

The Canadian Hydrographic Association
Association canadienne d'hydrographie



NEWSLETTER

*** June/August 1999 ***

Vol. 13, No. 4

Canadian Hydrographic Association
Central Branch
1999 Executive

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Central Branch Committees

NewsLetter/Web site

J. Weller, J. Berry, T. Herron, J. Weedon, L. Robbins.

Lighthouse (Central Branch)

T. Herron, E. Brown, T. Janzen, E. Sinclair, J. Weller.

Social Events

H₂O: E. Brown, B. Power, J. Miles.

BBQ: T. Janzen.

AGM: T. Herron, A. Leyzack.

International Members

F. Oliff, T. Herron, P. Knight, L. Robbins, J. Weller.

Membership/Nominations/Elections

A. Koudys, T. Herron.

Seminar

F. Oliff, T. Janzen.

Wade Essay Award

E. Brown.

Admiralty Launch Surveyor

A. Leyzack, W. Warrender, J. Dixon, B. Power,
H. Duller, J. Miles; E. Brown.

Notes from the Branch Vice-President

If someone were to ask you why you belong to the Canadian Hydrographic Association, what would your answer to that person be?

Many people join associations like the CHA in order to be a part of an organization, a part they feel may be lacking in their work environment. Others are "joiners", people who pay their yearly dues but never partake in any of the activities of that organization. It is the camaraderie, the feeling of "belongingness" that I think most people are after. The feeling of being part of a team, and accepted as an important member of that team, is very strong. It is an aspect of our society that is often overlooked.

There are some who may join in order to get the monthly newsletter or the journal *Lighthouse*. These are tangible items, something you can hold in your hands, read, and then put on your shelf if that is where you store such items. This is, for some people, all that they want. I cannot echo those feelings, which brings me to my point!

I do not belong to very many organizations like the CHA, but those to which I do belong I like to give back.

This volunteerism is what makes an association. You get back from an organization, I believe, what you put into it. If you don't like what you get from an organization, perhaps you should examine why it is you belong to it and whether you could or would like to help it become the kind of organization you think it should be.

We'll mail out a flyer with details of our next Branch meeting. In the meantime, I look forward to meeting you all at our Summer BBQ [details on page 5].

An important date: the 1999 Central Branch AGM & Dinner will be on **Thursday 9 December** at our regular location: *Mimico Cruising Club*, Etobicoke. Many thanks to the Club for allowing us to use their lovely facilities again this year. Hope to see you there.

In closing, may you all have safe and happy summers and do all of those things that bring you health and happiness!

Keep the wet side down and your paddle in the water!

— Fred Oliff.

Frank P. Hunt, Surveyor (1921-1999)

From the National Post, Saturday, March 27, 1999

Frank Hunt, an Arctic surveyor who helped draw the 60th parallel, the line that separates the four western provinces from the Yukon, Nunavut, and the Northwest Territories, has died aged 77.

From 1953 to 1957, Mr. Hunt surveyed the 60th parallel. He preferred the winter since the swamps, muskeg, lakes, and rivers were frozen. Surveying teams worked with a tripod with a telescope on top, aimed at a target on another tripod as far away as they could put it. They triangulated their way across the north, sometimes covering 80 kilometres a week, sometimes only a few kilometres in mountainous terrain.

Much of it depended on the line of sight, or how far away the surveyors could place their "target" tripod. This was before the snowmobile or the helicopter. Mr. Hunt traversed the north on snowshoes—his colleagues preferred skis, and teased him about his old fashioned footwear—on dog sleds and in single-engine Otter aircraft that could land on ice and snow with their tires and skis. On surveying trips, the teams would work from a base camp, but in the field they lived in tents. They spent as much as three months in winter and two months in summer mapping the north the hard way, from the ground.

Mr. Hunt was so calm about his work that nothing seemed to bother him. His colleagues say he would calmly level his tripod on shifting ice that would send most people scrambling for shore. This coolness came

from a man who couldn't swim. He was prized as a travelling companion because of his luck and his eye for solid ice.

Francis Patrick Hunt was born in Argentia, Newfoundland, on Aug. 10, 1921, the son of a blacksmith. His father died when he was just 3 years old and his mother, Mary, raised three boys and four girls on her own. At the outbreak of the war, the 18-year-old chose to join the Royal Canadian Navy. After the war, Frank worked in the Maritimes for several years before being hired by the federal government, for the Survey and Mapping Branch of the Topographic Survey of Canada. In 1947, he received his NSLS at the Nova Scotia Land Survey Institute. Mr. Hunt became known for something they couldn't teach in school: An obsession with accuracy and the ability to work in temperatures of -40C as if it were a spring day.

After his survey of the 60th parallel, Mr. Hunt was the most experienced Arctic surveyor in the country. He was the first surveyor hired for the Polar Continental Shelf Project (PCSP). Mr. Hunt signed on at the start and stayed with the project for 34 years.

After he retired from the PCSP in 1993, Mr. Hunt led a quiet life at his home in Ottawa.

Mr. Hunt received the *Centennial Medal* in 1967, and the *Canada 125 Medal* in 1992. His daughter, Patricia, is a geologist with Geological Survey of Canada in Ottawa.

From the NewsLetter Committee:

This summer edition of our newsletter brings several interesting items: a letter from Fred Oliff, our V-P; a column from Keith Weaver on In-House [CHS] Members; an International Column from Larry Robbins; news on our launch *Surveyor*; and a double Out-House column from Jim Berry. Thank you all.

Ken McMillan, CHA National President, has been very busy and his Message did not come in time for publication; we'll have it in our Fall NewsLetter. However, this gives us the opportunity to bring you an appreciation of Frank Hunt, a remarkable Canadian surveyor.

Mark this on your calendar! Thursday 9 December is the *Central Branch 1999 AGM and Dinner*. This is your opportunity to make your voice heard, to catch up with your fellow members, and to have an interesting and tasty evening out. As in past years, this will be at the Mimico Cruising Club.

News from the other Branches

Pacific Branch is the only Branch that was able to get their news to us in time for this issue [check their web site: <http://www.ios.bc.ca/cha>] We hope to have news from other Branches for our fall NewsLetter.

Dave Gartley, V-P of Pacific Branch, sent us a copy of their newsletter *Sounding Board*. Editor Rob Hare has produced two issues this year, filled with interesting and newsy items. One of the items was a report on the Canadian Hydrographic Association Malaysian project by Barry Lusk, back from a twelve-day planning visit to the University of Technology (UTM) in Johor Bahru and Kuala Lumpur, Malaysia:

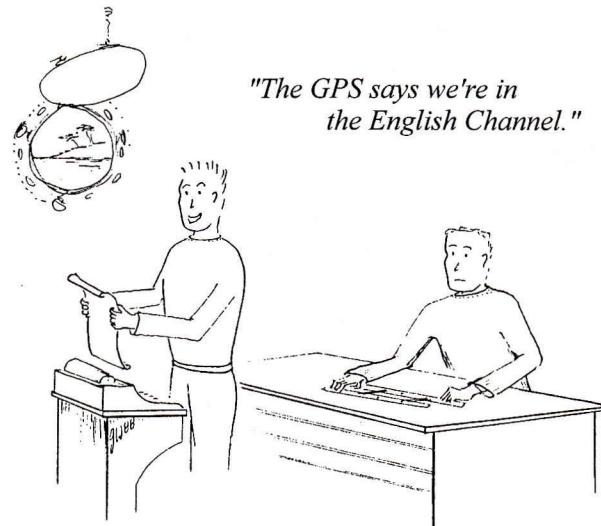
Barry undertook this trip to further develop CHA's involvement with the up-coming Category A hydrographic training course scheduled to begin in July. T. McCulloch, Project Manager, has held discussions with instructors Dr. David Wells, Ken McMillan, Dave Pugh and Dave Dodd and also with Shahlan Mardi of the UTM.

UTM has recently earned accreditation at the Category A level from the accreditation board of IHO/FIG this past July in Tokyo, Japan.

Three Cat B courses, each lasting 6 months, have been completed over the past three years and now the first Cat A course, scheduled to last 4.5 months, is about to take place. The Canadian Hydrographic Association project finances and personnel have supported each of these training sessions.

The CHA's project management has provided Canadian instructors to all the Cat B courses and now plans on having four Canadian instructors in the first Cat A course.

Canadian instructors' involvement in this course will begin in late July and finish in late August. All of the costs for these instructors will be provided by the funds allocated to the project by the Canadian International Development Agency.



"The GPS says we're in the English Channel."

The project will be complete at the end of 1999. The need for additional CHA/CIDA assistance to the UTM Hydrographic training program beyond 1999 will be reviewed by project management and the Project Advisory Committee (PAC) in May and June this year.

Other newsy items included reports on their AGM and a meeting featuring a multi-media presentation on the survey of proposed Pilot Marine Protected Areas at Race Rocks and Gabriola Passage. Data acquired included EM3000 MBES surveys, QTCView seabed classification, physical sampling, side-scan sonar imagery and underwater video from Coastal and Ocean Resources Inc.

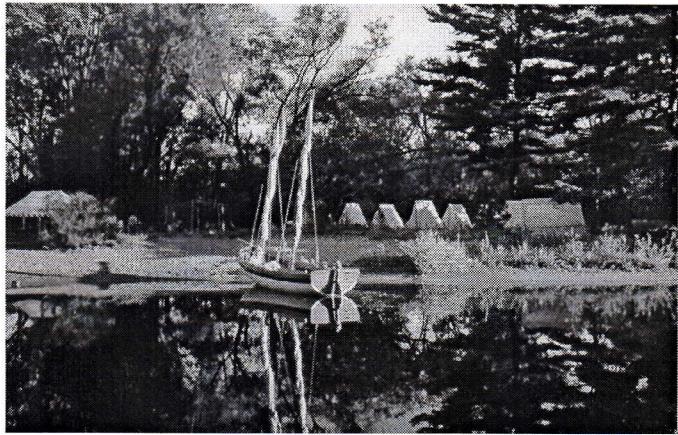
Social events included their 12th annual CHA H₂O Bonspiel. On Sunday September 19th, they will host a "Welcome Home" BBQ at IOS, and their Photo Contest is on again this year, probably on November 3. And several of their members placed honourably in the local 1999 Garden City 10km Run. Congratulations!

Another intriguing item is mention of a Bent Propeller Monument: In 1998, hydrographic staff on the CHS barge *Pender* erected "The Bent Propeller Monument" at Oliver Cove, British Columbia. This monument is a visible reminder to all who navigate the British Columbia coast of the many unknown dangers that lurk below the surface. It also pays tribute to the men and women of the Hydrographic Service who attempt to find and chart these hazards. The thought leaps to the mind that perhaps the bent propeller was once *Pender*'s?

Fred Oliff is circulating copies of these newsletters to In-house Members and they will be posted on our web site. Fred will be glad to send a copy to any members who are interested. Just give him a call.

CHA Heritage Launch Surveyor

Harry Needham is the Curator of the Canadian War Museum, which was a sponsor of our Admiralty Launch until this year. Our *Surveyor* encampment on Toronto Islands in August 1998 inspired this letter:



Dear Mr. Needham:

This past weekend I had taken the ferry over to the Toronto Island for a bit of relaxation as has been my habit for a number of years now. Imagine my surprise as I neared Snake Island (my favourite spot) to see an encampment of tents. My first thought was that they belonged to some outdoor group. My initial surprise turned to instantaneous delight when I realized that this was a re-enactment of some sort. By the time I had made my way over the bridge, lo and behold didn't a small craft appear fully loaded with rowers etc. and flying the Union Jack. What a stroke of luck and me without my bloody camera. Damn.

After watching the crew put the vessel through her maneuvers, I made my way over the bridge and into the camp where I was informed that, no — I had not travelled back in time but had stumbled onto the re-enactment of Lt. Joseph Bouchette's Hydrographic Survey of 1792. Bouchette and his party had indeed encamped on the island but as to the exact spot, it was never recorded. How bloody marvelous.

I had a wonderful time with the participants and promised I would be back amongst them the following day with my camera. The enclosed photos are the result of my return trip and are for your pleasure. The "Carpenter" told me to address the package to you c/o the War Museum and that you would be most appreciative in hearing about how much I had enjoyed this wonderful re-enactment of the founding of Toronto just a scant two hundred years ago.

Since I missed the "Surveyor" under sail with her crew in my photo session, would you be able to tell me where I could get copies of any to complete my set?

Let me end by saying thank you to all those involved in making this a most memorable Simcoe Holiday Weekend.

Yours, Gary Beecroft, Toronto.

Toronto Region Conservation Agency (TRCA)

By Jim Berry

(On page 7, Jim gives the early history of the TRCA building.)

The TRCA is the agency responsible for the recreational development and shoreline management of the north shore of Lake Ontario under its jurisdiction. The TRCA is implementing a program of waterfront land acquisition and creation to provide numerous recreational opportunities as well as to protect proposed new small-craft harbour facilities and to prevent erosion.

Humber Bay Park Phase I landfilling operations on the west side of Mimico Creek were initiated in 1971 and had created 8.5 hectares of land base by 1974. Officially opened in June 1974, this area provided facilities for boat launching, day mooring and passive recreational uses.

Phase II landfilling from 1975 to 1979 added 17.4 hectares (ha) of land base to the existing Phase I project. This westerly extension was designated in a configuration that would provide 21 ha of protected water for boat basin development.

The combination of these two landfilling operations formed the Humber Bay West park area.

The TRCA developed the park area adjacent to Mimico Creek for boating use by the general public. Facilities in this area include boat launching ramps; day mooring tie up areas; washroom building; and parking areas.

Passive recreational activities are accommodated by a scenic drive along the park's outer perimeter, with parking facilities at the various hard points; providing viewing areas and access to the protected beaches.

The *Humber Bay Boating Federation* and its, member Clubs, the *Etobicoke Yacht Club*, *Mimico Cruising Club* and the *Humber College Sailing School* has responsibility for the development of the boat basin. In accordance with the three party leasing arrangement between the Boating Federation, the Authority and the City of Toronto, all developments must conform to the Master Plan.

The *Etobicoke Yacht Club*, with 10.03 ha of leased land and 11.11 ha of protected water, has developed the following facilities: 350 wet mooring berths; 115 space dry sailing area; and Club House building.

The *Mimico Cruising Club* has similarly developed its leased 10.02 ha of land and 11.25 of protected water to provide: Club House; and 350 wet mooring berths.

The *Humber College Sailing School* has built a classroom building, parking area and docking facilities on its leased 0.793 ha of land and 0.75 ha of protected water. This school conducts sailing courses for approximately eight months of the year.

The International Column

By Larry Robbins, Commander, RNZN

The year is almost half through. The antipodes are apparently into winter (in Auckland we are having a spell of really quite balmy weather as is much of the country - except of course the deep south where our survey ship is working!) and the northern hemisphere is shaping up for summer.

This year has been remarkable in New Zealand for the new technology which has been seen and used in hydrographic work here for the first time. SHOALS was brought out to the country in the first deployment of the lidar system outside of North America and for the first time in a fixed-wing aircraft. I enjoyed the American personnel who brought the system out and appreciated the opportunity for a demonstration flight. My organisation - the RNZN Hydrographic Service - utilised the services of LADS Mk II, a commercial derivation of a system originally developed for and by the Royal Australian Navy. I have to say that I was extremely impressed by LADS MkII and the team that came with it. The solid hydrographic pedigree of the system was clearly seen and extremely good depths were achieved (almost down to the stated maxima at times). Even though the LADS team are Australian (sorry fellas, a low blow!) they were a great pleasure to work with and the results they have rendered are, I believe, excellent.

At the same time, the RNZN commissioned our new MBES system, an Atlas MD2/30, into HMNZS RESOLUTION. The timeframe for the installation of the system became a little compressed, whereas the necessary start date (for the contract which has to be completed by the middle of the year) remained fixed. The installation was somewhat complicated by the necessity to build a special 'pod' for the transducer installation. This was built of modern plastic/carbon fibre technology which is helping to give NZ such a good yachting reputation. The pod sits about 1.5 metres below the keel and certainly concentrates the mind of the ship's captain! Amazingly enough it has improved the ship's speed by almost 5% as well as improving the turning characteristics. I never did understand hydrodynamics!

The system is going well and giving good results. We were fortunate to have Dr John Hughes-Clarke out here to assist us with the trials and his in-depth knowledge of multibeams (bad pun, sorry) was invaluable.

I have largely concentrated on 'things' thus far. In terms of 'people' there is not a lot to report from International members apart from news of Nick Emerson who did not, after all, return to Europe but remains in Hong Kong having been offered a position at the Polytechnic there.

Fellow NZ-based member Peter Knight seems to be enjoying Dunedin. His Canadian pedigree shines through as (amazingly!) he is still surfing. He was kind enough to invite me to the university to pass on some of our experiences with the multibeam. I found the helicopter noise from the rescue helicopter coming into the hospital to be very distracting. Peter agreed, but said that the value of the windsock in giving him a hint about likely surfing conditions made the noise worth enduring!

I should also mention that Peter is Secretary of the NZ Region of the Hydrographic Society and editor of our newsletter *Boustrophendon*. Gary Chisholm is a committee member and Webmaster of our Homepage, see below.

A couple of other interesting International items:

Guenter Bellach:

bellachg@br.ksc.co.th or bellachg@a-net.net.th:

You may remember the short talk about my trans-Pacific crossing by sailboat I gave some years ago at a CHA Branch AGM. I now have my own homepage:

<http://www.bangkok.com/mypage/bellachg/>

where anybody interested can read a thorough account.

Gary Chisholm:

The main thing I want to say is that the NZ Region of the Hydrographic Society web site I put up is getting some good traffic. We reckon 200 people a month view it <http://www.hydrosoc.org.nz> with 70% being international (i.e. not NZ). I am updating it and hope to have a brief overview of the two airborne laser systems used recently in NZ for bathymetry mapping. Also my team from Trimble was at the two big shows: Oceanology International 99 in Singapore and HYDRO'99 in Mobile USA. Our booths at both shows were darn busy proving there is still a lot of life in the hydrographic/marine survey business... even with a low oil price.

Gee I was watching TV the other night and saw NZ got pretty close to the top for the World Curling competitions! I only thought this was played on some frozen lakes in the deep south of NZ...

Keep in touch, everyone. Drop me a line with your latest newsy item — your letters and cards are much enjoyed.

Do try the NZ Region HS Web site Gary mentions above.

LARRY ROBBINS

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e-mail: larry@robbins.gen.nz

web site: <http://www.robbins.gen.nz/>

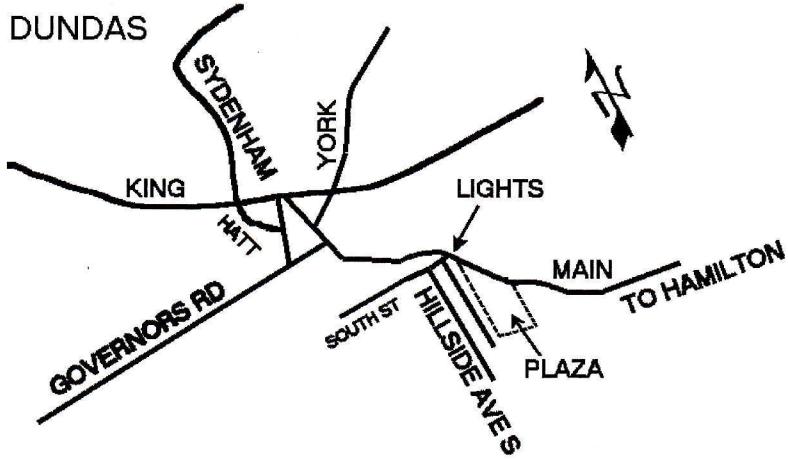
ANNOUNCING THE 1999
CANADIAN HYDROGRAPHIC ASSOCIATION
CENTRAL BRANCH
ANNUAL BARBECUE!!

Saturday, July 24th at 1:00 p.m.

**Place: The residence of Terese Herron and Shawn Cook in Dundas.
All CHA members, families and friends are invited to attend.**



Hotdogs and hamburgers with all the fixings, plus beer, wine and pop will be provided. Please bring either an appetizer, munchies, salad, or dessert and a lawn chair.



Location: 25 Hillside Avenue, Dundas.

From Hamilton, take Hwy 8 and turn left at the South Street lights, then left to Hillside Avenue. From Hwy 5, take Sydenham Road to King Street (Hwy 8). Turn left and follow Hwy 8 to South Street and turn right at the lights. Turn left to Hillside Avenue.



Branch Members on CHS Field Surveys

By Keith Weaver

The CHS field season is now under way and this year brings a much reduced field effort. There are currently two surveys, Georgian Bay and Revisory.

Mina Foroutan and Ken Dexel are CHA members participating on the Revisory survey. It started the field season with a trip to Kingsville on Lake Erie on May 17. The Revisory vehicles, a cube-van for the office and a utility-truck, were packed full. Both vehicles had undergone a customized paint job, prominently displaying the CHS crest and website along with some graphics to help identify us.

Armed with LFGB and McKee launches, they have taken on the task of testing the new ISAH datalogger replacement. It is a standard PC retrofitted in a rackmount case running Hypack-Max data-logging software by Coastal Oceanographic. They will be using Novatel R2 GPS receivers along with Knudsen 320M sounders. Currently they are processing with Unix HIPS software from USL on an Alpha workstation along with a desktop PC for auxiliary data processing (e.g. GPS backpack data collection of shoreline).

The Georgian Bay survey is aboard the *CCGS Griffon*. Here is a collection of standard launch and data-processing technologies, integrated alongside with current Unix HIPS multibeam processing and data collection. This survey's HIC is John Medendorp; Raj Beri is the 2IC. Al Shepherd is operating the Multibeam Launch *Petrel*, Paola Travaglini and Tim Janzen are processing the multibeam data. Glenn Macdonald and Mike Marsden are working with the other launches. Standard survey data from five launches (four Hourstons and one LFGB) are being transferred from ISAH data cartridges to the VAX, then to Unix single-beam HIPS for processing and field sheet preps in CARIS. This survey is expected to run to mid-July.

There will be two surveys in the Western Arctic: Jon Biggar will be running a survey from the *CCGS Nahidik* and Andrew Leyzack will head-up an opportunity-based survey aboard the 1100-Class icebreaker *CCGS Sir Wilfrid Laurier*. The *Laurier* survey will join the ship at Kugluktuk (formerly Coppermine), Nunavut Territory, and from there will be operating from Dolphin and Union Strait to Peel Sound. Sounding data will be collected from the ship and one Argos launch supplied by Pacific Region, using the Quester Tangent ISAH system. Using data collected from the 1998 surveys, the survey plans to demonstrate an S57 Electronic Navigation Chart (ENC) to Coast Guard and Northern Transportation Co. Ltd. (NTCL) in Simpson Strait. The ENC will be supported using the Hypack-Max software.

Working with Jon Biggar on the *Nahidik* is Dan Dexel and Arnie Welmers. They will be operating Hourstons, collecting data via Hypack and processing with HIPS on Harbour and Approach surveys in the Western Arctic between Holman and Hercshel Islands. Staff from Central and Arctic's Oceans Directorate will join the survey; this is a great opportunity to execute scientific investigations co-operatively with CHS and CCG.

With the reported low water levels this year, we wish all our field staff good luck. Keep your keel clear and your eyes peeled, we wouldn't want to see you high-and-dry.

Fine people, those West Island folk...

Contributed by Larry Robbins

Once upon a time in the Kingdom of Heaven, God went missing for seven days. Michael the archangel eventually found Him in a remote spot off to the side of the Universe. He asked God, "Where were you? Everyone was really worried!" God sighed a deep sigh of satisfaction and proudly pointed down through the clouds. "Look, my loyal servant. Look at what I'm making."

The Archangel Michael was puzzled. "What is it?" He asked. "It's a planet, and I'm putting LIFE on it! I've named it 'Earth' and there's going to be a balance between everything on it. For example," he pointed, "there's North America and South America. North America is going to be rich and South America is going to be poor, and the narrow bit joining them - that's going to be a hot spot. Now look over here. I've put a continent of black people in the south, and another one of white people in the north. See?"

"Wow!" the archangel voiced his praise, scanning his eye over this wondrous Creation. "And what's that long white line there?" "Ahhh," God said, tapping His nose. "That's New Zealand - the land of the long white cloud. That's a very special place. That's going to be the most glorious spot on earth-beautiful mountains, lakes, rivers, streams, fascinating flora and fauna, and an exquisite coastline. The people there are going to be modest, intelligent and humorous, and they'll be found travelling all over the world. They'll be extremely sociable, hard working and high achieving. And I'm going to give them this superhuman, undefeatable rugby team which will be blessed with the most talented, and charismatic specimens on the planet, and will be admired and feared by all who come across them."

Michael the Archangel gasped in wonder and admiration, but paused... "Hold on a second, Oh Father... what about the balance? You said there was going to be balance in all things..." God chuckled. "Wait until you see the neighbours I'm going to give them..."



From the Outhouse

by Jim Berry

An important item of news is that fellow Out-houser Joe Delle Fave and his wife Betty are again proud parents. Our congratulations to their son Mathew Alexander, born on January 25th. Everyone is doing fine.

As you might recall, the October 1998 CHA Branch meeting was held at our office in Scarborough. For those who did not attend the meeting, our office building is at the bottom of Eastville Avenue in the Brimley Road/Kingston Road area. It is a rectangular one-story nondescript building that overlooks Lake Ontario. This building which is nestled amongst a quiet shoreline community has a unique and interesting past.

Some interest was expressed in the history of the building and I promised I would check into it. I came across an article written by one of our Environmental Services staff, Gord MacPherson, that does a good job with some of the history:

The building was built during the Second World War to test and develop small radar units for weapon systems. During the 1940's this section of Scarborough Township shoreline was predominantly farmer's fields and summer cottages. It was a perfect place because of its relative isolation and broad vista of the lake. The base was also strategically situated between the Toronto Island Airport, which was an air force training facility, and the famous Camp "X" in Whitby. Remaining on the property is an underground bunker.

After the war, the base was decommissioned and turned over to the federal government as a weather station. The weather station lasted for ten years until it was closed in the mid 1950's. The Toronto and Region Conservation Authority (TRCA) bought this property for a nominal sum in the early 1980's, because for the most part it was classified as hazard land and was unsuitable for redevelopment. The first time I was in the building it was just after it was transferred to the Conservation Authority. You could see the evidence of its past under 30 years of dust. There were pictures of crew-cut scientists launching helium weather balloons over the Lake. There were labs with cartons of weather balloon payloads, and an internal layout of the building that gave hint of its military past. At one time it was also the training station and home base for the Toronto Police Canine Services.

Since its resurrection, the Eastville Avenue Building has been turned into an office facility for the Conservation Authority and City of Toronto Parks and Recreation. Our staff at this office are the waterfront development unit responsible for the construction and implementation of shoreline regeneration projects. They are the people that actually build our waterfront parks like Bluffer's and Ashbridges Bay. The City of Toronto

Parks and Recreation Staff actively manage the day to day upkeep of the parks. This building has had a big role in the country and the development of our lakeshore.

Thought you might also be interested in the park which houses the Mimico Cruising Club. (Our AGM location for the past 9 years.)

The Club has been built on land owned by the Toronto and Region Conservation Authority (TRCA). The land base known as *Humber Bay West Waterfront Park* was created through lakefilling.

(See page 3 for the rest of the story.)

The *Mimico Cruising Club* has developed its leased 10.02 hectares of land and 11.25 ha of protected water to provide Club House and 350 wet mooring berths.

The boat basin entrance is marked by two lighthouses, purchased by the boating federation from the Toronto Harbour Commissioners. Other navigational beacons on the outer shoreline have been provided by the TRCA.

So now you know where I work and the types of projects we work on. How about hearing from you?

Till next time.

Knudsen Engineering Ltd. is pleased to announce the latest addition to their 320 series of echosounders. The new 320B/R rackmount version of the 320B is a deep-water system with 10Kw transmit capability for full ocean depth sounding to 10,000 metres. The Scripps Institution of Oceanography, in California, has recently purchased their third 320B/R for use on their research vessels.

Now in use in more than 17 countries world-wide, Knudsen Engineering reports multiple 320M orders from the international dredging company Boskalis. Recent follow-on orders for seven additional 320M units for the Canadian Hydrographic Service's Central and Arctic Region move Knudsen equipment towards the goal of setting the standard for hydrographic survey sounders in Canada.

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