrifices en ce qui a trait au poids, aux performances et au coût. Pour ce qui est des modèles qui sont encore sur la planche à dessin, à moins que les critères de calcul et les essais existants ne soient uniformisés dans le monde entier, il semble y avoir peu d'espoir d'une solution parfaite.

Toutefois, des efforts sont tentés par l'entremise de l'OACI (Organisation de l'aviation civile internationale) en vue de convaincre les gouvernements et les constructeurs d'avions de la nécessité de prévoir une protection contre les oiseaux en établissant les critères de calcul de tous les avions à venir et de soumettre les parties constituantes à des épreuves normalisées afin d'assurer leur résistance aux chocs des oiseaux.

Écarter les avions du parcours des oiseaux.—Même si on réalisait un avion relativement à l'épreuve des oiseaux, il est peu probable qu'il pourrait voler à travers des volées d'oiseaux importantes, comme les bandes de canards et d'oies au moment de la migration, sans subir d'avaries.

On a fait des recherches pour savoir s'il serait possible de repérer au radar ces bandes d'oiseaux. Si cela était possible et si les déplacements de bandes étaient prévisibles, les pilotes pourraient alors être avertis.

Les photographies prises à intervalles différés ont permis de déceler ces volées d'oiseaux et les chercheurs espèrent qu'à l'aide de cette technique, les opérateurs radaristes apprendront à identifier les oiseaux. Des Notams portant avertissement de mouvements importants d'oiseaux pourraient alors être publiés et les entreprises de transport aérien être informées des routes et des horaires les plus favorables.

Écarter les oiseaux du parcours des avions.—Cette formule est, à l'heure actuelle, celle qui offre les meilleures chances de réduire le nombre des collisions entre oiseaux et avions.

Les chiffres canadiens démontrent que près de 80 p. 100 de toutes les collisions avec les avions civils se produisent aux aéroports ou à proximité. C'est donc là l'endroit tout indiqué pour s'attaquer au problème, qui consiste à diminuer le nombre d'oiseaux au voisinage des aéroports. Étant donné qu'au Canada la plupart des grands aéroports et plusieurs autres de moindre importance sont la propriété du ministère des Transports, celui-ci est tout particulièrement intéressé à ce problème.

Formation d'un comité du Conseil national de recherches

Il y a un peu plus d'un an le sous-ministre, M. Baldwin, demandait au Conseil national de recherches d'entreprendre une étude sur le problème des oiseaux.

Il ressort de ce qui précède qu'une telle étude ne sera pas chose facile. Le comité aura beaucoup de recherches à effectuer et une somme énorme de travail à exécuter.

Il s'agissait tout d'abord d'établir les cadres. Tirant son personnel d'organismes

et de compagnies qui possédaient déjà beaucoup de connaissances sur le problème, le Comité associé des collisions entre oiseaux et avions s'est constitué suivant les mêmes principes que les autres comités du Conseil national de recherches. Ce comité étant consultatif, il ne peut appliquer les recommandations qu'il formule mais il est à peu près certain que la plupart de celles-ci seront mises en vigueur. En fait, comme on le verra plus loin, plusieurs de ces recommandations ont déjà été mises en œuvre.

Le comité est composé de représentants du Canadian Aeronautics and Space Institute, des Canadian Pacific Airlines, du Service canadien de la faune, de la Rolls-Royce of Canada Limited, de la Direction de la sécurité du vol aérien de l'ARC, de la société Air Canada, du Conseil national de recherches et du ministère des Transports. Ce comité s'est attaqué directement au problème en se fondant sur la théorie suivant laquelle les oiseaux ne fréquentent pas les lieux qui leur offrent peu de nourriture, d'eau et de possibilités de se mettre à l'abri. Les spécialistes de la faune ont été priés de proposer des moyens de faire disparaître les «friandises».

Spécialité: Smorgasbord

A l'été de 1963, ils ont entrepris une étude écologique à divers aéroports en vue de déterminer l'importance du problème créé par les oiseaux dans une région donnée. Ils n'auront pas fini avant un an de recueillir toutes les données mais, dans l'intervalle, plusieurs de leurs recommandations sont mises en œuvre afin de faire disparaître les «attractions» dans un rayon de cinq milles des aéroports.

Les oiseaux s'alimentent de légumes, de grains et de céréales, de petits fruits, de

graines de mauvaises herbes, de déchets de dépotoirs, de décharges d'égout, ou encore aux abords des porcheries; ils se nourrissent aussi de vers, de souris et d'insectes. Ils établissent leur demeure dans les arbres, les mauvaises herbes, la végétation aquatique, les haies ou les vieux bâtiments. Et l'eau, il va de soi, s'amasse dans les baissières, les canaux ou les rigoles.

Les gens accourent vers les bons restaurants et les oiseaux leur ressemblent sur ce point.

Parmi les spécialités «annoncées» par plusieurs aéroports, il faut mentionner les souris qui se tiennent dans les zones en bordure des pistes. Elles attirent les hiboux, les hérons bleus et d'autres oiseaux.

Il arrive parfois que les sauterelles en abondance servent d'apéritif aux oiseaux. A d'autres moments, les beaux gros vers juteux qui viennent prendre l'air à la surface après une forte chute de pluie constituent un délicieux smorgasbord pour nos jolis amis emplumés.

En éliminant ces attractions, le Ministère espère transformer ses aéroports en déserts biologiques, opposant aux oiseaux une sorte de politique de la terre brûlée.

Notre représentant au travail

Monsieur J. L. (Jud) Courtney, de la Section des opérations des aéroports, représente le ministère des Transports au sein du comité du Conseil national de recherches et transmet les recommandations de celui-ci au Ministère.

Il a employé, récemment, une grande partie de son temps à visiter les aéroports d'un océan à l'autre et à y enseigner au personnel local les moyens de débarrasser

les aéroports de ce qui attire les oiseaux, moyens qui comprennent l'épandage de préparations pour la destruction des insectes et des vers, l'enlèvement des broussailles et des mauvaises herbes, le drainage des lieux remplis d'eaux, etc. Il a aussi eu des entretiens avec plusieurs fonctionnaires municipaux auxquels il a expliqué de quelle façon les municipalités pouvaient aider à l'application du programme, par exemple le déplacement des dépotoirs et l'établissement de projets à long terme concernant l'emploi défavorable des terrains voisins des aéroports.

Le succès remporté à Lakehead peut être attribué à de tels pourparlers.

Il y avait des années que des bandes comptant de 500 à 1,000 goélands rôdaient autour de l'aéroport de Lakehead. Un dépotoir, à moins de 200 verges de l'une des pistes, attirait les mouettes argentées.

Après que Jud Courtney leur eût expliqué la ligne de conduite adoptée par le Ministère, les fonctionnaires locaux cessèrent, le 28 juillet dernier, de déposer des rebuts comestibles à cet endroit. Entre cette date et le 6 août, le nombre des mouettes est passé de 1,000 à moins de 200. Le 6 août, par suite d'une défectuosité de l'incinérateur, la municipalité s'est vue obligée de recommencer à déposer des ordures et à le faire durant tout le mois suivant; le nombre des mouettes s'est alors rétabli à 100 pendant les fins de semaine et à environ 1,000 par jour en semaine.

L'incinérateur réparé, on a cessé définitivement de jeter les ordures le 4 septembre et, au cours des quatre jours qui suivirent, le nombre des mouettes passa de 1,000 à moins de 25 et, depuis ce temps, on a

vu peu ou point de mouettes sur les pistes de l'aéroport de Lakehead.

Un problème identique se présente à Yarmouth (N.-É.): un dépotoir, un aéroport et une surabondance de goélands. Au moment où j'écris le présent article, le conseil municipal se propose de déplacer le dépotoir en conformité du principe du rayon de cinq milles adopté par le ministère des Transports. Les autres villes auxquelles il a été demandé d'envisager de telles mesures comprennent Calgary, Windsor et North Bay.

L'aide des faucons à l'ère des avions à réaction

Les dangers que présentent les oiseaux existent dans tout le pays. A l'aéroport de Patricia Bay, à Victoria, le comité poursuit une expérience qui consiste à utiliser des faucons pèlerins. Ces oiseaux des îles voisines de la Reine-Charlotte ont été apportés par le Conseil national de recherches et ils ont été dressés, en vertu d'un contrat du Service canadien de la faune, par le fauconnier local Frank Beebe.

Ces pèlerins sont tous de jeunes femelles et on espère qu'à la suite du dressage qui leur est donné cette année, ils pourront débarrasser l'aéroport des goélands, sinon entièrement, du moins dans une bonne mesure.

L'expérience suivante a été faite en octobre: une bande de 100 goélands ou plus se trouvant sur la piste, on a lâché un faucon qui s'est mis à la poursuite des goélands, lesquels se sont envolés. Le faucon ne semblait pas disposé à mener à terme son attaque mais il a suivi les goélands, passant à travers la bande à plusieurs reprises.

Les goélands tournèrent en rond, puis ils prirent leur essor et disparurent, après quoi il fut facile de rappeler le faucon.

Les mêmes scènes se sont répétées à l'occasion de quatre autres expériences. Les faucons étaient avides d'attaquer mais ils allaient rarement jusqu'à frapper ou tuer leurs victimes. On sait qu'un goéland tué augmente la crainte des autres et en prolonge même la durée, mais vue que les pèlerins employés à l'expérience n'avaient que cinq mois, ils manquaient peut-être de maturité. La poursuite des expériences laisse prévoir que les faucons seront utiles à l'ère des avions à réaction.

Du bizarre au blitzkrieg

Les méthodes et les dispositifs utilisés pour faire peur aux oiseaux vont du bizarre au blitzkrieg. On utilise des chiens qui dispersent les oiseaux à peu près comme le font les faucons; on a recours au simple «épouvantail» classique et à un grand

Une bande de 7,000 goélands s'envole à Long Point, sur le lac Supérieur, après qu'un haut-parleur placé à proximité ait fait entendre des cris de détresse.





Le fauconnier Frank Beebe recule lorsque le faucon pèlerin qu'il a dressé jette un goéland mort à ses pieds.

nombre d'appareils sonores à effets psychologiques qui font entendre des cris de détresse, des cris d'alerte, des bruits de cartouche à plomb, de pétard, de cartouche Very, de fusée à éclatement et d'exploseur d'acétylène.

Pour réussir en ce domaine, il est de toute première importance de bien comprendre le comportement réactionnel des espèces difficiles. Comme les humains, certains oiseaux sont intelligents alors que d'autres sont plutôt stupides. Les uns réagissent à un genre de stimulant, les autres à un autre.

Une autre méthode intéressante qui pourrait bientôt être l'objet de recherches pourrait s'appeler un Mickey Finn électronique. Il s'agit de l'emploi de fréquences d'ondes radioélectriques dirigées sur les volées d'oiseaux.

Si on pouvait mettre au point un générateur d'ondes assez puissant pour produire un effet sur les oiseaux à quelque distance en avant d'un avion, un tel dispositif pourrait être monté dans le nez des avions auxquels il assurerait un passage libre.

On sait que les oiseaux qui sont dérangés en vol par un stimulant invisible ou inconnu sont portés à plonger ou à refermer leurs ailes pour se laisser descendre vers le sol. Si un tel générateur les dérangeait ou les inquiétait, ils n'auraient qu'à descendre de quelques pieds pour que le danger de collision disparaisse.

Il se peut toutefois que le pas le plus décisif à faire dans la lutte contre les collisions entre les avions et les oiseaux, outre l'éloignement des oiseaux qui fréquentent les aéroports, consiste à suivre leurs mouvements au radar et à régler les vols des avions en conséquence.

Évidemment, cette mesure ne s'appliquerait qu'aux grands mouvements de migration dont les biologistes pourraient prédire la marche avec exactitude suivant les fronts météorologiques. Tous les radars de bord ne sont pas encore propres au repérage des oiseaux mais le temps est peut-être proche où les contrôleurs de la circulation aérienne pourront assumer cette tâche et ainsi augmenter encore leur apport à la sécurité aérienne.

Le langage des oiseaux

Le Canada n'est pas seul à lutter contre les oiseaux. La plupart des pays ont des problèmes identiques et l'échange international de données qui se poursuit sans cesse est très important.

Toutefois, même en ce domaine, des difficultés se présentent, par exemple la question des langues. Les gens des différents pays réussissent à se comprendre grâce aux traducteurs et aux interprètes mais il n'en va pas de même dans le monde des oiseaux.

Il semble que les oiseaux des différents pays ne « parlent » pas la même langue. Autant que nous sachions, les oiseaux migrants qui passent l'hiver en Floride gazouillent avec un ton du Sud. Il est certain que les appels de détresse enregistrés en Hollande n'inquiètent pas les oiseaux de la même espèce ici au Canada.

Le comité devrait peut-être s'adresser à la Commission royale d'enquête sur le bilinguisme et le biculturalisme pour résoudre ce problème!

World Meteorological Organization

WHAT IT DOES

By John de Bondt

One of the most heartening examples of international understanding and co-operation within the United Nations is the World Meteorological Organization or WMO, in which weathermen of the Department of Transport play a major role.

Dealing with the one subject of perpetual interest to people everywhere, the weather, scientists in Canada, Russia, India and more than 100 other countries belonging to the WMO share the same workshop: the atmosphere.

The atmosphere provides the world's weather and knows no political boundaries. Weather over Canada is normally influenced by conditions in other countries but Canadians know all too well we usually get the blame for all cold weather on this continent.

It is perhaps natural that such an international—and safe—subject as the weather promoted some of mankind's earliest international thinking. The first effort towards international collaboration in meteorology occurred in 1853 when a meeting of seafaring nations drew up a program of weather observations over the oceans to contribute to the safety of life at sea.

A quarter of a century later this international co-operation was extended over land as well as sea and a system for exchanging weather information between different countries was set up under the International Meteorological Organization.

Aviation gives impetus

During the present century the birth and development of aviation created a new need for detailed weather information along air routes and at airports. This gave a tremendous impetus to the study of the weather.

At the same time the revolutionary advances in other branches of science and technology, such as radio communications, greatly helped meteorologists in meeting this new challenge.

The creation of the United Nations provided a new framework for international collaboration in various areas including technical and scientific fields. Consequently, when the directors of the national weather services met in Washington in 1947, they adopted the world meteorological convention establishing a new organization founded on a formal agreement between governments.

The convention was ratified by a large number of states and officially came into force on March 23, 1950.

In December 1951 the general assembly of the United Nations approved an agreement between the UN and the WMO by which the latter was recognized as a specialized UN agency.

8,500 Observing Stations

One of the essential tools of meteorology is the weather map on which weather developments are followed. Such maps are drawn several times a day and are based on observations of pressure, temperature, wind, rain and other elements, on the ground and in the upper air.

The World Meteorological Organization unites some 8,500 observing stations set up for this purpose throughout the world.

The data obtained are transmitted many times daily, at fixed hours, throughout the year. Millions of observations are thus made and transmitted each year.

The worldwide exchange of weather observations provides the basic information for forecasting the weather for the benefit of aviation, shipping, agriculture and the general public.

To make weather observations from stations throughout the world comparable and meaningful, it is necessary to standardize instruments and methods of observation. To achieve this, the WMO issues guides and technical regulations internationally agreed upon.

Assists in many fields

However, the World Meteorological Organization does not merely draw up regulations. It also carries through projects of interest to all nations, calling for action on more than a national scale.

The organization's program includes assistance to member countries in developing their water resources, participation in tropical research and assistance in overcoming world-wide or regional deficiencies in meteorology.

Weather forecasting for agriculture, international comparison of meteorological instruments and publication of a wide variety of international manuals and technical studies are other examples of the organization's work.

The WMO also:

- keeps abreast of and uses new developments in science and technology such as rockets and satellites, which provide valuable weather information;

- takes part in arid zone research and helps improve living conditions in barren areas;

- contributes to locust control and helps protect crops from this pest;

- encourages scientific research and instruction in meteorology;

- publishes the informative WMO Bulletin.

As well, it plays a very active part in the United Nations programs of technical co-operation and assistance towards economic development. It provides advice to facilitate the establishment and development of national meteorological services.

It also promotes the training of meteorologists and specialists in all branches of weather science by fellowships, scholarships and training courses.

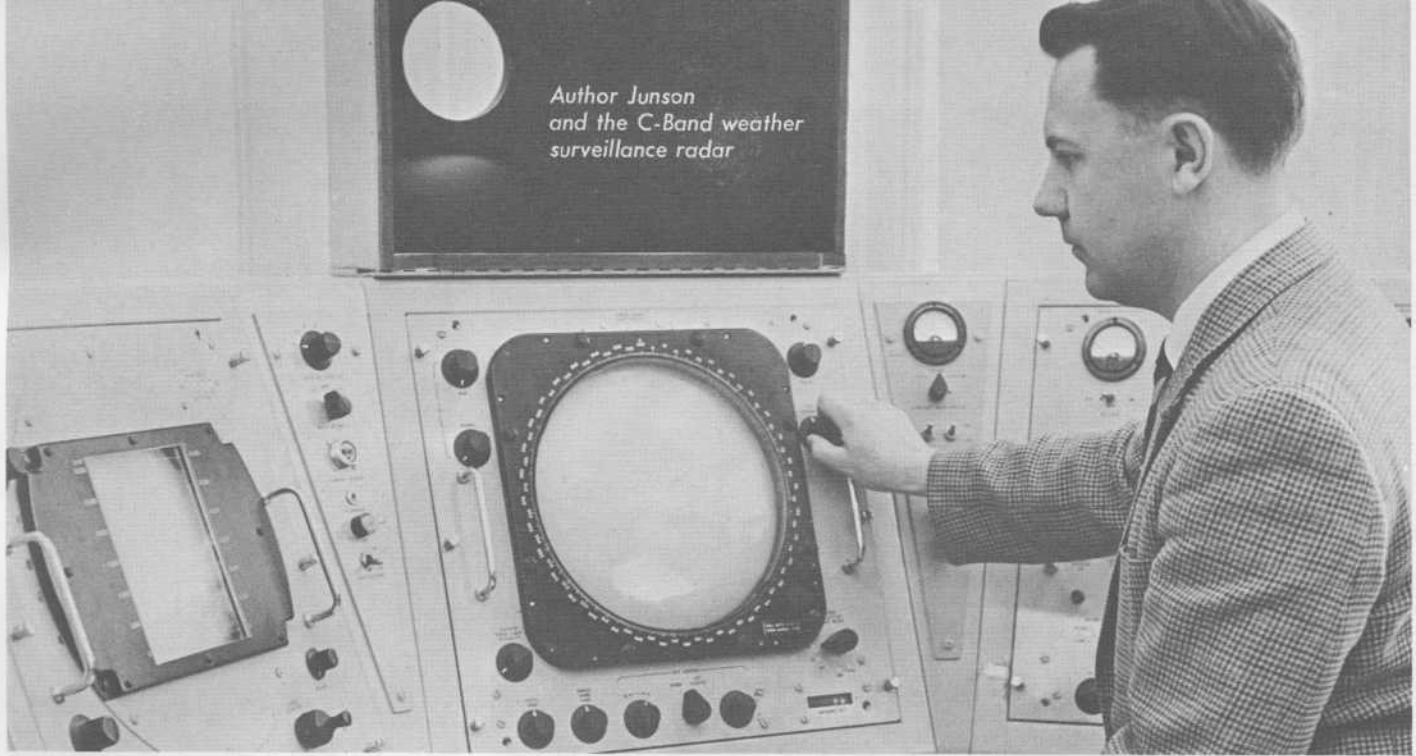
Canadian Participation

Canada, as one of the largest countries in the world, has an extremely important role to play in international meteorology and scientists of the department's meteorological branch, as well as from other government agencies, have been active in the work of the WMO since its inception.

C. C. Boughner of the meteorological branch is president of the WMO committee for climatology. Other branch employees serving as chairman of various working groups are Dr. D. P. McIntyre (international research projects in meteorology), Dr. W. L. Godson (IQSY meteorological program), E. I. Mukammal (plant injury and reduction of yield by non-radioactive pollutants), J. P. Bruce (publication and exchange of data in hydro-meteorology), F. W. Benum (meteorological codes) and R. R. Dodds (definition of terms used to describe intensity of meteorological phenomena).

Other government meteorologists serving on various working groups are Dr. R. M. Holmes of the federal Department of Agriculture, Dr. K. M. King of the Ontario Agricultural College and R. H. Clark of the Department of Northern Affairs and National Resources.

Author Junson
and the C-Band weather
surveillance radar



An Electric Eye on the Weather

By J. H. Junson, Meteorological Technician, Winnipeg Weather Office

A new "weatherman" has joined the staff of Winnipeg's airport weather office. He has an electronic brain that will be used in several ways to help forecast the weather.

For instance he will be able to "see" storms in places where there are no weather reporting stations.

The new helper is known as a C-Band Weather Surveillance Radar. This set is the first of four to be installed by the Department of Transport at various airports across Canada. Halifax, Toronto, and Edmonton are also scheduled to get these \$200,000 radars.

The Winnipeg set will scan the horizon for 200 miles in all directions. It will be on the lookout for storms—snow, rain, hail or tornadoes—over the vast area from eastern Saskatchewan to northern Manitoba, northwestern Ontario and parts of North Dakota and Minnesota.

Pin-Points Storm

When it detects a storm it will pin-point the position, track its movements, indicate the intensity or size and much more.

Pilots of light aircraft and crews of huge airliners will be able to look at the radar scope and plan the safest course for trips out of Winnipeg. It will tell them where there is likely to be severe turbulence, heavy precipitation or icing conditions; and also indicate how high the clouds extend, and in which direction they are moving.

Other people will benefit from radar also. With extra attachments it will be able to tell the farmer or hydrologist how much water has fallen on a certain area.

Thunder, Hail

Meteorologists will be able to use time-lapse photos of the radar scope to do studies on where thunder and hail storms are most likely to develop.

How does this electronic genius do it?

It works on the echo principle, like the sounds that are echoed back from the walls of a large empty building.

The radar sends out bursts of ultra-high frequency energy of

more than 5,000 megacycles. They travel at the speed of light until they hit a wall of precipitation that reflects them back to the set.

The antenna picks up this back-scattered energy, and a receiver amplifies it, then displays it on the weather office radar-scope as a small patch of light.

Performs Feats

It has to be a mathematician to perform these feats. The radar brain instantly works through equations to tell the operator where a storm is brewing, which way it is moving, how violent it is becoming, what kind of precipitation is falling, and when it is likely to reach a certain spot.

However, it does have its trouble. Even though it can "see" for 200 miles, it is most accurate for only 70 miles or less. This is due to the earth's curvature, and the loss of power with distance. It also gives a weak distorted picture if the antenna dome is covered with ice and snow.

The antenna that transmits and receives the ultra-high frequency energy is mounted on a 70-foot tower near the west side of Winnipeg's International Airport. It is a 12-foot dish that rotates horizontally, or nods vertically, depending on what the operator is scanning.

Sweeps Sky

If he is sweeping the horizon in search of storms, the antenna rotates; but if he wants a close look at one storm area, the antenna nods up and down, and paints a vertical picture of the storm.

The transmitter and antenna are connected by underground cable to the viewing screen in the new terminal building. This screen or scope is placed in a darkened corner of the pilot briefing area of the weather office, where it can be watched by the briefer on duty, and viewed by pilots entering the briefing room.

Winnipeg's new "weatherman" is expected to be a busy helper at the airport weather office in the years ahead.



R. K. Brown



J. I. Carmichael



G. G. Leask

Appointments in the News

R. K. Brown

R. Keith Brown, 50, has been appointed chief of government telecommunications planning, a newly-created division in the telecommunications and electronics branch.

Mr. Brown, who assumed his new duties April 1, was a scientific officer with the Defence Research Board since 1951, and in recent years played a prominent role in Canada's space program. He was in charge of all engineering phases of the Topside Souther Satellite Project Alouette.

The government telecommunications planning division was set up in accordance with Glassco Commission recommendations, to cope with the expansion of international communications and the increased use of telecommunications by the government. It will be concerned with the development of policy and plans as related to the federal role, providing advice to Treasury Board, as well as promoting Canadian participation in the development of commercial international telecommunications by cables, satellites and other media. The division will include some members of the present staff of the telecommunications branch, but Mr. Brown will organize its expansion.

Russell Keith Brown, a native of Selkirk, Manitoba, graduated from the University of British Columbia in 1941 with a

Bachelor of Arts degree in physics and mathematics. In 1948 he received a Masters degree from the same university. He is a registered member of the Association of Professional Engineers of the Province of Ontario.

Prior to joining the technical staff of DRB, Mr. Brown spent several years teaching and conducting scientific research. From 1936 to 1939 he taught school at Invermere, B.C. After receiving his B.A. he conducted a course in pre-radar instruction for members of the RCAF at U.B.C. and, from 1943 to 1948, remained on staff as a physics lecturer.

In 1948 Mr. Brown was appointed assistant research physicist with the B.C. Research Council and two years later joined the B.C. Cancer Institute as a radiation physicist.

During his 12 years with the Defence Research Board, the new chief of government telecommunications planning worked with advanced electronic systems, including the Light Weight Doppler Navigator Radar, the Alouette and, most recently, the International Satellite for Ionospheric Studies (ISIS) which involved extensive arrangements for co-operation with U.S. space agencies.

Mr. Brown is married and has a son and daughter attending university.

J. I. Carmichael

James Irving Carmichael has been appointed chief of the newly-created management services division.

Establishment of this division resulted from recommendations of the Glassco Commission report concerning the needs of the department in the areas of management and manpower development. The division will undertake management audits or special studies necessary for the efficient operation of the department. As chief, Mr. Carmichael will be responsible to the director of administration and personnel.

Mr. Carmichael, 49, is a native of Fort William, Ontario. He graduated from Queen's University in 1936 with a Bachelor of Science degree with honors in mechanical engineering.

Since that time he has accumulated more than 20 years of diversified industrial experience in general management and production engineering. From 1938 to 1948 he held various positions with Canadian Car and Foundry Company at Fort William, including that of assistant chief inspector and chief engineer on aircraft and bus production.

During the years from 1948 to 1953, Mr. Carmichael was plant manager and executive assistant to the president of Fleet Manufacturing Limited, Fort Erie. He left



F. J. Bullock

to become a partner in a Fort Erie construction business and in 1954 joined Aero-Auto Engineering (Canada) Limited of Toronto as manager. In 1956 he was appointed a consultant with P. B. Yates Machine Company at Hamilton and later became president and general manager of Bucyrus-Erie Company of Canada at Guelph.

In 1959 Mr. Carmichael was appointed a senior consultant with Payne-Ross Limited of Toronto. He left this company in 1961 to become a partner in a consulting organization dealing with management, operating and engineering problems and as such served with the "Make Or Buy" project of the Glassco Commission. In July, 1963, he was invited to return to review all government workshops in Ottawa as a special study for the Treasury Board.

Mr. Carmichael is a member of the Association of Professional Engineers of Ontario, the Engineering Institute of Canada and the American Institute of Industrial Engineers. He is married with four children.

G. G. Leask

Capt. George G. Leask, formerly superintendent of marine operations, has been appointed superintendent of nautical regulations.

Capt. Leask, 43, has been connected with seafaring both merchant marine and Navy, since he matriculated from Newcastle, England, in 1937. He obtained his certificate as Master Mariner, Foreign-Going, in Halifax in 1946.

He began his career as a cadet deck officer with the Anglo Saxon Petroleum Company, London, the marine division of Shell Oil Company. He came to Canada in 1942 and was chief officer with the Park Steamship Company and Canadian National Steamship until 1946.

For two years he served with Gabriel Aero-Marine Instruments, Halifax, as compass adjuster and marine advisor. From 1948 to 1950 he was master of Acadia Overseas freighters. He joined the department in 1949 and served as a deck officer in ships based at the Dartmouth Marine Agency, Nova Scotia. While serving with the department, he was also a member of the Royal Canadian Naval Reserve and at the outbreak of the Korean War entered the Navy on a short service commission.

As a lieutenant from 1951 to 1956, Capt. Leask was commanding officer of an air-sea rescue vessel attached to HMCS "Shearwater" in Nova Scotia, then was recruiting officer for the Province of Newfoundland. Subsequently he served as first lieutenant aboard the minesweeper "Quinte".

Capt. Leask spent a short time in Chicago, Ill., as a marine surveyor and left that post to re-enter the Department of Transport as marine inspector. Subsequently he was promoted to pilotage administration and then to superintendent of marine operations, Canadian Coast Guard.

Capt. Leask is married and his wife and two children, Bryan and Sheryl, reside in Ottawa.

F. J. Bullock

The appointment of *Captain Frederick J. Bullock*, 51, as operations officer in the marine operations branch, was announced late in March.

Capt. Bullock formerly was a steamship inspector in the marine regulations branch. He joined the department in 1957 as a pilotage officer at Ottawa headquarters, following a lengthy career in the British and Canadian merchant fleets and four years at Royal Canadian Navy headquarters in Ottawa.

Born in Monmouthshire, England, he served a four-year seagoing apprenticeship with the Hain Steamship Company of London and subsequently served as an officer in the Athel Line of tankers and the Blue Star Line of London. He joined the Canadian Pacific steamship line in 1940 and was an officer in cargo and troop transport vessels of that company until early 1945.

He survived the torpedoing of the "Beaverbrae" in 1941 and the "Empress of

Canada" in 1943. From 1945 to 1951 he was in command of the Canadian vessels "Dundurn Park", "Marchdale", "Fort McDonnell", "Bayside" and "Inverness County", engaged in world-wide trading.

Capt. Bullock, who holds a Foreign-Going Master's Certificate, entered the government service in 1953, serving as alterations and additions officer at Royal Canadian Naval headquarters until 1957, when he joined D.O.T.

Capt. Bullock, with his wife and daughter Elizabeth, resides in Ottawa.

J. P. E. Morin

J. P. Edgar Morin, 36, has been appointed superintending engineer of Quebec Canals replacing Joseph Morin (no relation) who retired recently. J. P. E. Morin, formerly an engineer, with the St. Lawrence Ship Channel, assumed his new duties in February.

A native of St. Felicien, Roberval Co., Quebec, Mr. Morin graduated from Laval University in 1953 with a B.Sc. degree. For the next three years he held various positions with lumber companies in the province. In May 1956 he joined the Department of Transport as an engineer with the ship channel and from then until his recent appointment, he received a series of promotions within the engineer classification.

In Memoriam

The many friends of Captain Julian Talbot, veteran of 28 year's service with the Department of Transport, learned with regret of his sudden death on Saturday, February 29, at Quebec. Burial took place at Dartmouth, N.S. on March 4.

Capt. Talbot was 57 years old and a native of Natashquan, Que. He began his government service in 1931 as seaman and quartermaster aboard the old "Montcalm". He subsequently served aboard CCGS "N.B. McLean" for a time, then was in the coastal trade for some years, during which time he acquired his Master Mariner's certificate.

In 1944 he returned to the government service as chief officer of the "Bernier". He later served aboard CCGS "Saurel", CCGS "Lady Laurier" and CCGS "Edward Cornwallis". In 1959 he was appointed master of CCGS "Sir William Alexander", a post he held until the beginning of this year, when he was named master of CCGS "C. D. Howe". He was widely known in marine circles throughout the Atlantic coastal and Gulf areas.

Capt. Talbot has made his home in Dartmouth, N.S. during the years of his East Coast Service. He and Mrs. Talbot moved to Quebec following his appointment to the "Howe".

He is survived by his widow, a son and three daughters, all of the Dartmouth, N.S. area.



1 In flight students T. Givilt (Vancouver) and G. Paquet (Montreal) copy clearance from Ottawa Tower.

2 Instructor Bob Bulbrook explains instruments used in CF-DTB to students Paquet and Givilt.

3 In the meteorological communication relay centre, the students learn how meteorological traffic is relayed and collected.

4 Students are shown the arrival and departure control positions in Montreal's area control centre. Mr. D. Johnston, (third from left in rear) officer-in-charge of the centre, explains the operations.

5 Gilles meets the officer-in-charge of the marine/aeradio station, Mr. G. Coffin (left). Others in photo include F. Gingras, regional controller of telecommunications (second from left) and A. A. Johnson, supervisor of the air services school (right).

6 Mr. P. Cordeau of the ATC tower (left rear) explains control position to students. In the foreground is Miss M. Carpenter, a control assistant.

7 Radio Operator "500", Gilles St. Pierre, sits at the operating "Range" position at Montreal aeradio.

D.O.T. TRAINS RADIO OPERATOR NUMBER 500



Since the department's air services school at Ottawa Airport began training radio operators four years ago, 27 classes have been held and more than 500 students have graduated as Radio Operators 1. These former students now serve the department in all six air services regions across the country.

Each course is of 18 weeks duration and includes meteorological training, radio operating (which involves mastering a typing speed of 35 words per minute and copying morse code directly on typewriter or teletype), and familiarization with such navigational aids as VOR, ILS, Decca, Loran, Radar and air traffic control. Operation procedures for radio operators are numerous and complex. A thorough understanding is essential for the efficient handling of communications designed to maintain the safety of aircraft and ships.

The students are not completely new to the complexity of radio operations when they enroll in one of D.O.T.'s courses. Each must have had some prior training or experience at a radio college or technical school before being accepted. And because they are qualified to some degree they are paid \$325 a month—the rate for Radio Operator 1—during their departmental training period.

One of the highlights of each course is a familiarization flight to Montreal and back in a D.O.T. DC-3. This flight usually takes place a few weeks prior to graduation and

allows the students to gain first-hand knowledge of many of their text book experiences.

CF-DTB, the plane generally used, has been specially equipped with a transistorized amplifier which operates 12 individual head sets from the craft's communication system. Students can tune in on everything the pilot says and hears, which gives them a good understanding of flight operations. As well, the instructor accompanying the students can shut out the pilot and talk to the students through an amplifier.

However, all the action and interest of these trips isn't confined to the air. Once at Montreal, where they make an ILS or SRA approach depending on weather conditions, the students spend several hours visiting the airport and its facilities—air traffic control, meteorological and telecommunications.

News on the DOT decided to go along on one of these Montreal junkets and chose to accompany the group of students which included D.O.T. Radio Operator No. 500—Gilles St. Pierre.

Gilles, who is a native of Montreal, was posted to Sept Isles marine/aeradio station when he graduated early this Spring, but like his fellow classmates and those who graduated before him, he won't forget the flight to Montreal which was his first chance to see a major, busy centre in operation.



How to get **STRONG** without trying

The U.S. Navy monthly "All Hands" says all you need is "a chair, a heavy desk, or a table and one minute a day." And then you, too, can be as fit as the Marine Corps. The science of isometrics, is at the fingertips of every paunchy executive and flabby housewife who dreams of being sprightlier.

The new fad, which has inspired a flood of books, is the art of toning up the muscles without undue exertion. It's a question of exercising a leg or an arm against an immovable object: the resulting tension and contraction stimulate nearly 100 per cent, of a muscle's fibres, claim adherents, as compared with the mere 50 percent, to 60 percent, involved in other methods.

The managing director pushes upwards with his fingers placed under his desk. His secretary pushes the fist of one hand into the palm of the other. The wife can make her thighs more firm by standing with feet apart and pulling her thighs towards each other for six seconds, at least three times a day.

Paunches

People in all walks of life are getting their daily "physicals" in 60 seconds flat. A man who pulled his stomach towards his spine and held it there for 10 seconds, five times daily, reports that his waistline has been reduced by two inches.

Another variation for attacking paunchiness is: 1. Breathe in deeply, push out the stomach as far as possible and hold there for one second; 2. Breathe out, pull the stomach in as far as it will go and hold it there for six seconds; 3. Repeat six times a day. Do this for a month, and measure.

Isometrics was discovered in the twenties, when scientists found that one leg of a frog tied down for a time grew stronger than the one left free. Athletes explored the secret after two Germans elaborated the system about 10 years ago. Today, it's the key to the 650,000-girl physical education classes that the Y.W.C.A. run in the States from coast to coast.

One book on isometrics by Lieutenant-Colonel William Rankin describes the system used by the Marines, the toughest branch of the U.S. Armed Forces. Rankin made history and headlines in 1959, when he ejected himself from a jet seven miles up at near supersonic speed. He's an isometrics man.

Vic Obeck, director of athletics at New York University, brought out a long-playing record, "How to Exercise Without Moving A Muscle," two years ago. It is still a best-seller. Members of his class get isometrics as part of their training. The Notre Dame football team and Olympics weight-lifting coach, Bob Hoffman, are among the science's other addicts.

Isometric exercises can even be done in a car. Women drivers tighten their stomachs by forcing their abdominal muscles outwards while stopping at red traffic lights. Squeezing the steering wheel as hard as possible does something for the wrists and arms, apart from alarming the passengers in the bus pulled up alongside.

FIRE PREVENTION PAYS OFF

By D. G. MacKinnon,
supervisor, fire services, air

Sixty-three air services establishments, a record number, from across the country entered the 1963 fire prevention contest. Each one actually entered three contests—one for air services, one for the Government of Canada and the third for international contestants.

These annual contests stimulate fire safety consciousness among air services personnel. And, most important, they seem to have paid off in dollars.

In 1955, before the international government division contest was established, air services public and non public fire losses reached a high of \$5,079,745. Last year, after eight years of completion, such losses sank to a low of \$194,259.

The international competition, sponsored by the National Fire Protection Association (International) provides recognition for excellence in the field of fire safety education and performance. Its aim is to stimulate universal fire safety consciousness and to encourage wider use of modern fire prevention techniques.

Contestants are required to summarize and, when possible, provide documentary evidence and photographs of their particular fire inspection procedures, organization activities, employees control education and program highlights during the Christmas season, spring clean-up period and Fire

Prevention Week.

Government organizations, other than military (which competes in classes of its own), compete in three groups: "A"—single building units; "B"—multi-building facilities; "C"—district administrative operations. The winning entry in each group is awarded a small plaque and then is judged against the other winners for a Grand Award Plaque.

The leading Canadian government entry is awarded the C. A. Thomson Challenge Shield, and place certificates are awarded to the top twenty entries.

In 1963 contest 462 entries competed in the international government division. Of the 228 of these from Canada 63 were from the Department of Transport.

D.O.T. results for all three contests follow:

International Contest, Government Division

*Honorable Mention to Moncton Airport in the multi-building facilities section.

*Honorable Mention to Moncton Air Services Region in the district administrative operations.

Government of Canada Contest

*Fifth place—

Moncton Airport

*Eleventh place—

Halifax International Airport

(Continued on page 20)



Presentation of awards to Canadian winners for the International and Government of Canada contests took place at the Parliament Buildings, Ottawa. Mr. Jean-Charles Cantin, parliamentary secretary to the Minister of Transport, presented an award certificate to R. W. Goodwin (left) director of civil aviation.

ISOMETRICS



1 Stomach Tightener for waist and abdomen. Sit with legs held together, extended straight out. Bend forward and grasp legs just below the knees. Press down with hands, at the same time pressing up against the hands with both legs. Hold for six seconds.



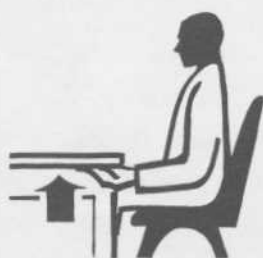
2 Criss-Cross for chest and legs. Sit, preferably on floor, with feet four inches apart. Bend forward and place hands against inside of opposite knees. Attempt to press knees together, while at the same time holding them apart with hands. Hold for six seconds.



3 Body Lift for shoulders, arms, abdomen. Sitting with back straight, lean forward and place your hands, palms down, against the sides of your chair. Hold legs straight out, attempting to raise body about one inch off the chair. Hold for six seconds.



4 Leg Squeezer for legs. Sit forward on edge of chair, lean back, hold legs straight out. Hook one foot over the other and hold tightly. Rest feet on floor, keep legs perfectly straight, and try your hardest to pull your feet apart. Hold for six seconds.



5 Arm Curl for upper arms. Sit straight, grasp underside of heavy desk or table with palms up, forearms parallel to desk. Push up as hard as possible for six seconds.

Note: The sequence of exercises has to be repeated daily, without fail, in order to succeed.

THE littlest ASTRONOMER*

On another mountain lived three other astronomers. The biggest astronomer was very smart; he knew more than just about anybody about telescopes and stars. He had built the Great Telescope on the mountain and it was famous all over the world. He liked to build telescopes, but best of all he liked to explore the sky with them and see a thing a little better than it had ever been seen before. He couldn't do this much any more. He knew that there were not enough telescopes for all the good astronomers, and that he would learn more about the sky, in the long run, if he spent his time getting more telescopes instead of just using the Great Telescope. Getting more telescopes was hard work, and he had to spend more time far away, where the keepers of the money lived. The middle-sized astronomer was also smart. He was an expert on making telescopes work, and on making special calculations, and particularly on what was an important thing to work on. He liked best to explore the sky with the Great Telescope, and to understand something a little better than it had ever been understood before. He couldn't do this much any more. All day the littlest astronomer came to his office and asked him to give advice about their projects, to fix their mistakes, and to adjust the telescope a little better for them so they would do better the next night. He always helped them, and all the astronomers dis-

covered more as a result. The astronomer was glad. When the biggest astronomer was gone, as he often was, the middle-sized astronomer had to do all the biggest astronomer's work, too. Sometimes he had to say something about astronomy on television. He didn't like this, because it was embarrassing, but he knew that if he didn't say it the television people might have a bad astronomer say things that were wrong, and then all the astronomers would be embarrassed and unhappy. It was hard work, but there was no one else who could do it.

The littlest astronomer was smart, but he had never tried to be an expert at anything. Nobody came to him for advice, because he didn't know any more than anyone else. He was glad no one bothered him. Best of all he liked to explore the sky with the Great Telescope, and that's all he did. He published lots of papers.

One afternoon the keeper of the Great Telescope came to the three astronomers and said, "The middle-sized astronomer has adjusted the telescope carefully and it will be a beautiful night tonight. Who would like to use the telescope?" "I can't," said the biggest astronomer. "I was up all last night coming from the city where the keepers of the money live, and I am very tired. It was very uncomfortable, because I bought the cheapest ticket to save money. This evening I must find a way to build

another Great Telescope that is better than ours, but which costs a little less. Our Board of Trustees needs the answer day-after-tomorrow. It will be hard, but I think I can do it. And I would like to play with my little boy just a little—I have not seen my family for a week."

"I can't," said the middle-sized astronomer. "This evening I must go to a college where there are no astronomers and tell the science students how exciting astronomy is." (He had asked the littlest astronomer if he could give the lecture, but the littlest astronomer had said he had too many observations to study, and besides, he gave so few lectures that he wasn't very good at it.)

"I can," said the little astronomer. And he did. Later that night, as the littlest astronomer finally went to bed, the biggest astronomer was still awake, looking at the dark ceiling of his bedroom and worrying. Have I found the best and cheapest way to build a Greater Telescope? Will it best explore the most important problems I know of? He tossed and turned, knowing he must be right so that all the astronomers could learn more about the sky. The middle-sized astronomer was still awake, too. He had driven through a bad snowstorm until very late, because the students had kept him so long asking questions. Some had decided they wanted to be astronomers,

(Continued on page 20)

SUGGESTION AWARD WINNERS

These D.O.T.'ers have received awards-in-kind during recent months for suggestions made to save time, effort or money:

NAME	POSITION	LOCATION	VALUE OF AWARD
Albert Becker	Radio Operator	Williams Lake, B.C.	\$10
Dennis H. Bodkin	Electrical Technician	Terrace, B.C.	\$30
Miss Sybil Cleary	Meteorological Communicator	Edmonton, Alta.	\$15
R. Delong	Stationary Engineer	Halifax International Airport	\$10
Joseph R. Ferguson	Radio Technician	Montague, P.E.I.	\$10
Rheal E. Forgues	Meteorological Technician	Ottawa Airport	\$10
Alan B. Jones	Radio Technician	Saskatoon, Sask.	\$25
James Knight	Meteorological Technician	Lethbridge, Alta.	\$10
James O. Martin	Radio Operator	Kingston, Ont.	\$25
R. P. MacLachlan	Technical Officer	Ottawa Airport	\$25
Alex McDowell	Clerk	Winnipeg Air Services	\$15
Brian L. Miles	Meteorological Technician	Calgary, Alta.	\$25
W. W. Nicholl	Technical Officer	Ottawa	\$10
D. F. Nichol	Radio Operator	North Bay, Ont.	\$10
Wilfrid North	Radio Technician	Rocky Mountain House, Alta.	\$30
G. N. O'Brien	Stationary Engineer	Halifax International Airport	\$10
William Pawlivosky	Meteorological Technician	Lethbridge, Alta.	\$10
F. M. Peterson	Radio Technician	Vancouver, B.C.	\$15
Miss Evelyn Smirle	Secretary	Ottawa	\$10
Miss Edith Waddington	Clerk	Ottawa	\$10
Walter G. Williams	Airport Mechanic	Yarmouth, N.S.	\$10
Albert Wood	Foreman Mechanic	Montreal Air Services	\$15

(FIRE PREVENTION . . . from page 18)

*Nineteenth place—
Ottawa Airport

*Twentieth place—
Montreal International Airport
Air Services Contest (confined to D.O.T.
establishments, classified according to size
and staff.)

*Grand Award—
Moncton Airport

*Class "A"—
First—Halifax International Airport
Second—Montreal International Air-
port

Third—Gander International Airport
*Class "B"—

First—Moncton Airport
Second—Quebec Airport
Third—Whitehorse Airport

*Class "C"—

First—Ottawa Airport
Second—Fredericton Airport
Third—North Bay

*Class "D"—

First—Big Trout Lake Met. Station
Second—Graham Air Radio Station
Third—Esteven Point Met. Station

(THE LITTLEST . . . from page 19)

too, and he was glad. But tomorrow he
would have to make a very careful calibra-

tion of the Great Telescope so that the
littlest astronomer could analyze his
observations. He tossed and turned, trying
to decide the best way to make the cali-
bration. It had to right if all the astron-
omers were to get the answers. No one but
the little astronomers would ever know who
had arranged for them to get these right
answers. The littlest astronomer was
sound asleep, and very happy. No one had
bothered him all day. He could use the
Great Telescope almost any time he wanted.
He did just as he pleased, all day, every day.
It was a good life.

*This appeared as a letter to the editor in the
September, 1963, issue of Science magazine.

Retirement

EDWARD DAVEY—Ed Davey, a man whose connection with radio dates back to 1920 when he was 16 years old, retired from the department on March 21.

Born on Gurnsey in the Channel Islands, Mr. Davey came to Canada at a young age with his parents. They settled at Chatham, Ontario, where he got his amateur radio operator's license in 1920 and spent one year with F. J. Collin's radio station. In 1924 he joined the government service as temporary operator in charge of Anticosti Lightship at a salary of \$55 a month, plus allowances. A year later Mr. Davey, by then a permanent employee, was assigned to Chebucto Head.

From 1926 to 1930 he served at Belle Island, Nfld., and Yarmouth, N.S. and then in June, 1930 was assigned to the N. B. McLean which was making her maiden voyage.

That same year Veteran Davey was posted to Ottawa shortwave and spent the rest of his career in this vicinity. However, if his location remained fixed, his career did not. The year he came to Ottawa the department set up its first frequency standard or "monitoring station" and along with his assigned duties of operating VAA, Mr. Davey became interested in the monitoring station. From then on he had a great deal to do with the

service as it grew. In 1936 he was promoted to a Radio electrician and also helped set up two new monitoring stations at Strathburn, Ontario and Forrest, Manitoba.

During the Second War, Mr. Davey's Ottawa monitoring station, was called upon to use every means at its disposal to uncover enemy or clandestine emissions. It did in fact intercept such transmissions from a station at Long Island, N.Y., which was subsequently seized by American authorities.

In late 1941 a new building was erected to house the Ottawa station where, for the remainder of the war, Ed Davey supervised a staff of radio operators numbering at times as high as 125.

During post war years he had a hand in setting up the monitoring stations at Wetaskiwin, Alberta and Beaumont, P.Q. In 1955 he took over as officer in charge of the Almonte monitoring station when the Ottawa station closed, and remained in this position until his recent retirement.

At a celebration in honor of Mr. Davey, W. A. Caton, controller of radio regulations, reviewed Mr. Davey's long career and presented a gift from his friends and co-workers. Mrs. W. B. Smith gave a floral corsage to Mrs. Davey.

The Daveys plan an extended trip to Europe as a start on retirement. A visit with son Donald in London, England, and another to Ed's birthplace on the Channel Islands are two "musts" on the itinerary.



Left to Right: Mr. and Mrs. Davey, Mrs. Smith and Mr. Caton.



Gift of Painting Delights Capt. Brand

CAPT. ERIC S. BRAND, who retired as director of marine operations last November, recently received an oil painting as a gift from Canadian Coast Guard captains, officers and crew and from other colleagues in the department.

The painting of the "CCGS John A. Macdonald" by Commander Anthony Law, R.C.N., was not finished in time to be presented to Captain Brand when he actually retired. Seeing it for the first time early in April he promptly sent off letters of thanks to the assistant deputy minister, marine, captains, district marine agents and others asking them to tell everyone who contributed to the magnificent gift how grateful he and Mrs. Brand are. "My wife and I shall cherish the picture as a reminder of the happy years we spent with you all" he said. "In due course it will be handed on to our children."

DATELINE— ACROSS CANADA

Esquimalt, B.C.—Exploring effective management techniques was the theme of a 12-day seminar of senior middle management personnel of the department, held during the first two weeks of March at HMCS Naden, Esquimalt, B.C.

Using RCN facilities, 11 officers from various air services headquarters and one district marine engineer, under the direction of Training and Welfare Chief D. E. DeBow, studied modern management techniques.

Included in the topics of discussions and case studies were authority, leadership styles, communication, planning and organization—all designed to explore effective management techniques.

Those taking the course, from Vancouver, Victoria, Edmonton, Calgary and Winnipeg, were accommodated in HMCS Naden Wardroom.

Ottawa—To start off the 1964 philatelic year the first stamp to be issued by the Post Office Department was the seven cent regular stamp.

The new stamp, which replaces the famous blue "Canada Goose" design, is printed in blue. Its design is a modern inter-city jet aircraft taking off from a Canadian airport. The plane is a composite of many modern short and long range jets and is not intended to represent a specific type. The airport, though, is patterned after the Ottawa terminal building.



Taking part in management seminar at Esquimalt, B.C., early in March were, left to right, back row: P. S. Walker, and R. S. Turner, Edmonton; A. F. McQuarrie, Calgary; and H. V. Allan, Vancouver. Middle row: W. F. Inanson and W. G. Wastell, Edmonton; K. O. Cavey, Winnipeg; W. L. Inglis, Vancouver and I. M. Campbell, Victoria. Front row: B. M. Borthwick, Vancouver; Course Director D. E. DeBow, Ottawa; and W. R. Lavey and D. B. Robinson, Vancouver.

Nanaimo, B.C.—At 10 words a minute across 800 miles of open Pacific Ocean a Lantzville housewife can talk to her husband at his place of work. (Lantzville is a village five miles north of Nanaimo.)

The husband, Peter Sculthorpe, is telegraph operator aboard the Canadian Coast Guard weathership Stonetown, which spends alternate seven-week periods on duty at Weather Station Papa—way out in the Pacific. The wife, Ella Sculthorpe, decided that seven weeks without a word "spoken" was just too long so she learned Morse and how to operate a ham radio set and received her operator's license late last December. Since Peter is one of four amateur radio operators aboard the Stonetown, the Sculthorpe's can now send daily messages either direct or through other hams living nearby.

Ella is one of the few women to obtain an operator's license. She now sends and receives messages competently at a 10-word a minute rate using a standard telegrapher's key. Not interested in long range contacts, she just wants to be able to know how things are with Peter on the weathership.

Toronto: Attention: Dr. T. G. How! The following item appeared in a recent issue of the *Globe and Mail*:

TAIPEI (AP)—*The Control Yuan, top watchdog body in Nationalist China, has impeached the chief of the weather bureau for dereliction of duty. Kenneth*

T. C. Cheng was accused of having provided inaccurate information about Typhoon Gloria, which struck Formosa on Sept. 13, leaving 239 persons dead and 89 missing. The Control Yuan said Cheng predicted wrongly that the typhoon would bypass Formosa.

Saint John, N.B.—Sidney A. Guptill, 34 year-old assistant lightkeeper at South West Head, recently was honored by the Carnegie Hero Fund Commission for risking his life in an effort to save someone from death. He was awarded a bronze medal and a cheque for \$750.00.

Mr. Guptill and Vernon Bagley, a game warden at Grand Manan Island, helped save 36 year-old Floyd Jones from death by exposure on February 26, 1963.

Jones and his brother were carried by rough seas and high winds to a small beach at the base of a 200 foot high cliff when their motor boat became inoperable. Floyd was able to climb 20 feet to a small ledge as a rising tide flooded the beach. His brother scaled the cliff and three hours later sought help from Seal Cove lighthouse, where Mr. Guptill then served.

Bagley and Guptill, working with the others from a ledge 30 feet from the cliff top, lowered themselves separately with ropes to bring Jones to safety. Bagley went first, found Jones and helped pull him up 100 feet to another ledge. He went up the rope and Guptill went down to complete the rescue.

Mr. Guptill, father of three children ages 13, 8 and 1½, said he was "too busy to be nervous" during his experience on the windswept ledge.

"A man doesn't do much thinking at a time like that. All I knew there was a man alive down there and he was going to die if we didn't do something."

Winnipeg—Winnipeg Region can boast a figure skating champion.

Shirley Robson, 14 year-old daughter of Helen Robson, a clerk in central registry at Winnipeg Region, captured the 1964 Canadian Junior Figure Skating Championship at North Bay, Ontario. Both Shirley and her coach, Miss Elaine Protheroe, were delighted that the long hours of training had paid off so rewardingly. Not only had the crown been won, but with a lead of more than 40 points!

Shirley's home is in Winnipeg, but she has been skating and attending school in Edmonton for the past three years. Although some sports allow a change of coach with no ill effects, such is not the case in figure skating. When Miss Protheroe, a former resident of Winnipeg, accepted a position in Edmonton, Shirley and her parents decided that if she wanted to continue skating, it would be best for her to move to Edmonton, too.

Miss Protheroe is among the country's top professional skaters. Under her guidance Shirley has sacrificed most of her home and social life for the rigorous routine of a champion. However, the hard work is reaping its rewards and she is considered to be one of the fastest rising stars on the figure skating horizon.

Even though she loves skating, Shirley has never allowed it to interfere with her school work. She practices hard, but does so after school or during noon recess.

She was awarded the gold dance medal last fall, and received her gold figure medal in the summer of 1962, when she was 13.

What's next?

"How about the 1968 Olympics?" say Shirley and her coach.

Montreal—The world's first icebreaking cable repair ship, being built for the department by Canadian Vickers Ltd., was launched on April 15. Not yet named, the vessel is expected to be ready for service in the Spring of 1965.

The ship is twin-screw, diesel-electric powered and equipped to lay cable for the Canadian Overseas Telecommunication Corporation in the Gulf of St. Lawrence, along the Atlantic Seaboard and in the Eastern Arctic.

Ottawa—The Flight Safety Foundation, which annually presents awards for "dis-



tinguished service in achieving safer utilization of aircraft", selected the personnel manning ocean station vessels as 1963 winners of a symbolic plaque.

The citation accompanying the award read in part: "The dedicated personnel of Ocean Station Vessels have modestly and untiringly supplied services of immense benefit to the safety of over-ocean transportation."

Prince Rupert—The late Nicholas A. Beketov, who served as district marine agent at Prince Rupert, B.C., for 11 years from 1948 to 1959, was buried at sea off Brotchie Ledge in the Strait of Juan de Fuca on April 7. Full naval honors were performed from the CCGS Camsell.

Mr. Beketov, who was a veteran of the Second World War, had specifically asked for the sea burial. It was a dignified ending for a man who loved the sea.

Born in St. Petersburg, Russia, Nicholas Beketov fled his homeland after fighting in the strife against Bolsheviks in 1921. He landed in New York and later lived in Winnipeg and Toronto. During World War Two he served in the Royal Canadian Navy as a lieutenant-commander.

Prince Rupert—The Prince Rupert district marine agency added a new supply and workboat to its fleet when the CCGS Skidegate arrived in Prince Rupert harbor on April 6. Mrs. E. O. Ormsby, wife of District Marine Agent Ormsby, had christened the vessel at the False Creek yard of Allied Ship Builders Ltd. on January 25.

The new vessel replaces the "Katherine B" which has been in service for more than a quarter of a century. She is named after an inlet in the nearby Queen Charlotte Islands and will operate in Skidegate waters in the course of her duties.



*Canadian
Coast
Guard*
ALBUM

CCGS JOHN A. MACDONALD

CCGS *John A. Macdonald*, completed at Davie Shipbuilding yard, Lauzon, Que., in September, 1960, has a number of historic Arctic firsts to her credit. She was the first ship to reach Tanquary Fiord, the first to reach Resolute Bay through the uncharted waters around Graham Island, and the first to circumnavigate Devon and Prince of Wales Islands. Based at Dartmouth, N.S. Marine Agency, she has served in the Gulf of St. Lawrence, Newfoundland and Arctic waters.

LENGTH: 315 feet

BREADTH: 70 feet

DRAFT: 28 feet

POWER: Nine 2,000 H.P. diesel units in groups of three, each group coupled to a 5,000 SHP electronic propulsion motor; triple screw.

GROSS TONNAGE: 6,186