news on the dot

july/august 1964

SATELLITES TO RING THE WORLD

CANADA BROKE THE ICE IN RUSSIA

news on the DOT

VOLUME 15 • NO. 4
JULY-AUGUST 1964 • OTTAWA

CONTENTS

COVER

This illustration shows some of the communications satellites now orbiting the earth. In the lower left-hand corner is Telstar I. In the upper left-hand corner is Syncomm II, while the other two are Relay I and II. Satellites not shown are Telstar II and the giant mylar-skinned balloon, Echo II.

BELL TELEPHONE PHOTO

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.*

ROGER DUHAMEL, F.R.S.C., QUEEN'S PRINTER AND CONTROLLER OF STATIONERY, OTTAWA, 1964

What's in a Name?

Shakespeare answered: "That which we call a rose, by any other name would smell as sweet." Nothing changes underneath, says the bard. Agreed. But still a name change might be fun. It's a "Do blondes really have more fun?" kind of thing.

Perhaps Ebenezer wonders: "Would I have more fun named Rock?" And it wouldn't surprise us if all Janes wonder will they always be "plain".

This burst of introspection is brought on by the editorial staff's (i.e. the editor's) consideration of a name change for News On The DOT.

We believe there are several good reasons for such a change—none of which include a woman's (i.e. the editor's) penchant for change just for the sake of change.

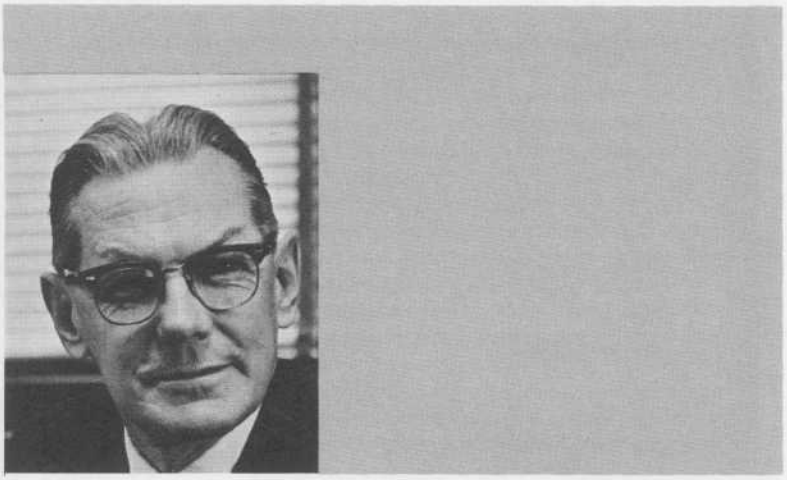
This editor's letter is the trial balloon. We would like to know what our readers think of the idea. Since silence is generally interpreted as consent, write if you have any objections.

News On The DOT is, we hope, a relatively sophisticated 15 year-old. Would a change of name help or hinder it at this stage in its growth? The name we prefer is not so far removed from its present one to strip it of the identity it has created up to now. We propose only that the words "News On" be dropped and that it be called The DOT. (Sort of sounds like "Life", "Time" or "Look", doesn't it?).

Point for point these are our reasons: The publication is a bimonthly, six issues a year, and as such cannot run "hot off the press" items with any degree of timeliness. (This is precisely the reason for not reporting such employee statistics as births, marriages, transfers and the like.) We understand many readers already refer to it as "The DOT" in a kind of affectionate fashion. As a matter of appearance and style we prefer the shortened version—it certainly is more contemporary—and, finally, since the letters of the department are D.O.T. and the press and other media frequently use the term "The D.O.T.", we believe the word those letters spells is a good choice of name for a staff magazine.

There, you have our reasons. What do you think? Don't keep your thoughts to yourself. Let's hear from you—it's your magazine and you are entitled to a voice in a matter as important as changing the name of a member of the "family".

The Editor



FROM THE DEPUTY MINISTER'S DESK

Previous issues of News On the DOT have carried articles about the special fund which was established from surplus insurance premiums to provide university entrance scholarships to children of Department of Transport employees.

Now we have more good news. After final closing of the insurance company's books on the departmental health scheme, there is still a substantial amount of money to be returned to D.O.T. It would add considerably to the scholarship fund's capital and make it possible to offer either more annual scholarships or to increase the amount of the three existing four hundred dollar ones.

The scholarship scheme was put into effect successfully for the first time last year. The funds came from surplus contributions returned to the department on behalf of its employees by the Travelers Insurance Company when our group health insurance plan ended with the establishment of an overall government plan. At that time D.O.T.'ers were given the option of having an appropriate portion returned to them or leaving it in a central scholarship fund. The majority supported the plan to establish scholarships.

Employees will again be given a similar option in respect to the new credit. If you have not already received more detailed information you will in the near future.

J. R. Baldwin

LE MOT DU SOUS-MINISTRE

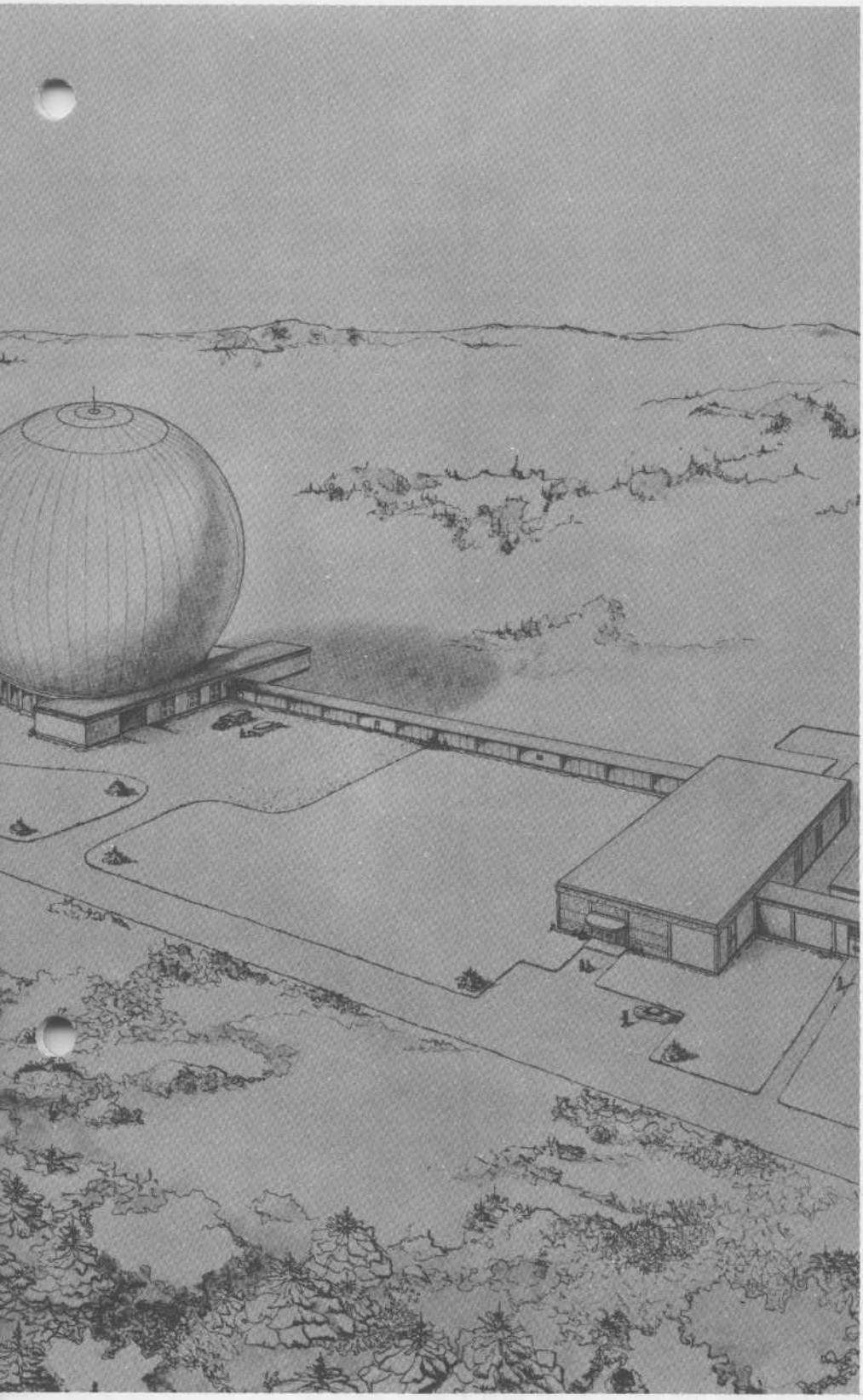
Des articles ont paru dans des numéros antérieurs de NEWS ON THE DOT au sujet de la caisse spéciale créée au moyen des primes d'assurance de surplus en vue d'accorder des bourses d'études en première année d'université à des enfants d'employés du ministère des Transports.

Nous avons d'autres bonnes nouvelles. Après la fermeture des livres de la compagnie d'assurance relatifs au régime d'assurance santé du Ministère, il nous revient encore une somme importante. Cette somme ajouterait beaucoup à la caisse de bourses d'études et permettrait soit d'accorder un plus grand nombre de bourses annuelles, soit d'augmenter le montant des trois bourses de $400 chacune accordées actuellement.

Le plan de bourses d'études a été mis en œuvre avec succès pour la première fois l'an dernier. Les fonds provenaient de l'excédent des contributions que la Travelers Insurance Company a remis au Ministère lorsque notre régime d'assurance a pris fin par suite de l'établissement d'un plan d'assurance général applicable à tous les employés du gouvernement. A ce moment, il a été demandé aux employés s'ils désiraient recevoir la part du surplus qui leur revenait ou la voir affecter à une caisse de bourses d'études. La majorité a opté en faveur de la création d'une caisse.

Les employés seront de nouveau priés de se prononcer au sujet du nouveau montant. Si vous n'avez pas encore reçu de plus amples renseignements, vous en recevrez bientôt.

J. R. Baldwin



Artist's sketch of Canada's ground station now under construction in Nova Scotia.

RINGING THE WORLD

by John de Bondt

Canadian telephones may soon be abuzz with voices from outer space. They won't say: "Take me to your leader," but "How are you, Jack."

The voices will be those of relatives, friends or business contacts overseas, relayed by satellite. Also, live television pictures from distant points around the world, such as we have seen via Telstar, will appear more frequently on Canadian screens.

Telecommunications by satellites are not just a pipe dream. As early as 1958 the U.S. launched an earth satellite, Score, which successfully relayed voice and telegraph transmissions. Other U.S. experimental satellites, such as Courier I-B, Telstar I and II, Relay I and II, and Syncom II have produced even more satisfying results, and millions of TV viewers on both sides of the Atlantic have seen programs relayed by some of these satellites. Now the U.S. is readying for launching—in 1965—its first experimental and operational, commercial telecommunications satellite, fittingly named Early Bird.

When the satellite is in orbit the Department of Transport's ground station (now under construction in Nova Scotia) will be ready and waiting to tap Early Bird's commercial capacities. Thus Canada itself plans to be an early bird in a commercial system that is expected to give world-wide coverage with a string of satellites ringing the world by 1967 or 1968.

The time is approaching when expansion of the traditional methods of telecommunications, such as submarine cables and high-frequency radio will no longer alone be able to cope with increased overseas traffic. Earth satellites will provide part of the needed extra capacity and should have several advantages over present systems, flexibility being perhaps the most spectacular. While a cable connects only a

certain number of points, a satellite system has the potential of ultimately being developed so any country with a suitable ground station could use it.

Global System

Exploratory talks have been held among several countries able to make an effective contribution towards a global system of communications satellites and interested in investing in such an undertaking. The group includes the European Conference on Satellite Communications (Britain, France, West Germany, Italy and 13 other nations), the United States, Canada, and, more recently, Japan and Australia.

Canadians who have attended some of these meetings include officials from the Canadian Overseas Telecommunication Corporation and the departments of Transport, External Affairs and Finance.

Discussions have laid the groundwork for an international committee to govern the establishment of a world-wide system, details about its operation and conditions of participation.

In accordance with various U.N. resolutions on the peaceful uses of outer space, Canada and the other prospective participants are agreed that participation should be open to any nation or group of nations that wants to join and is prepared to subscribe a share of the capital cost. At the same time they recognize the need to organize and operate such a system on a sound commercial basis.

The countries are also agreed that the space segment — i.e. the satellites themselves and the ground-based command and control facilities — should be owned and managed on an international basis. Each country or group of countries would build and operate its own terminal stations on the ground.

The capital cost of the space segment is estimated to be some $200,000,000. Canada's share will be $7,500,000. At press time Canada and the other nations were seeking agreement on voting power, management arrangements, and the extent to which each country's industry will be able to participate in the supply of equipment.

Why Satellites?

Microwave signals transmitted from a radio station, whether or not satellites are used, travel in a straight line. They cannot pass through obstacles such as mountains or follow the curvature of the earth. In a microwave network, such as the one across Canada, towers relay signals to each other high over such obstacles. A satellite takes the place of many towers by being high enough to be "visible" to two ground stations thousands of miles apart. "Visible" here means, of course, that nothing obstructs a straight line of sight between station and satellite, although the satellite may be invisible to the naked eye because of distance or darkness.

Two ground stations can thus communicate with each other as long as a satellite is above the horizon or "visible" to both. The higher a satellite's orbital altitude, the longer two ground stations can both see it, and the lower this altitude, the more satellites there must be in orbit to make sure that at least one of them is "visible" to both stations at any time; when one dips below the horizon, another replaces it.

The Relay and Telstar satellites are of the medium-altitude type and orbit the earth at heights anywhere between 600 and 7,000 miles. To make continuous global communications possible, up to 18 satellites would have to be in orbit at all times, depending on whether they would carry position control equipment or not. Satellites carrying such equipment form a "controlled system" in which spacings between them are uniform. In such a system fewer satellites are required than in a "random system" in which the spacings are not uniform.

However, if a satellite is placed in orbit above the Equator at an altitude of 22,300 miles, and is effectively controlled, its speed will equal that of the rotation of the earth and it will appear to hang motionless in space. A satellite in such a "synchronous orbit" would be "visible" to approximately one third of the earth's surface 24 hours a day. Terminal stations 10,000 miles apart could communicate with one another via such a satellite and three such "birds" would provide global coverage. Syncom II is such a synchronous satellite.

Both the use of medium-altitude and synchronous satellites are being contemplated for a world-wide system and Canada's ground station in Nova Scotia will be able to track either type.

Enter Comsat

The United States, which has devoted much effort to space development, is a world leader in the technology of satellite communications. Under legislation passed by Congress in 1962, the Communications Satellite Corporation (Comsat for short) was created as a private, non-government organization, with a mandate to bring a commercial system of communications by satellites into operation "as expeditiously as practicable".

Half of the corporation's 10,000,000 shares were offered to and eagerly bought by 163 telecommunications companies, ranging from the giant American Telephone and Telegraph (which paid $57,915,000 for 2,895,750 shares) to small independent telephone companies. The other half of the stock, offered to the general public at $20.00 a share through some 1,350 brokers, was picked up within a day.

Comsat plans to place its Early Bird satellite in synchronous orbit over the Atlantic Ocean by mid-1965 for test purposes as well as commercial services. Early Bird will be designed to provide up to 240 two-way telephone circuits between North America and Western Europe. Such circuits could be used for telephone conversasations, for television signals, or for "record traffic" (message and other telegraph traffic, telex, facsimile, photogram and data transmissions).

One of the things Comsat expects to find out is the attitude of the public towards the quality of telephone communication using a satellite in synchronous orbit. The length of time (about three-tenths of a second) required for transmission of a signal to satellite and back tends to interfere with the normal rhythms of conversation. The effects of the necessary echo suppressors—at least of existing types—also reduce the quality of communications. The extent to which the public will consider these effects to be acceptable in practice is expected to influence greatly the decision whether satellites in synchronous or in medium-altitude orbit will be used in the planned global system.

The corporation has awarded contracts to U.S. industry for studies of a "multiple access" system which will be able to receive and transmit from several ground stations at the same time. Further contracts have been awarded to the American Telephone & Telegraph Company and RCA jointly and to the International Telephone & Telegraph Corporation and the Space Technology Laboratories jointly for comprehensive design work on medium altitude systems, and to Hughes Aircraft Corporation for further work on synchronous satellite design.

When the international organization comes into effect, opportunities to bid on the supply of material and services for the space segment will be available to industries in all participating countries.

Comsat will be the manager for the countries participating in the global satellite communications system for at least the initial period up to 1970.

Canada's Role

Canada's space technology is already relatively advanced. Although Alouette was a scientific satellite, its design and construction involved many techniques also used for communications satellites.

Three Canadian engineers from the Transport Department and the Canadian Overseas Telecommunication Corporation gained valuable know-how during two years in England where they took an active part in the research and design of the ground station at Land's End.

Canadian industry has been able to "grow up" in step with the scientists. Many components for various U.S. satellites have been designed and constructed in Canada including the main electronics for the Relay series of satellites and a novel telescopic antenna having wide application. The Canadian government has supported space development in industry in a variety of projects.

The RCA Victor Company Ltd. of Montreal is under contract to the Department of Transport to supply management and systems engineering for the Canadian ground station. Subject to the approval of the department the company is responsible for the preparation of specifications, the management of subcontracts and the installation of the equipment. The department will approve the selection of subcontractors and provide the site, buildings and access roads.

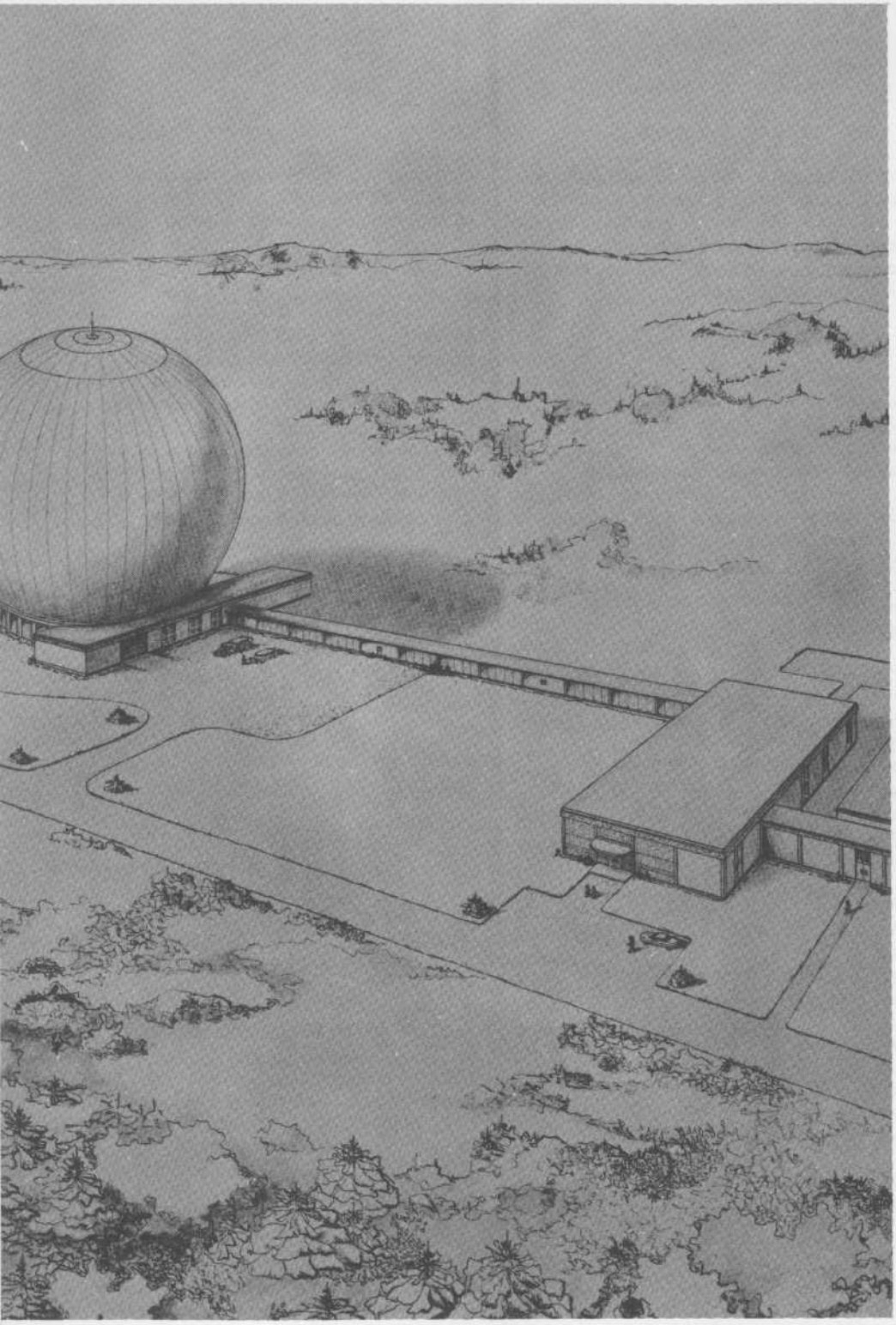
The station, now under construction, will be built with a number of relatively large subcontracts spread out through the Canadian electronics industry. The department also has a number of separate, independent small contracts with Canadian firms to take advantage of specialized skills and know-how. Situated near Mill Village, N.S., 80 miles southwest of Halifax, the Canadian terminal station will cost about $5,000,000.

The design of the station is flexible enough to permit participation in experimental work under an agreement between the Department of Transport and the U.S. National Aeronautics and Space Administration (NASA), as well as to handle regular commercial communications.

It is expected that the station will eventually become a facility of the Canadian Overseas Telecommunication Corporation, which as the name implies operates in this field. To this end the COTC is working closely with the department on the project team; assistance is also being provided by Canadian domestic commercial communications companies. With the formation of COTC in 1949, Canada has played an increasingly prominent role in the ownership and operation of the overseas facilities needed for her communications (the new Atlantic and Pacific submarine cables are outstanding examples) and it is intended that this policy should continue in the future.

One of the most spectacular features of the station will be a dish-shaped antenna 85 feet in diameter, covered by a 95-foot radome of coated Dacron, held up by air under pressure. It will suffice for the experimental stage of the project and for commercial satellite communication on a limited scale, but as demands on its service and the number of satellites in orbit increase, more antennas will have to be added.

Terminal stations already exist in the U.S., Great Britain, France, Italy, Spain, Brazil and Japan. West Germany, like Canada, is in the process of building one.



Croquis de la station terraine du Canada qui est en voie de construction en Nouvelle-Écosse.

Les communications à l'échelle du globe

par John de Bondt

Des voix de l'espace feront bientôt bourdonner les appareils téléphoniques des Canadiens. Les personnes à l'écoute n'entendront pas des voix mystérieuses disant: "Conduisez-moi à votre chef", mais plutôt des interpellations bien connues comme "Comment allez-vous, Henri?".

Ces voix seront celles de parents, d'amis ou de relations d'affaires d'outremer, retransmises par des satellites. De plus, des émissions de télévision en direct provenant de pays lointains, comme il nous a été donné de voir par l'entremise du Telstar, apparaîtront plus souvent sur les écrans du Canada.

Les télécommunications par satellites ne sont pas des rêves d'astrologue. Dès 1958, les Etats-Unis ont lancé un satellite terrestre, nommé Score, qui a relayé avec succès des transmissions téléphoniques et télégraphiques. D'autres satellites expérimentaux des États-Unis comme le Courrier I-B, les Telstar I et II, les Relay I et II et le Syncom II, ont donné des résultats encore plus satisfaisants, et des millions de téléspectateurs des deux côtés de l'Atlantique ont vu des émissions relayées par quelques-uns de ces satellites. Les États-Unis lanceront bientôt (en 1965) leur premier satellite de télécommunications expérimental à exploitation commerciale, dénommé à juste titre Early Bird.

Dès que le satellite sera en orbite, la station terrienne du ministère des Transports, actuellement en construction en Nouvelle-Écosse, sera prête à fonctionner et à bénéficier des possibilités commerciales de l'Early Bird. Ainsi le Canada a l'intention d'être l'un des premiers pays à faire partie d'un système commercial qui doit assurer un service mondial au moyen d'une série de satellites qui encercleront le globe vers 1967 ou 1968.

Le moment approche où l'expansion des méthodes classiques de télécommunications, comme les câbles sous-marins et la radio à haute fréquence, ne pourra plus répondre à elle seule aux besoins grandissants des pays d'outre-mer. Les satellites terrestres assureront une partie des cir-

cuits supplémentaires de communications nécessaires et, de plus, devraient présenter de nombreux avantages par rapport aux anciens systèmes, la souplesse étant sans doute le plus remarquable de ces avantages. Alors qu'un câble ne raccorde entre eux qu'un certain nombre de points, un système de satellites pourra être développé au point que n'importe quel pays qui dispose d'une station terrienne appropriée pourra s'en servir.

Système mondial

Des pourparlers préliminaires ont eu lieu entre un certain nombre de pays qui peuvent apporter une contribution efficace à la réalisation d'un système mondial de communications par satellites et qui sont intéressés à investir des sommes dans une telle entreprise. Les pays qui participent à ces pourparlers sont les membres de la Conférence européenne des communications par satellites (Angleterre, France, Allemagne de l'Ouest, Italie et 13 autres pays), ainsi que les États-Unis et le Canada et, récemment, le Japon et l'Australie.

Les Canadiens qui ont assisté à ces réunions comprennent des représentants de la Société canadienne des télécommunications transmarines et des ministères des Transports, des Affaires extérieures et des Finances.

Au cours de ces réunions, on a jeté les bases d'une commission internationale qui régira l'établissement d'un système mondial et étudié les détails relatifs à l'exploitation de ce système et aux conditions de participation.

Conformément aux diverses résolutions des Nations-Unies relatives aux utilisations pacifiques de l'espace extra-atmosphérique, le Canada et les autres participants éventuels ont convenu que la participation devrait être ouverte à tout pays ou à tout groupe de pays qui le désire et qui est disposé à partager les frais d'établissement. A la même occasion, ils ont reconnu la nécessité d'organiser et d'exploiter un tel système sur une base commerciale bien établie.

Les pays sont également convenus que la partie spatiale du système de satellites (c'est-à-dire les satellites mêmes et les installations terriennes de commande et de contrôle) doit être la propriété de tous les pays participants et être administrée par ces pays, tandis que chaque pays ou groupe de pays construirait et exploiterait ses propres stations terminales au sol.

Les frais d'établissement de la partie spatiale sont évalués à quelque deux cent millions de dollars. La part du Canada s'établit à 7 millions et demi. A l'heure où nous mettions sous presse, le Canada et les autres pays tentaient de s'entendre sur la répartition des votes, les dispositions relatives à la gestion, et le degré de participation de l'industrie de chaque pays à la fourniture du matériel.

Pourquoi des satellites?

Les micro-ondes provenant d'une station radio, que l'on utilise ou non des satellites, se propagent en ligne droite. Elles ne peuvent pas passer à travers les obstacles comme des montagnes ni suivre la courbure de la terre. Dans un réseau à micro-ondes, comme celui qui traverse tout le Canada, les ondes passent au-dessus des obstacles en étant relayées d'une tour à l'autre. Un satellite remplace plusieurs tours parce qu'il est suffisamment élevé pour être "visible" de deux stations terriennes situées à des milliers de milles l'une de l'autre. Évidemment, "visible" signifie dans ce contexte que rien ne s'interpose entre la station et le satellite, bien que le satellite puisse être invisible à l'œil nu par suite de la grande distance ou de l'obscurité.

Deux stations terriennes peuvent ainsi communiquer entre elles tant qu'un satellite se trouve au-dessus de l'horizon ou qu'il est "visible" des deux stations. Plus l'orbite du satellite est élevée, plus longtemps deux stations terriennes peuvent le voir, et plus la hauteur est faible, plus il faut de satellites en orbite de sorte qu'au moins l'un de ces satellites soit "visible" des deux stations à tout instant; lorsque l'un deux disparaît au-dessous de l'horizon, un autre le remplace.

Les satellites Relay et Telstar sont du type à altitude moyenne et leur orbite se situe entre 600 et 7,000 milles d'altitude. Pour que des communications mondiales continues soient possibles, il faut qu'il y ait jusqu'à 18 satellites en orbite, suivant qu'ils sont munis ou non du matériel de contrôle de position. Des satellites munis de tel matériel forment un "système contrôlé" dans lequel l'espacement entre les satellites est uniforme. Dans un tel système, il faut moins de satellites que dans un système où l'espacement n'est pas uniforme.

Toutefois, si un satellite est mis sur orbite au-dessus de l'équateur à une altitude de 22,300 milles, et est bien contrôlé, sa vitesse sera égale à celle de la rotation de la terre et il semblera rester accroché dans l'espace. Un satellite sur une telle orbite synchrone est visible sur environ le tiers de la surface de la terre, 24 heures sur 24. Des stations terminales situées à 10,000 milles de distance les unes des autres peuvent communiquer entre elles au moyen d'un tel satellite, et trois satellites de ce type suffisent pour desservir tout le globe. Le Syncom II est un satellite synchrone.

On songe à utiliser des satellites à altitude moyenne et des satellites synchrones pour le système mondial de communications, et la station terrienne du Canada, en Nouvelle-Écosse, pourra communiquer avec ces deux types de satellite.

Comsat

Les États-Unis, qui ont consacré beaucoup d'efforts à la conquête de l'espace, sont l'un des pays les plus avancés dans la technique des communications par satellites. En vertu de lois approuvées par le Congrès en 1962, la Communications Satellite Corporation (COMSAT) a été créée à titre d'organisme privé, non gouvernemental, avec mission de mettre en œuvre le plus rapidement possible un système commercial de communications par satellites.

La moitié des dix millions d'actions de cet organisme ont été offertes à 163 sociétés de télécommunications qui se sont empressées de les acheter; ces sociétés vont de la compagnie géante American Telephone and Telegraph (qui a payé $57,915,000 pour 2,895,750 actions) aux plus petites

compagnies de téléphone indépendantes. L'autre moitié, offerte au public à $20 l'action, par l'intermédiaire de 1,350 courtiers, a été achetée en une seule journée.

COMSAT envisage de mettre son satellite Early Bird sur orbite synchrone au-dessus de l'Atlantique au milieu de 1965 afin de procéder à des essais et aussi pour assurer un service commercial. Le Early Bird sera conçu pour assurer jusqu'à 240 voies téléphoniques bilatérales entre l'Amérique du Nord et l'Europe de l'Ouest. Ces voies peuvent servir aux conversations téléphoniques, aux émissions de télévision ou pour le trafic «enregistré» (messages et autre trafic télégraphique, télex, fac-similé, phototélégrammes et transmissions de données).

L'une des choses que COMSAT espère déterminer est la réaction du public à la qualité des communications téléphoniques par l'intermédiaire d'un satellite sur orbite synchrone. La durée de transmission d'un signal (environ trois dixièmes de seconde) jusqu'au satellite et retour a tendance à nuire au rythme normal de la conversation. L'effet des suppresseurs d'écho nécessaires—au moins les types actuels—réduit également la qualité des communications. L'importance que le public pourra attacher à cet effet aurait une grande influence sur la décision d'utiliser des satellites sur orbite synchrone ou des satellites à altitude moyenne dans le système mondial de communications présentement à l'étude.

COMSAT a adjugé des contrats à l'industrie américaine en vue de l'étude d'un système à «accès multiple» par lequel plusieurs stations terriennes pourront recevoir et transmettre des signaux en même temps. D'autres contrats ont été adjugés conjointement à l'American Telephone and Telegraph Company et à RCA, et conjointement à l'International Telephone and Telegraph Corporation et aux Space Technology Laboratories pour des travaux poussés relatifs à la conception des systèmes à altitude moyenne, ainsi qu'à la Hughes Aircraft Corporation pour d'autres travaux relatifs à la conception des satellites synchrones.

Lorsque la commission internationale aura été créée, les entreprises industrielles de tous les pays participants auront l'occasion de présenter des soumissions relativement à la fourniture de matériel et de services concernant la partie spatiale du système.

COMSAT sera l'agent d'administration des pays qui participeront au système mondial de communications par satellites, au moins depuis le début de l'exploitation jusqu'en 1970.

Rôle du Canada

La technique de l'espace est déjà relativement avancée au Canada. Bien que l'Alouette ait été un satellite scientifique, sa conception et sa construction faisaient appel à plusieurs techniques également utilisées dans les satellites de communications.

Trois ingénieurs canadiens du ministère des Transports ont acquis des connaissances précieuses durant leur séjour de deux années en Angleterre, où ils ont pris une part active aux recherches et aux études relatives à la station terrienne de Land's End.

L'industrie canadienne a pu se mettre au diapason des scientifiques. Plusieurs parties composantes de divers satellites des États-Unis ont été conçues et construites au Canada; parmi ces pièces, on compte les principaux organes électroniques de la série de satellites Relay et un nouveau type d'antenne télescopique qui a des applications variées. Le gouvernement canadien a aidé l'industrie dans une grande variété de projets relatifs à l'espace.

Le ministère des Transports a passé avec la RCA Victor Limitée, de Montréal, un contrat qui confie à cette compagnie la gestion et l'étude technique de la station terrienne du Canada. Sous réserve de l'approbation du Ministère, la compagnie s'occupe de la préparation des devis, de la gestion des sous-traités et de l'installation du matériel. Le Ministère approuvera le choix des sous-traitants, fournira l'emplacement, le bâtiment et les routes d'accès.

La construction actuelle de la station comprend l'adjudication d'un certain nombre de sous-traités relativement importants à l'industrie électronique canadienne. Le Ministère a également passé avec des maisons canadiennes un certain nombre de petits contrats qui lui permettront de tirer profit des connaissances spécialisées que possèdent ces maisons. La station terminale canadienne, située près de Mill Village (N.-É.), à 80 milles au sud-ouest d'Halifax, coûtera environ 5 millions.

La conception de la station est suffisamment souple pour lui permettre de participer à des travaux expérimentaux en vertu d'une entente entre le ministère des Transports et la U.S. National Aeronautics and Space Administration (NASA) et d'acheminer régulièrement des communications.

Il y a lieu de croire que la station deviendra éventuellement une installation de la Société canadienne des télécommunications transmarines qui, comme son nom l'indique, exploite déjà ce domaine des communications. Voilà pourquoi la S.C.T.T. collabore étroitement aux travaux de l'équipe du Ministère chargée de réaliser le projet; les sociétés canadiennes commerciales de communications à l'intérieur du pays y participent également. Depuis la formation de la S.C.T.T., en 1949, le Canada a acquis un nombre de plus en plus grand d'installations transocéaniques dont elle a besoin pour ses communications (les nouveaux câbles sous-marins de l'Atlantique et du Pacifique en sont des exemples remarquables) et elle a l'intention de continuer cette ligne de conduite.

L'une des caractéristiques les plus remarquables de la station sera une antenne en forme d'assiette de 85 pieds de diamètre, recouverte d'un radôme de 95 pieds en Dacron traité, soutenu par de l'air sous pression. Cette antenne suffira pendant la période expérimentale du projet et pour les communications commerciales par satellite à petite échelle, mais à mesure qu'augmenteront les besoins du service et le nombre de satellites, d'autres antennes devront lui être adjointes.

Des stations terminales existent déjà aux États-Unis, en Grande-Bretagne, en France, en Italie, en Espagne, au Brésil et au Japon. L'Allemagne de l'Ouest, tout comme le Canada, est à en construire une.

Aboard the Leningrad, J. R. Strang and Russian hosts watch the convoy safely by-pass an area of ice.

CANADA BROKE THE ICE IN RUSSIA

Canada and the Soviet Union, neighbors across the North Pole, have decided to trade a little over-the-back-fence gossip about ice.

The two largest countries in the world with a year-round ice problem have already begun an exchange of key officials and scientists; a first in international ice co-operation between Canada and Russia.

This "Eaton's telling Simpson's" exchange began last February when seven Canadians, headed by Assistant Deputy Minister of Transport, Marine, Gordon Stead, went to Moscow. Others in the group were J. R. Strang, D.O.T.'s director of shipbuilding; A. H. G. Storrs, D.O.T.'s director of marine operations; Captain W. Dufour, C.C.G.S. d'Iberville; W. E. Markham, D.O.T.'s meteorological branch; Miss Moira Dunbar, Defence Research Board, and Dr. A. E. Collin, of the Department of Mines and Technical Survey's Bedford Institute.

The Canadian visit was originally scheduled for early February, with the Russians to pay a return visit to Canada in March. Light ice conditions in the Baltic, however, delayed the Canadian visit until late February so the Russian visit had to be put over until next year.

The Canadians were met in Moscow by A. A. Afanasiev, director of the Northern Sea Route Administration. They found the capital city to be typical of Central Russia with its many onion-domed buildings,

At the Marine Museum, Captain A. I. Mikulinsky briefs the Canadians on the statistics of Soviet sea-borne freight turnover.

parks, museums and monuments. The days in Moscow were devoted to discussions, official dinners and receptions, with time enough for sightseeing and entertainment.

Headquarters of the Northern Sea Route are located in Moscow and it is from there that all vessels are assigned to various districts of service. The Canadian party was given a general briefing on all the ships in the icebreaking fleet but, naturally, extra attention was devoted to the Lenin, the world's largest nuclear-powered icebreaker and the fleet's showpiece. Unfortunately, the group didn't get to see her because she was in drydock at Murmansk, undergoing her first refit and refuelling in three years.

The only difficulty the Canadians experienced during talks with their Russian hosts was that of interpretation. As is the case everywhere, first class interpreters are in short supply in Russia and so the ice talks were slowed down on occasion while points were clarified. However, most Russians engaged in maritime or scientific fields have a working knowledge of English and the Canadians found this a great help. Miss Dunbar, too, as the only Canadian who could speak Russian, assisted whenever possible.

Limitations of time and translation rather than reticence to answer were the chief problems of an otherwise valuable exchange of technique and theory.

The theory of handling the problems of ice varies widely in the two countries. The Russian ministry is more inclined to favor strength and power of vessels: if a vessel is big enough and strong enough it can cut through any ice, no matter what the thickness. Canada, on the other hand, relies heavily on the application of scientific knowhow to ice. Therefore the Canadians were anxious to increase the time allotted to scientific talks during their tour. They managed to turn their scheduled three-hour visit to the Arctic Institute into an all-day affair, and to change the hour scheduled for the Museum of the Arctic into an entire morning. The visits to these two Leningrad institutions were the highlights of the tour.

The Institute's program covers operations and research in oceanography, meteorology, glaciology and geophysics. It organizes and runs 100 permanent polar stations, the Arctic Ocean Drifting stations, the annual airborne scientific expeditions to the Arctic, and the Antarctic program. It also manages the ice reconnaissance program and does the ice forecasting for the Arctic.

Before leaving the Institute Mr. Stead presented officials with a letter found posted on the door of one of the huts on the ice-floe station, North Pole 7, which drifted into Baffin Bay in 1962. This genuinely pleased the 30-odd Russian scientists present and was very well received.

The shoe was on the other foot in Moscow. There parts of an old Canadian icebreaker were pointed out to the group. The wheelhouse and radio shack of the Litke, originally the Canadian ship Earl Grey, were on display. She was sold to the Russian government in 1914, and was in service until quite recently.

For three days of the trip the Canadians saw Russian operations first hand from the deck of the Leningrad while escorting a convoy to and from the ice edge. Miss Dunbar says she found it a spacious and well-furnished ship, beautifully kept by everyone, including female crew members. (Women are employed on most ships in the Russian merchant fleet.)

The Leningrad is 400 feet long, with an 80-foot beam, and is powered by eight diesel-electric motors.

The Canadians were given an exhaustive briefing by a solicitous group of the ship's officers, and a naval architect went along on the trip to answer questions on design.

The similarity between Russian and Canadian handling of convoys became obvious on the Leningrad. Miss Dunbar, who has had considerable experience with D.O.T.'s northern operations said: "Standing on the bridge listening to what went on, both on the icebreaker itself and between it and the vessels following, the only noticeable difference was in the language. The Russians have the great advantage, however, of dealing almost exclusively with ice-class vessels which enable the convoys to stay close together and move faster, but the techniques are very similar."

Even apart from icebreakers the total strength of the Russian ice-strengthened fleet is about 350 vessels which explains the advantage outlined by Miss Dunbar.

The tales of World War II suffering heard in Leningrad staggered the imagination. Blockaded for nearly three years, 632,000 civilians are said to have starved to

death whereas only 16,700 were killed in bombing raids and shelling. The Canadians visited a mass burial ground where it is thought 400,000 persons are buried. In spite of these experiences, Leningrad today is a city of beautiful architecture, wide boulevards and happy-faced citizens.

On February 29 the Canadians said good-bye to their Russian hosts and left aboard the Red Arrow (the state railway company's speedy train) for Finland to see the shipyards where many Russian vessels are built.

Helsinki, the Canadians found, was extremely gay and bright. Even without understanding the language, they thought the advertising signs and window displays appealing and, in some cases, spotted familar trademarks.

It was the weekend when they arrived so they had time for some much needed rest and relaxation. They were guests of honor at a buffet supper hosted by Canadian Ambassador Cleveland.

While in Finland the delegation inspected the offices and shipyard of the Wartsila/Koncernen Ltd. and the Board of Navigation; toured the factories of Oy Stromberg Ltd., builders of electrical equipment for the shipyard; visited the Finnish Technical Institute and spent a day aboard the icebreaker TARMO in the Gulf of Bothnia.

They were particularly interested in the modern shipyard where the Moscow and Leningrad, the largest diesel icebreakers afloat, were built for the USSR. In fact, when they were there another vessel of the Moscow class was under construction. It will be christened Kiev.

The group broke up in Finland. Miss Dunbar, Dr. Collin and Mr. Markham went on to spend a day or two each in Stockholm, Copenhagen and Hamburg, talking with ice experts in those countries in order to complete the picture of Baltic practice in this field. Messrs. Stead, Strang and Storrs journeyed to London for a few days' business and then home, and Captain Dufour returned to Canada via Paris where he spent a few days leave.

In summing up the visit, the members of the Canadian delegation felt to a man that they were well-received in all the countries visited and that their various hosts were most willing to answer questions and show them as many things as possible in the time allowed. The trip was well worthwhile in the sense that they learned a lot both about ice problems and the people they met.

Perhaps, most important, they were able to draw favorable comparison with Canada's ice operations.

The ice they saw was land fast and easier to handle than that in the Gulf of St. Lawrence as far as they could ascertain. However, they didn't view Russian operations in the Arctic, which presumably would be much more difficult than in the Baltic.

Some equipment they saw was new to them, as were some techniques, but, as Mr. Stead said: "Any changes that will be made in our operations or new equipment that will be added as a result of our visit, will be of minor importance.

"On the overall picture we are satisfied that we are as advanced as Russia in our icebreaking operations and the organization of Russian and Canadian ice operations is remarkably similar. Since we rely more heavily on such scientific support as ice forecasts, reconnaissance flights, computer analysis and so on, perhaps we are even ahead."

The Canadians are looking forward to repaying the Russians' fine hospitality when the delegation from the U.S.S.R. visits here next winter, and hope to show them as much as possible of the unique ice conditions in the Gulf of St. Lawrence.

Miss Dunbar, Captain M. V. Sorokin, Mr. Stead and Captain Dufour study the design of the icebreaker Leningrad.

Mr. Stead, Captain Mikhailov, Y. P. Zheltovsky, chief engineer, and Mr. Strang view the Leningrad's automatic manoeuvering control panel.

Examining a model of the atomic icebreaker Lenin at the Marine Museum are, left to right, Messrs. Markham, Storrs, Strang and Stead and Konstantin V. Bannov, deputy chief of the Northern Sea Route Administration.

A roundtable discussion in the headquarters of the Northern Sea Route in Moscow.

Messrs. Markham, Stead, Strang and A. I. Ignatiev, head of the icebreaker test laboratory of the Arctic Institute, engage in lively discussion in the Leningrad's engine room.

Ron Latremouille makes an entry in one of the three score and more Registry Books kept in the Registry of Shipping offices. Each such entry must be entered by hand in a legible fashion as a permanent record.

SHIPS THAT GO DOWN TO THE SEA —— from a-to-z ———— MUST BE REGISTERED

by Yvonne McWilliam

Tucked away on the second floor of the Hunter Building in Ottawa is D.O.T.'s Registry of Shipping section.

Like most registry offices it conforms to the layman's idea of one: great ledgers filled with carefully handwritten entries on thick, yellowing pages. (All this will soon change, though, when the Registry of Shipping undergoes a face-lifting. Information now on the ledger sheets will be transferred to cards and filed in an open-tub system as in banks.)

The records, which antedate Confederation and contain the vital statistics of Canada at sea, reveal that in 1877 Canada stood fifth in tons of shipping among maritime nations.

However, history is only a by-product and not the purpose of the section. Its vital concern is to issue to shipowners a certificate of British registry which includes measuring each vessel for gross and register tonnage. Registration establishes nationality, protects title and determines tonnage. In effect, registration is a ship's passport and its importance to the shipowner is obvious. It means the ship is entitled to the rights and privileges of a British ship as a Commonwealth vessel. The registered tonnage is the basis of many charges including pilotage fees, canal fees and harbor dues.

A ship's name is registered, and once entered it is the exclusive property of that ship. By 1964 there were 22,796 names registered ranging from AII to Zysygy. Ten numerals can be used, and in some cases they make the difference: for example, The Mary, Mary I and Mary II.

With so many names already chosen, shipowners are requested to make three or four choices in order of preference to avoid the frustration of one particular owner. He made about a dozen applications for names, but each one was rejected because it was already in use. Finally, in desperation, he made what was to be his final choice. Speculation at the registry office was that he put letters and numerals in a hat, shook them up, and wrote them down as they were drawn out: T E K 8 E R I M A T!

Apparently D.O.T. is not alone with a power of veto. One applicant thought Call Girl might be a nice name for his ship. Before the department could reply to his request he wrote again saying his mother and sister violently objected. Could he please change his mind and call it the Red Witch after his red-headed sister? This was approved by the department if not by the sister.

Another name request sent G. G. M. Guthrie, supervisor, registry of shipping, to the Canada Elections Act: a fisherman decided to call his vessel "Vote Liberal." The registrar wondered if perhaps the Elections Act prohibited the use of political slogans as names. Since the Act was silent on the point the zealous fisherman got his name.

The effects of registration are most readily compared with Provincial Land Titles Acts. This means the Register Book is public notice of title and any charges against that title. A ship's title may be transferred, transmitted or mortgaged under the special provisions of the Canada Shipping Act. So, for example, if someone wants to mortgage his ship to you in return for a loan, you better search the Register Book at the ship's port of registry to see if there are other mortgages—assuming a first mortgage is the security you want.

Ownership of a registered vessel can be complicated. Although it has never happened, it is possible for a ship to have 320 owners! For some reason the number of

possible shares in a ship has been limited to 64, and the rules allow as many as five joint owners for a single share: thus, 5 × 64 equals 320.

Speculation abounds as to the arbitrary choice of 64 shares. One theory is that the very earliest type of coasting vessel in the English Channel was designed with 64 ribs or frames; another, that the total number of Wardens of the historic Cinque Ports was 64; a third, that full ownership was based on the binary system, 2, 4, 8, 16, 32, 64.

Yet another places its origin in "protection" money, the fee that privateers like Drake and Raleigh charged English merchant ships for their services. Once in port and safe from foreign pirates, the merchants paid a one-third duty on the unloaded cargo. They were left with two-thirds of their venture (64 shares) and through the years the 64 shares left to the merchants as 100 per cent profit was translated into 64 shares as 100 per cent or full ownership.

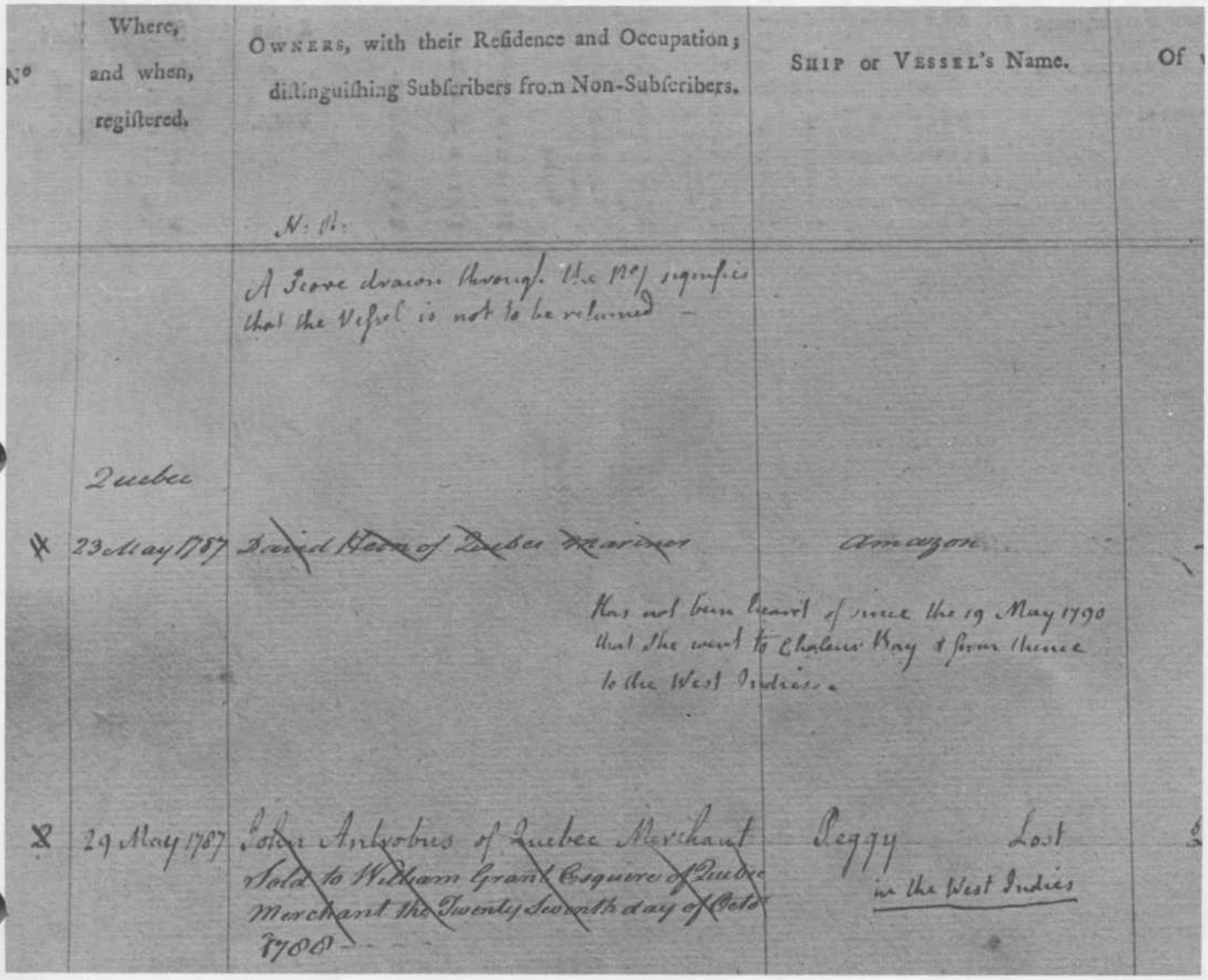
Registrar Guthrie considers the most believable theory to be based on the practice of dividing prizes of war in vogue when the Merchant Shipping Act of 1825 was drafted. It is said the draftsman adopted the practice of dividing the shares in French and American prizes of war into eight parts, certain of which were allotted whole (to the Admiral or Captain for instance) while others were further subdivided. But as such subdivision could not go on indefinitely, it is said that the 'eights' were again divided into eights, thus giving sixty-fourths.

There are three basic forms of ownership of a ship: individuals, corporations, and joint owners. Joint owners are subject to the ordinary rule of survivorship. That is, on the death of one owner his share goes to the other(s), and cannot be transmitted to his heirs.

Hence with two equal owners, for example two fisherman, normally it's best for them to register as separate owners of 32 shares each.

A ship (by section 2 (98) of the Canada Shipping Act) covers every description of vessel used in navigation not propelled by oars, including lighters, barges or scows. If a commercial vessel is not over 15 tons register tonnage and is employed in Canadian waters, registration is not required. The same holds for pleasure yachts under 20 tons wherever employed. Otherwise a ship must be registered. If it isn't, it can't be recognized as a "British ship". For the purposes of the Act, then, a British ship is a registered ship, as opposed to one that is merely British-owned or operated.

Using the nomenclature of "British ship" implies no colonial subjection since that was the term agreed on in the British Commonwealth Merchant Shipping Agreement signed in 1931 (oddly enough, that was the



N°	Where, and when, registered.	Owners, with their Residence and Occupation; distinguishing Subscribers from Non-Subscribers.	Ship or Vessel's Name.	Of
		N. B.		
		A Scrove drawn through the No. signifies that the Vessel is not to be returned —		
	Quebec			
X	23d May 1787	Daniel Hern of Quebec Mariner	Amazon	
		Has not been heard of since the 19 May 1790 that She went to Chaleur Bay & from thence to the West Indies —		
X	29 May 1787	John Anbrobus of Quebec Merchant Sold to William Grant Esquire of Quebec Merchant the Twenty Seventh day of Octo 1788 —	Peggy Lost in the West Indies	

When a Register Book no longer carries current information (i.e. the vessels it pertains to no longer ply Canadian waterways) it is sent to the Public Archives to be retained for posterity. A page from an old Port of Quebec Register Book—date 1787—is shown here.

same year the Statute of Westminster formally declared external independence for Commonwealth members) so there would be no "Canadian Ship" or "Australian Ship" and corresponding certificates. The common term "British" was accepted and the test for registration would be either a British subject or a body corporate established within the Commonwealth or, since 1961, the Republic of Ireland. Ships so registered are granted equal rights and privileges throughout the Commonwealth.

Other privileges follow registration, so even where it is not required owners often register voluntarily. For example the owner of a small fishing vessel which is nowhere near 15 tons register tonnage might wish to apply for registration in order to qualify for the Dept. of Fisheries' Fisherman's Indemnity subsidy; for National Health and Welfare's Sick Mariners' benefits; or for National Revenues' Coasting Licence with remission of sales tax.

Because of the importance of registry books as public notice of title, they are kept at 74 custom ports which have been designated as Ports of Registry by Order-in-Council. Consequently much of the day to day work is done by customs officers, who forward copies of every transaction affecting a ship to the registry of shipping. They are then checked, entered in the master indexes in Ottawa, and copies made to send to the Registrar General in the United Kingdom to become part of the records kept there on every ship in the Commonwealth. The "List of Shipping" published annually by the Registry of Shipping is as current as a telephone book. It lists the 22,000-odd ships registered in Canada and gives particulars of each and their owners.

Often the entries made by local registrars can be quite complicated so advice and guidance is sought from Mr. Guthrie and his assistant Cliff Hornsby about such things as first registry, sale under admiralty court order, registry anew, registry after a wreck, transfer of ownership and joint ownership, transmission on death or bankruptcy and so on. Frequently they are asked for details of recording, measurement, registry and licencing of vessels by lawyers, shipyard owners and government agencies.

(Licencing of vessels is another D.O.T. responsibility handled by the Registry of Shipping, but it requires much less paper work than registration. The department has licensed about 500,000 vessels—ships powered by 10 h.p. or more, but less than 15 tons registered tonnage. Once a vessel is licenced the information is merely kept on file and nothing is added. Virtually all 300 or more customs officers across Canada can and do issue licences to the ever-increasing number of small boat owners.)

Every ship seeking registration must be measured for gross and register tonnage. Canada's main authority in this field is Cecil Tucker, principal surveyor for tonnage, who advises the nation's 40-odd surveyors. In the main these surveyors do their job on a part time basis, and are often employed by other government departments or are retired naval architects or master mariners.

Tonnage in ships is not a measurement of weight (i.e. not 2,000 pounds) but a measurement of size (100 cubic feet equals one ton).

It is believed that the term harkens back to cross-Channel trade in spirits in the days when the capacity of a ship was expressed in the number of casks (the French word was "tuns") it could carry. Later tonnage for registration purposes was arbitrarily defined by the 100 cubic foot standard. Gross tonnage is the total of all enclosed space on the ship including the underdeck and the superstructure. However, registered tonnage is net tonnage. That's what is left after subtracting the areas required for the actual working of the ship such as crew accommodations and the propelling power allowance, which alone can amount to one third of the gross tonnage.

Tonnage measurement is required in a variety of circumstances ranging from first registry in Canada to establishing tonnage of government vessels not intended for registry (this includes all naval vessels.)

The importance of the registry section can readily be seen in the day to day happenings of Canadian ships from clear title to tonnage clearances for the world's major waterways, and it is from this vital role that it becomes a chronicler of seafaring Canada from the Bluenose to Bluenose II.

Superintendent of Registry G. G. Guthrie (right) discusses the measurements of a vessel with J. E. Firth. Mr. Firth is assistant to C. E. S. Tucker, Principal Surveyor of Tonnage.

Cliff Hornsby and Miss Geraldine Beaulieu straighten out a transfer of ownership problem—just one of the many such problems they come up against daily.

The Heads

by T. E. Appleton, Small Boat Operations

One of the more mealy-mouthed euphemisms of current jargon is the expression 'powder room' for what Tom Jones would have called, quite properly, the privy.

Powder room in this sense would have been incomprehensible to sailors of that day, never ones for 'nice Nelly-ism' where plain words would do; anyway the powder room was the magazine or gunpowder stowage. The English tongue has benefitted from its early transmission abroad by sailing ship and the language of the sea has been reflected in many of our most pungent expressions which have ancient and peculiar roots. Such a word is 'head' meaning, among yachtsmen, the privy, but also being the general term for the fore-part of a vessel.

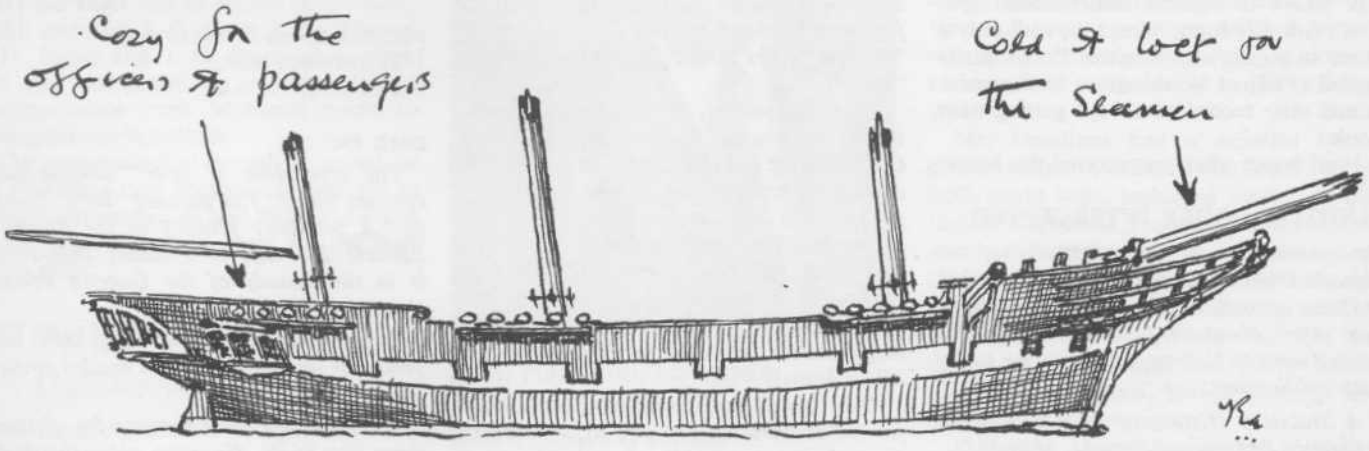
Rough as they were in olden times, seamen had small modesty in a way of life that permitted no privacy and little comfort, and in which all problems of personal hygiene had but one solution—salt water, and lots of it. It was convenient then for the sailor to satisfy his natural occasions from the elaborate timber-work called 'the heads', which connected the stem and the gammoning of the bowsprit to the hull.

As time went on, the heads incorporated seats with round holes, a chummy and secluded arrangement which may still be seen in Nelson's VICTORY at Portsmouth Dockyard. The officers, and the passengers in stately East Indiamen, fared rather better and their 'heads' opened off the after cabins and were sometimes semicircular appendages with glass windows, built out from the quarters of the ship. They must have been rather comfortable little rooms from which one could enjoy a view, forward, of the ship's side and the lower rigging, and, aft, of the lazy wake of a sailing ship and the eternal horizon. Sea-water was used for washing as fresh water was scarce unless a tropical thunderstorm set all hands to collect rain in old sails.

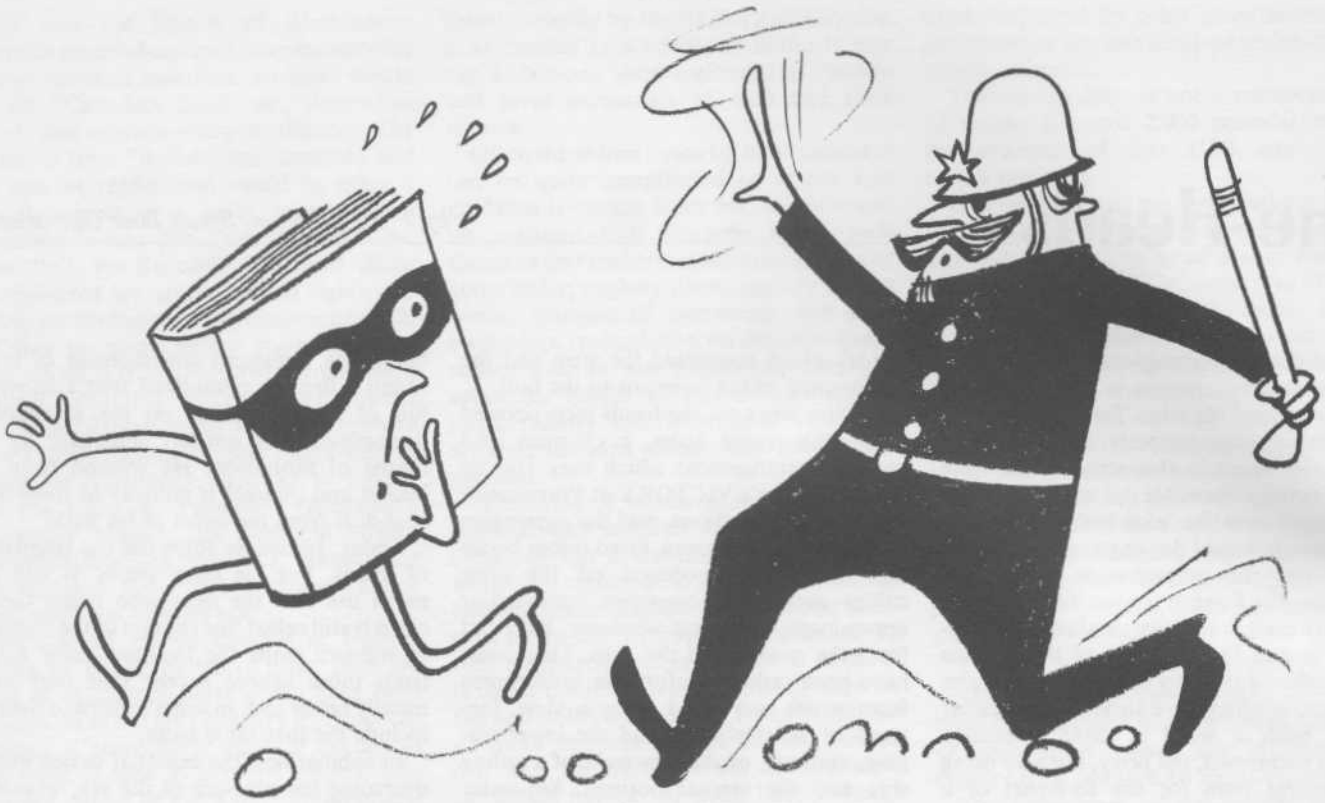
The advent of steam, hot water and galvanised buckets did a little to improve the ablutionary lot of seafarers. So did the Merchant Shipping Acts, those monumental chapters in nineteenth century social legislation, which brought to shipboard the minimum conveniences of life. Many a fireman considered that a shovelfull of red hot ashes on the stokehold floor-plates was entirely adequate as a means of sanitation. He washed from a bucket and thought it unlucky to rinse the coal-dust from the small of his back.

Today, passenger ships use the language of hotels, but the term 'heads' is still in naval use and the man who keeps them clean is still called 'the captain of the heads'. In modern ships the facilities differ little from those ashore except that they are usually better and, in some European liners, include the inevitable bidet.

In submarines, the essential device must overcome the pressure of the sea, wherein lurks a rude shock for the unwary. But perhaps, in a world which has introduced nuclear power to ships, even this last hazard has been overcome and an occupant can have peace of mind to study the flags of the International Code which, in at least one ship, were posted inside the door for the continuing benefit of junior officers in their idle moments.



The heads — fore and aft



FBI Seeks Help from D.O.T.

Imagine our surprise when the FBI bypassed the RCMP to get our help!

The fugitive couldn't be found in the U.S. and apparently was holed up in Canada where it became Information Division's job. We found him, too, with only a name to go on, and Fugitive Books Intercepted (FBI) of Washington, D.C., maintained their record of always getting their book.

It all began when we received this letter:

FUGITIVE BOOKS INTERCEPTED

DEAR DIRECTOR OF PUBLICATIONS (*of the Canada Dep't of Transport*): MAY 25, 1964

Please excuse us, Sir, for "knocking at your door" about the following urgent need of an American University Library for one of your publications:

A Statutory History of the Steam and Electric Railways of Canada, 1836-1937
Compiled by Robert Dorman.
Ottawa, 1938.

Do you have a spare copy you can send us, Sir, for this good purpose? As a matter of fact the need is so urgent that the Professor of Transportation making the request (through the Library) threatens to go to Canada himself if we cannot produce! Now we cannot think of anything nicer than to go to your beautiful Country in June—his deadline is June 15!—but it would be a defeat for our "bloodhounds" in pursuit of "fugitive" titles if they failed to produce the "hare"!

What can you do, Sir, to save the reputation of our hounds? Can you send us a copy (at "anything less than a million dollars", of course)? If not, can you have one duplicated for us by the deadline date? (There must be a Transportation Conference at the University for which this gem is coveted). We have never seen the item but if duplication is possible within $35, we will not need further confirmation. (It could be 1000 pages for all we know!)

Our "bloodhounds" will "make up" to you for the cooperation you give us on this one, through the service they render some of your Country's Libraries.

May we hear from you, Sir, soon?

Best thanks for your help with a copy in the original (preferably) but in duplicate otherwise.

Very sincerely yours,

Their letter gave us the scent of the quarry and away we went in mad pursuit. Within hours we were able to reply:

MAY 28, 1964

FUGITIVE BOOKS INTERCEPTED,
1722 19TH ST., N.W.,
WASHINGTON 9, D.C.

DEAR FBI:

The reputation of your "bloodhounds" remains intact. The pursued "hare" known as "A Statutory History of the Steam & Electric Railways of Canada, 1836-1937" is in the custody of the Queen's Printer, Ottawa.

Your pack picked up the trail here yesterday and were last seen headed straight for the quarry.

The custodian has a bagging fee of something like $4.00. However, since this is his bailiwick, he will be relaying to you direct the terms of acquisition.

With a 'tally-ho' and all that, we extend to you best wishes for the continued success of operation f.b.i.

Very sincerely yours,

Appointment

Maurice Edward Louch, 44, was appointed chief of the newly-created flight services division in June. Formerly he was regional controller of civil aviation for the department at Moncton, N.B.

The new division is a result of the upgrading of the former flight operations section. Its responsibilities include management of D.O.T.'s fleet of 39 fixed-wing aircraft and 20 helicopters used to evaluate and calibrate navigational radio aids and instrument landing systems, and for site selection, accident investigation, transportation and inspection duties.

Mr. Louch, a native of St. Thomas, Ontario, was educated there and at London, Ontario. Learning to fly in 1938, he obtained his commercial pilot's licence the following year.

He joined the RCAF in 1941 and served as a flying instructor at Arnprior and London, Ontario. Subsequently he was a pilot with 164 Transport Squadron at Moncton, N.B. and with 436 Squadron in India and Burma.

Mr. Louch, active in the flying club movement in the post war years, joined the department as a civil aviation inspector at Toronto in 1950. From 1955 to 1958 he was in charge of flying training at Ottawa and then returned to Toronto as regional superintendent of air regulations. He was appointed regional controller of civil aviation at Moncton in 1963.

The new chief of flight services is a licensed airline transport pilot and is qualified both on fixed-wing aircraft and helicopters. He also holds a glider pilot's license.

"The Show Must Go On"

What would you do in the hours immediately following a plane crash in which you were involved? Count your blessings? Take about three good stiff drinks and go to bed? Talk it out of your system?

Well, five D.O.T. employees couldn't do any of these things when in mid-June an Air Canada Viscount they were travelling on crashed at Toronto International Airport. They were returning from an ice reconnaissance in the Arctic. With only a brief time out for one of them to be x-rayed, the five gathered their charts together, went to the office, and got out the material by the next day, Sunday, June 14. The information in these reports is very important for ships operating in ice-infested waters at this time of year.

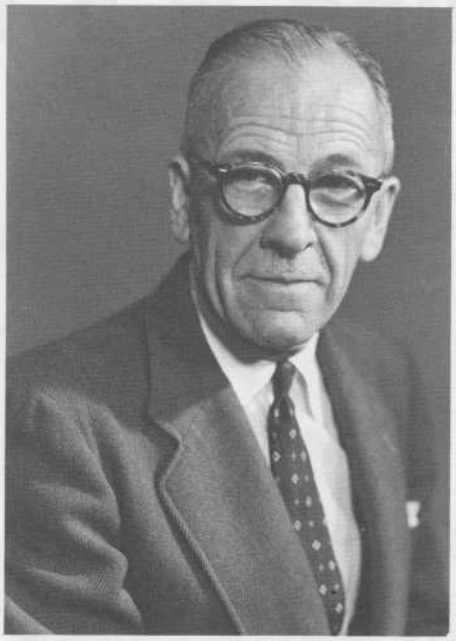
D. S. Veinot was in charge of the party which included J. G. Cote, J. A. Weaver, J. H. Butler and J. G. Plamondon. They had just completed an almost 51-hour reconnaissance from Montreal north to 82 degrees north latitude.

The meteorological branch is proud of the way these men finished up their job in difficult circumstances and their awareness of the trust placed in them by the men in the ships.

ATTENTION— Lightkeepers' Wives

G. J. Laycock, director of lighthouses for Australia, wrote to D.O.T. early this summer relaying a request he had received from the Country Women's Association of Tasmania. Apparently many wives of lightkeepers belong to the association and they would like to correspond with wives of Canadian lightkeepers.

Anyone interested in an Australian penfriend should write to Mr. Laycock and he will forward letters to the Country Women. Address letters to: G. J. Laycock, Director of Lighthouses, Dept. of Shipping and Transport, Rialto Building, P.O. Box 2111s, Melbourne C1, Australia.



John Hamilton, Canada's "Mr. Water Safety", Dies Following Illness

The Canadian boating realm lost a keen yachting enthusiast when John E. V. C. Hamilton, former small boats officer for the department, died at Vancouver, B.C. on June 26. He was in his 68th year and had been ill for some months.

Mr. Hamilton, often referred to as "Mr. Water Safety", was known from St. John's, Newfoundland, to the Queen Charlotte Islands as a lecturer on safe boating practice and related aspects of yachting. He was, in a measure, "the man who wrote the book" in promoting water safety, for he had a hand in the preparation of "Safety Afloat", the department's handbook for the boating public. He joined the department in March, 1957, and retired in November, 1962.

Proficient with his sketching pencil, Mr. Hamilton conceived and drew the popular "tip sheet" that is included in "Safety Afloat" as a visual reference on the rules of small boat navigation. In the course of his work with the department he visited boating clubs and other outdoor organizations in every part of Canada. He listened to the views of these groups in relation to the regulating of the rapidly-growing volume of pleasure boat traffic on the country's lakes and rivers.

Mr. Hamilton had a colorful background. Born in India he was a veteran of both world wars, including service on the Indian Northwest Frontier. He served 14 years with the three armed forces of Canada, as well as many years with the British Imperial forces. Following service with the RCAF in World War II, he served at both Naval and Army headquarters in Ottawa before joining the Department of Transport.

Following his retirement he took up residence in Vancouver.

Mr. Hamilton is survived by his widow, Mrs. Marion Hamilton of Vancouver, a son, Commander Jonathan C. Hamilton, R.N. of London, England; two brothers and three sisters.

NORMAN C. TERRY, Vancouver regional airworthiness inspector, retired on April 30 after 28 years with the department.

Born in London, England, Mr. Terry embarked on a long career in aviation when he joined the Royal Flying Corps in 1916. He came to Canada in 1920 and enlisted in the RCAF as an NCO in charge of aircraft and engine repair at Camp Borden, Ontario.

In 1926, while stationed at Jericho Beach, Vancouver, Mr. Terry volunteered for the Hudson Straits Expedition and spent the next 16 months in the Arctic. It was during this period that newspapers headlined the disappearance of three men on a photo reconnaissance flight aboard a Fokker monoplane over the Ungava wastes. Two weeks later the lost men—Sgt. Terry, Flying Officer A. Lewis, the pilot, and an Eskimo—staggered into their base camp to relate the hardships they had endured after their plane was forced down by engine trouble.

In 1937, following a six-year stint with Canadian Airways, Norman Terry joined the department as a regional airworthiness inspector and continued as such throughout his D.O.T. service.

Dr. T. G. Howe admires a desk set that was one of the gifts received by Mr. Terry on the occasion of his retirement.

Calling it a Day

Head table guests enjoy the farewell remarks made by Jim McPherson at the dinner given in his honor. Left to right are: Dr. P. D. McTaggart-Cowan, former director of the meteorological branch; the guest of honor, D. C. Archibald, chief of basic weather, and Mrs. McPherson.

JAMES ALEXANDER McPHERSON, supervisor of the surface meteorological inspection program for Canada, retired on July 1. He had been on retirement leave since January.

A graduate of the Universities of Alberta and Toronto, Mr. McPherson joined the meteorological service in 1936 as an observer. After several promotions as a meteorological officer he was appointed to the position he held at the time of retirement.

During his 27 years of service Mr. McPherson visited many parts of Canada inspecting stations, establishing new ones and carrying out programs of instruction. His background of scientific and technical training fitted him uniquely for the duties he performed.

Before going on retirement leave early in January, Mr. McPherson's colleagues honored him at a dinner. Dr. P. D. McTaggart-Cowan, then director of the meteorological branch, and D. C. Archibald, chief of basic weather, paid tribute to his service. As well, he was presented with an engraved watch and a wallet, the gifts of his many colleagues and friends across Canada.

Suggestions Saved MORE Than $34,000 Last Year

Every year since the suggestion award plan was introduced into the public service the number of suggestions made by D.O.Ter's has increased steadily. From March 31, 1963 to April 1, 1964, for example, the secretary of the plan, Ted Howe, received an average of three per working day for a total of 855. Of these 151 were approved for awards—in cash or kind—and the department realized $34,514.23 in actual cash savings, not to mention the countless intangible benefits affecting working habits, surroundings and so on.

Vancouver Air Services Region led the department with 39 awards, 30 of which went to telecommunications and electronics employees. Add those 30 to the 36 awards won by other T & E employees throughout the country, and that branch received the most awards of any single branch—66 in all.

However, all these facts and figures relate to the past. Among the recent batch of awards, were three valued at $100 or more. In fact, one for $195 is one of the largest to be granted in the past year or so.

William J. Dowsley, a technical officer with the Prescott District Marine Agency, received this large award for recommending that a single voltage transformer, primary 95-130, secondary 6.3 volts be used instead of one transformer, primary 95-130, secondary 115 plus one transformer primary 115, secondary 6.3. Adoption of this suggestion saves the department $65.75 for each installation and it is estimated that annual savings will total nearly $3,000.

Another major cash award, $105, to be exact, went to *G. G. Webster* for suggesting the installation of tape suppression equipment on selected circuit reperforators for outgoing transmission. The proposal was reviewed on a national basis and it was found that annual savings of nearly $1,100 would be realized. Mr. Webster is a communicator with the meteorological branch at Vancouver.

The third "big-money" winner was *W. H. O'Brien*, a storeman at Quebec District Marine Agency. He came up with a simple idea to save the department more than $1,000 a year.

Mr. O'Brien recommended that the Canadian Coast Guard discontinue buying winter weight officer caps and use instead navy blue Melton cloth covers for existing summer weight frame type caps. In addition to saving money, this suggestion also simplifies stores procedures and stocking of these items.

Other recent award winners were:

NAME	POSITION	LOCATION	AMOUNT
T. W. Hurst	Technician	Ottawa Airport	$10
J. O. Dailey	Radio Operator	Bull Harbour, B.C.	$20
J. W. Willis	Radio Operator	Goose Bay, Lab.	$10
V. W. Zariski	Radio Technician	Edmonton, Alta.	$15
Mrs. Frances M. Wadsworth	Clerk	Vancouver, B.C.	$15
B. Glowenka	Draftsman	Winnipeg Air Services	$10
J. A. MacDonald	Clerk	Montreal Air Services	$15
Miss Carol H. Crozier	Stenographer	Winnipeg Air Services	$10
G. E. Miller	Radio Operator	Moncton, N.B.	$10
K. A. Maynard	Radio Operator	Penticton, B.C.	$10
J. E. R. Gagne	Met. Communicator	Montreal Airport	$10
J. O. Martin	Radio Operator	Kingston, Ont.	$25
E. J. McKnight	Equipment Operator	Fort St. John, B.C.	$15
S. M. Nield	Airport Mechanic	Fort St. John, B.C.	$15
M. G. Jeffries	Radio Operator	Tofino Marine Aeradio Radio Station, B.C.	$30
L. E. Tickner	Radio Operator	Victoria	$10
J. Burns	Met. Technician	Meteorological Hqts., Toronto	$10
Miss M. E. V. O'Malley	Clerk	Information Services, Ottawa	$10
J. J. Daniel	Met. Technician	Air Services School, Ottawa	$10

Send Suggestions Postage Free to: Secretary, Suggestion Award Plan, Dept. of Transport, Ottawa

DATELINE—ACROSS CANADA

Mr. Pickersgill throws the switch which sent his official message across the country on the occasion of the opening of the joint CN-CP microwave network. Left to right: Mr. N. R. Crump, President of CPR; Mr. Pickersgill; Mayor Jean Drapeau of Montreal; and Mr. Donald Gordon, President of CNR.

Montreal—With the flick of a switch that sent simultaneous messages to cities along the system, Minister J. W. Pickersgill opened the joint Canadian National-Canadian Pacific Telecommunication's new 3,282 mile microwave network on Monday, May 11.

The 41 million dollar system stretches from Vancouver to Montreal and, linked to existing microwave facilities of the two companies and other services, provides a network extending from Newfoundland to the Pacific Coast and to the Yukon and Alaska. It also forms the Canadian leg of the commonwealth communications system that stretches to the United Kingdom, Australia and New Zealand.

Donald Gordon, Chairman and President of the CNR, N. R. Crump, Chairman and President of Canadian Pacific and Mr. Pickersgill officiated in the Montreal ceremonies. Other ceremonies were held simultaneously in Ottawa, Toronto, Winnipeg, Regina, Saskatoon, Calgary, Edmonton and Vancouver.

The network, consisting of 127 unmanned tower sites, follows a path that actually by-passes the major cities for protective reasons. They are connected by feeder lines.

This new microwave system will provide the Canadian public, business organizations and government with fast, reliable means of communication.

Toronto—Dr. Warren L. Godson, superintendent of the meteorological branch, has been elected a Fellow of the Royal Society of Canada. As well, he was awarded the Buchan Prize of the Royal Meteorological Society for outstanding contributions to the society's Quarterly Journal from 1959-1963.

Dr. Godson, a native of Victoria, was a scholarship student at UBC and received a Ph.D. from the University of Toronto in 1948. He joined the meteorological branch in 1942 and has made notable contributions to meteorology in research. Over 100 of his papers have been published and he has won international recognition as an outstanding authority on cloud physics, stratospheric circulations, ozone and radiation.

Chicago—"Damage to Ottawa Air Terminal By Sonic Boom" was the title of a paper presented June 25 by W. Alec Ramsay, chief architect, major terminals, at the symposium on effects of sonic booms on buildings during the 67th Annual Meeting of the 2,000 member American Society for Testing and Materials at Chicago.

More than 4,000 engineers and scientists attended the week-long meeting, at which 38 formal technical sessions and more than 1,200 committee and sub-committee meetings were held concurrently.

The Chicago-based society is an international non-profit body devoted to "the promotion of knowledge of the material of engineering and the standardization of specifications and methods of testing."

Ottawa—Ever wonder how fast a bottle travels as it bobs along in the water? Would 800 miles in 7½ days or less surprise you? News On The DOT, too, found it hard to believe. However, when two D.O.T.'ers, each with 40-odd years of service, confirmed the facts we accept the incredible story that at least one bottle journeyed 100 miles a day or more from the mid-Atlantic to a tiny bay on the west coast of Scotland.

It all began about midnight on April 28 when Ed Davy, who retired as officer-in-charge of the Almonte, Ontario, monitoring station earlier that month, tossed a bottle overboard about mid-Atlantic. Mr. Davy and his wife, travelling over to England and the Channel Islands to visit relatives, thought of their old friend Jack Brooman of the telecom lab at Ottawa Airport and decided to put his name and address on a piece of paper, seal it up in a bottle and throw it into the ocean. They fully expected, if any one ever found it, it would be months or even years later.

However, not two weeks had passed when Mr. Brooman received a letter from

Patrick Bay, Scotland, telling how the writer had picked the bottle up at noon on May 5, just 7½ days after it had been tossed overboard.

Mr. Brooman was flabbergasted. He wrote post haste to Ed Davey in the Channel Islands asking how far the bottle had travelled. The reply was that at noon on April 28 the ship's log showed them to be about 1,000 miles from England. Assuming the ship was about 200 miles further along between then and midnight when the bottle was thrown overboard, the bottle travelled some 800 miles to Patrick Bay, Scotland. A hundred miles a day, or even more if the bottle was on the beach a day or so before it was found, seems pretty good going. Best of all, it required no postage stamps to get it there!

Peterborough—An organized safety program has been in effect along the Trent Canal for several years. The program is designed to promote safe working habits and conditions for operating, maintenance and construction personnel and for the boating public using the system.

The central safety committee makes an annual visit to each of the canal divisions early in the navigation season to pass on up-to-date information to field personnel.

To date the committee has been successful in having safety helmets adopted for all work, for obtaining safety scaffolding for gate painting and for safety railing on control dams, and other such physical aspects of safety.

The main work of the committee, however, has been instilling the idea that safe working practices and good housekeeping pay dividends to the employee and the department by reducing accidents.

Sydney—On March 7, 19 scouts of the 17th Sydney Boy Scout Troop visited aboard the CCG icebreaker Sir William Alexander as guests of Captain Ivan Green and Chief Officer Earl Jennex. From the following account published in the *Owl Hoot*, the troops' monthly bulletin, they obviously were impressed, particularly by the vessel's color scheme. "She's painted the violently visible color Fire Engine Red No. 16." (Even we didn't know the number of the paint before reading their report!)

The photo of the CCG Sir William Alexander is from a 35 mm. color slide taken by C/Off. Jennex. He was using a Pony II camera and Kodak chrome No. 2 film. The original color was excellent.

THE 17TH VISITS ICEFIGHTERS

In Canada, ice is more than a substance; it's a besieging force.

To cope with it—to aid Gulf shipping, escort supply ships to defence installations and Northern Affairs outposts, so far north they're off the top of most maps; to break ice jams, rescue sealers, fishermen, lighthouse keepers, and European vessels that head for Canada; Canada's Department of Transport maintains an ice breaking fleet second in size only to Russia's, that is—10 full icebreakers.

All vessels in the Gulf area are asked to report to the ice operation office in Sydney, N.S. for routing. The safest route through the Gulf of St. Lawrence is reported to ships by Capt. E. Kelso, the ice information officer at Sydney. This is based on on-the-spot observations and reports from shipping, supplemented by ice reconnaissance flights. The Sir William Alexander is a specially powered armoured monster that can really battle the ice floes. She's painted the violently visible color Fire Engine Red No. 16.

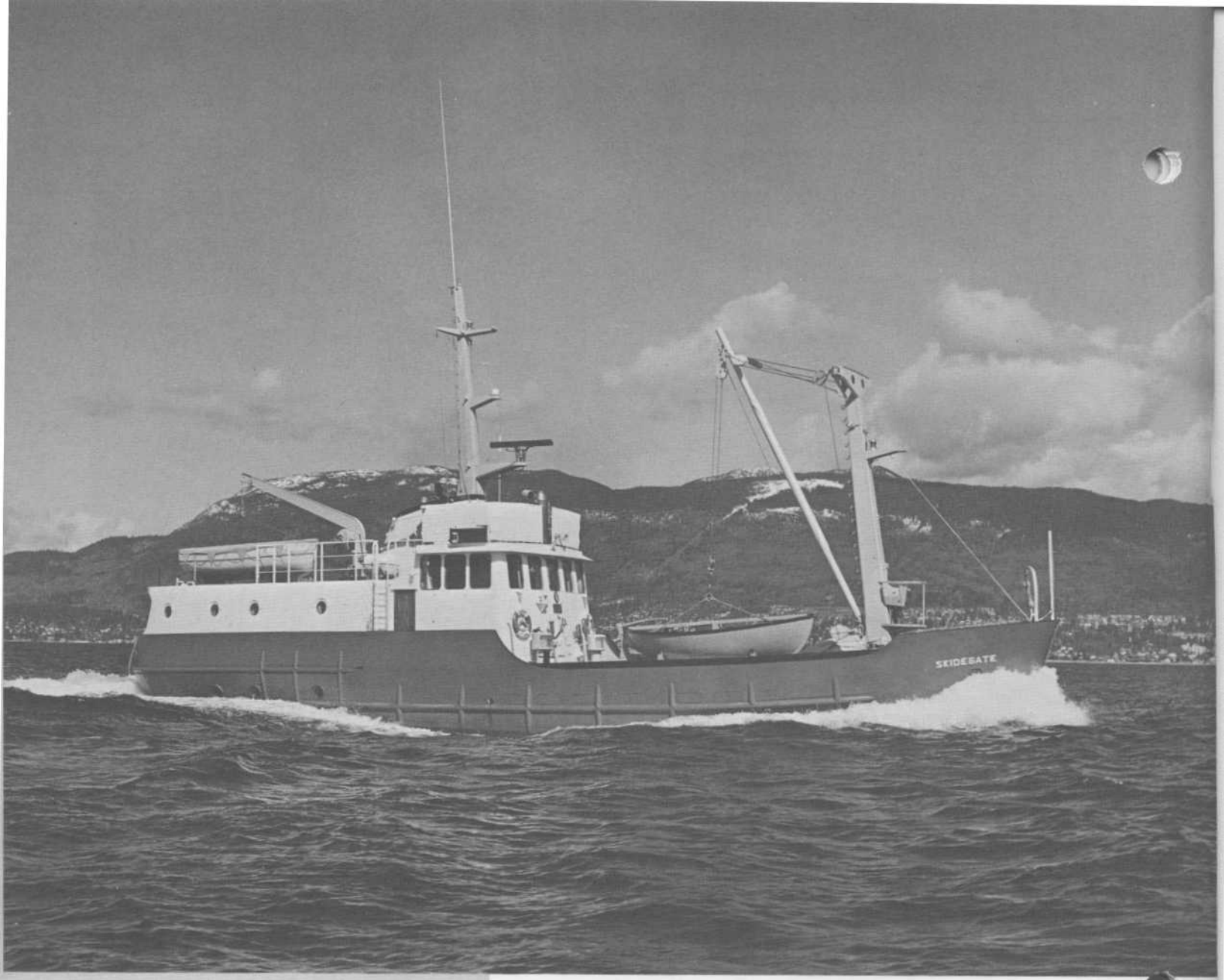
The Sir William Alexander has extra steel plating bow to stern and from keel to well above her water line. Like all icebreakers, she's round bottomed, and has a long slope to her bow—a necessary feature as an icebreaker operates by "running aground" on the ice and breaking it with her weight.

On March 7, 19 Scouts and 2 Scouters from the 17th, boarded the icebreaker Sir William Alexander. In a matter of minutes, introductions under way, and soon we were under way, leaving the government wharf, cutting our way thru harbour ice.

During the cruise, to the mouth of the harbour and back to dock, our group—the Swallows (Honour Patrol of 1963) and the Arrow Patrol, had a guided tour of the ship—from the large engine room, with six diesel engines, thru the decks, quarters, galley, dining room, up to the wheel house, where the navigating is done; here we saw the compass for keeping on course, the radar screen, and near by the radio room (where we almost lost Roger) and the chart room, where the ice floes are kept track of.

The Owl Hoot on behalf of the 17th, St. Anthony Daniel Troop extends their thanks to Capt. Ivan Green and Chief Officer Earl Jennex and crew for a most interesting and educational experience. Many thanks; Icefighters.

Several members of the Central Safety Committee recently took part in a one-day program on construction safety attended by some 30 canal employees. Left to right they are: W. H. Tuckett, mechanical engineer; J. Hughes, Kirkfield division canal superintendent; L. St. C. Willett, deputy superintending engineer; D. A. H. Farmer, superintending engineer; and S. Wawrykow, machinist foreman. Two other members of the committee, G. E. Easton, canal superintendent, and E. H. Crowe, maintenance supervisor, were away at the time of the course.



Canadian Coast Guard ALBUM

CCGS SKIDEGATE

The Prince Rupert District Marine Agency tender Skidegate is a newcomer to the Canadian Coast Guard fleet. She was completed in April, 1964 at the yard of Allied Builders, Vancouver, B.C.

LENGTH: 69 feet, 10 inches

BREADTH: 16 feet

DRAFT: 4 feet, 7 inches

POWER: Diesel, 320 brake horsepower

GROSS TONNAGE: 136