



## The News Letter of the Burlington Radio Control Modelers Club

Box 85174 Brant Plaza, Burlington, Ontario, L7R 4K4

### Editorial

The next meeting is our annual general meeting when the members get to elect the executive for next year. Your current executive will make every effort to make this a painless procedure but your vote for or against the volunteers is essential for the health and well being of your club. A chart showing the current members of the executive is included with this edition.

In this month's edition it is my pleasure to present an article by Norm Harris and I have taken on the role of technical "expert" in the matter of engine performance; specifically, 2-stroke V. 4-stroke. I hope that I will have (a) clarified the issue or (b) started an argument which will take the form of a rebuttal to your newsletter.

As always, I am looking for input from the membership. I can be reached at 416-622-3705 or by *(new)* E-mail: [Lawrence.Cragg@Sympatico.ca](mailto:Lawrence.Cragg@Sympatico.ca) or S-mail to suite 2010, 820 Burnhamthorpe Road, Toronto, M9C 4W2 or FAX 416-622-4134

### The President Writes:

Happy New Year everyone. It is my wish that health and happiness are with you throughout the coming year as well as many more after that.

At 9:00 AM on January 1st, 2001, our esteemed MAAC V.P./Middle Zone Director Wayne Bransfield was the first member of the Burlington Radio Control Modelers to take to the air. It was a beautiful morning, with a good solid snow base over the runway, well packed by wind and snow mobiles. The sky was blue, the sun was shining, and the wind was barely discernible. The temperature was hovering around a cool -7 degrees C. All persons dressed for the weather found it extremely pleasant and bright. Add to this a turnout of about 40 people and hot chili provided by Keith Lush as well some with a little more 'nitro' in it by Bud Childerhose, it was a pleasant experience for the start of the new year. Everyone had a smile upon his face and had a great time. The morning was busy with aircraft continuously in the air, powered by standard glow engines, gas engines and electrics. Thank you to all who participated and made this one of the best turnouts for our club. Of course Art Titmarsh showed up in his short pants, claiming that his long pants were in for their annual laundering.

**The January meeting is our Annual General Meeting and you are receiving official notice of this meeting with this mailing or reading of the newsletter.** We are holding our annual elections for the Executive and Board of Directors. You are encouraged to attend and include your voice to the elections.

### *Next Meeting Thursday, January 25th Annual General Meeting & Election of the Executive*

Being your President for the last two years has been a privilege and an honour. It is certainly a humbling experience to be in front of the membership each month but I have been blessed with a supportive and genuinely interested Board of Directors. In many cases, they have taken it upon their own initiative to take ownership of many of the duties and tasks that must be completed to provide you, the members, with a safe and reputable flying site. The most difficult jobs are looked after readily by volunteers and this makes the experience of being President most rewarding. Some of our Directors are continuing into the next term and some are not. To all of them, my most sincere 'Thank You' for your suggestions, assistance, support, and most of all, your friendship. I am truly a richer person for having worked with all of you. I am sure that the membership will support the new Executive and Board, as you have supported me these last two years.

Perhaps now I can get some time to build and fly in the coming year!

Update for the Mitsubishi J2M-3 Raiden (Jack) – Fuselage is almost complete, tail feathers are installed, and fillets in for the fin and stabilizer.

Foam cores for the wings were cut by Karl Gross, ailerons, and flap areas cut out of the cores, and the false ribs for the flap area installed. They have not yet been sheeted. I have since started to cut out the cavities for the aileron servo's and have obtained the pneumatic Robart retracts for the gear. The scale locations have been located and marked for the installation of the retracts, but the cavities not yet cut out, nor the routing for the air lines, at the time of this writing. I also need to start the framing up of the ailerons, elevators and rudder. These will be fabric covered, as in the full scale aircraft.

I will bring to the meeting what has been completed so far, so that those that are interested can see and, if you have questions, please ask. That way I learn too.

That's all for my sessions as President, and I leave you with the usual good wishes:-

Fly often, fly level, but most of all FLY SAFELY!

Bill Swindells

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## Coming Events

*These are the events that I know about so far. Updates and/or corrections are welcome. Help!*

January 25 Annual general meeting & election  
February 22 Monthly meeting  
March 7 Rubber match at the Hamilton club  
March 22 Monthly meeting  
April 26 Monthly meeting  
May 24 Monthly meeting

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## Your Editor's Progress

*Those of you who have read recent editions of this newsletter will know that your editor is building a 1/7th scale P51. Here's a progress report:*

The wing is done with the exception of wheel covers. Apart from that, the wing is ready for 600 grit sanding and finishing. The fuselage is in an advanced state with the tail feathers on and the model is beginning to look right perky.

The fuselage construction sequence is unusual in that one of the last pieces added to the fuselage is the fire wall. However, that let me defer a decision about which engine to use until I had time to think about the whole subject. Some of that thinking found expression in the article I wrote for this edition: see "Torque Anyone?" Another consequence of the unusual sequence is the required installation of the tail wheel before the tail surfaces. This is because there is a double ended link in the fuselage that will be forever inaccessible once the fuselage is sheeted.

So far, the fuselage is not too difficult. We shall see how long that opinion lasts! I have yet to tackle the engine mounting and cowling. It doesn't look hard but it will produce copious amounts of wood shavings.

I talked to Peter Hagens who did such a magnificent job of covering his war birds in Mono Coat Chrome and asked him how difficult it is to do. In essence, he said you need three people: one to hold the model, one to stretch the Mono Coat, and one to do the ironing! I think I'll pass on that idea!

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## Torque Anyone?

*I have frequently been told that 4-strokes produce more torque than 2-strokes and that that is why they are "better." And so, with all of three years experience behind me, I'm going to slay that dragon and, hopefully, provoke an argument or two!*

First of all, 4-stroke engines do *not* produce more power than a 2-stroke of the same capacity. Indeed, quite the reverse: in the general case, 2-strokes produce greater power than 4-strokes. What *might* be true is that 4-strokes have a broader (flatter) torque band than 2-strokes of comparable capacity. Racing motorcycles of a few years ago amply demonstrated the superior performance of 2-stroke engines but with a very narrow power band. We could use engines like that if only we had nice constant speed propellers like the big boys do; effectively an infinitely variable gear ratio.

So what do we want for our model aircraft? We want *power* of which torque is but one component. Power is a measure of work done and is the product of force, distance, and time. For us

concerned with rotating a propeller, the equivalent is torque and RPM ~ the latter term incorporating the notion of distance and time. Ultimately we must convert the available power to thrust. It's thrust (*power*) that makes an aircraft climb – not torque!

To illustrate; imagine an electrically powered aircraft with its propeller locked up. Now apply battery power and, while it lasts, the motor will produce buckets of torque but the aircraft isn't going anywhere except perhaps up in flames. So much for torque! Conversely, put a flat disk on your engine and spin it as fast as you like and you'll not get anywhere with that either. Lots of RPM but no torque (excepting that required to ensure against perpetual motion!) So much for RPM!

For some time, I have been puzzled by the vertical performance of two models of essentially identical weight. The observed performance seems to support the notion of 4-strokes being "better" since the Saito .91 powered model will go vertical and the OS .61 powered model won't. Yet the OS .61 is rated at 1.9 HP – nearly 12% *more* than the Saito .91 rated at 1.7 HP. So what's going on here? Clearly, I'm not getting anywhere near maximum power out of the OS .61 and calculation yields only 0.9 HP because I'm only running at about 10,000 RPM instead of 16,000 RPM where the engine develops its peak power. To get peak power, I'll have to fit a considerably smaller propeller in order to decrease the load and to allow the engine to develop its maximum power. Of course, the noise level is going to be horrible and the fuel consumption worse but it will be interesting to observe the performance.

While I don't have recorded figures for the Saito engined model, I think it is turning a 13 X 7 propeller at 9,000 RPM. If this is true, the engine is developing 1.02 HP – a full 35% *more* than the OS .61. That yields a calculated static thrust of about 7.27 lbs which explains why the model will go straight up (thrust exceeds weight) and would seem to support the "flatter torque" thesis.

So where does all this get me? It takes me more-or-less full circle: At typical prop speeds of about 10,000 RPM, the bigger 4-stroke is running closer to its optimum speed and thus produces more *power*. The smaller 2-stroke is capable of producing as much if not more *power* than the larger 4-stroke but only if it is run nearer to its "red line" – 16,000 RPM in the case of the OS .61. Since power is the product of torque and RPM, then, to develop the same power, the 2-stroke will run at a lower torque but at higher RPM. To use the power developed by a 4-stroke at a relatively lower RPM and higher torque, we get to use a larger propeller. Conversely, to use the power developed by a 2-stroke at a relatively higher RPM and lower torque, we get to use a smaller propeller – just like everybody "knows." In effect, it is simply a matter of matching the load to the engine – just like motorcycles where Hondas are geared to run at some 10,000+ RPM while Harleys are geared to run like steam engines. The efficiency (conversion of power to thrust) of a propeller turning at a very high speed is another matter entirely.

Incidentally, the equation for calculating power includes RPM<sup>3</sup> so the power output increases very rapidly with RPM.

I think I have some very interesting experiments to do this coming season.

Argument? Rebuttal? Aw come on!

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## A DIRTY STORY

*This from Norm Harris:*

A number of members have asked me how I weather my scale aircraft so I thought I would try and put down on paper some of the things I do. A lot of the ideas were developed modeling 1/72 scale aircraft but still apply to our larger models particularly if you don't have an airbrush.

The character acquired by an aircraft as a result of its exposure to the elements offers one of the most interesting features of model building. It lends an opportunity for the modeler to add a touch of realism that transforms a common model into a museum piece. To produce a replica of a real live gasoline burning, gun shooting, fire breathing combat aircraft entails weathering and toning with a variety of materials and techniques. The careful application of pastels is one technique of providing that reality. It is important for the modeler to bear in mind that he is dealing with a reduced scale and, while the effects caused by weather, wear and use should be noticed, they should not become the focal point of the model's finish. Perhaps a good goal to begin with is to endeavor to make a model look used but not abused. If you look at full size aircraft from a distance usually 3-400ft the details and camouflage seem to blend and the further away you get the details completely disappear. Just look at your own bright and highly decorated model when you fly it too far away from you. Therefore, to get the same impression for your 1/6, 1/5, or 1/4 scale, you need to examine your model from a scale distance away compared to the prototype you are modeling.

The following is a list of areas which can be checked with reference to photographs to locate and determine the action and reaction of weather and the aircraft's internal functions on its surface:

**Fuselage:** engine cowling seams, exhaust ports, cooling gills, gun troughs/ports, scoops, vents, louvres, spinner openings, radiator intakes and exits, canopy seams, radio mast, stabilizer hinges, leading and tailing rudder edges.

**Wings:** wing roots, pitot tube, guns, flap hinges, blisters, fairings, hatches and holes.

**Under-carriage:** wheel wells, doors, oleo legs, struts, tail wheel

**General:** In what area did the aircraft fly? What role did it perform? Who flew it?

To elaborate further, examples relative to the above headings are given below:

The upper surfaces of wings, tail and fuselage spine of an aircraft flown in a hot or harsh climate would tend to take on a bleached look.

The undersurfaces of wheel spats and the fuselage behind the tail wheel of a Junkers JU87 flown in the desert should have a sandy yellow appearance.

The lower half of the undercart doors of a Fiat G50 would be blasted black within a very short time due to the exhaust venting directly onto them.

Bomber aircraft generally had a more weathered appearance than fighters due to the more utility role they performed. Also, bombers were not often flown by the same crew each day

and therefore would not receive the same care as a fighter which could be flown extensively by one individual pilot.

### List of Materials

Pastels: Carb Othello Pastel Pencils

46/2 Black, 93 Grey, 96 Grey, 92 Grey, 91 Grey, 73 Green, 23 Green, 16 Green, 59 Brown, 65 Brown, 89 Brown, 39 Yellow, Ochre, 52 White

Pastel Stick: Nu Pastel Warm Grey #239P

Pencils: 8008 All Stabilo

BB 838 Wolff's Carbon Charcoal

Brushes: 5/8" flat brush No.1 pointed brush

Blending Stump: #2

The materials can be used for toning, streaking, weathering, altering colours, exhaust stains, shell injection chute burns, stains, rust, dust, accentuation panel lines, oil stains, and various mottle effects.

### Method of Application:

1. Directly from sharpened pastel pencil for dark crisp effects. Buff with wide brush. Example: Small oil runs from engine.

2. For softer ' effects rub pastel on scrap piece of paper to produce a small mound of powder. Dip #1 brush into powder and apply to model in a quick flicking motion trying to touch only the tip of the brush for a fine streak. Increased pressure, will result in a wider streak. For more intense effects, first apply half of the streak with desired pencil. Carefully draw #1 brush over initial pastel line. This will pull excess to a soft feathered edge. Buff. Example: For small, fine streaks from pitot tubes, guns, small bumps, control hinges.

3. Use wide brush for toning large areas, blending and buffing.

4. Blending stump may be dipped into pastel powder and used for application or used to smudge or blend after application directly from pencil. Example: For soft mottle patterns used on German aircraft.

5. 8008 Pencil. Sharpen carefully to very sharp point and run along desired panel lines to be emphasized. Buff along line with #1 brush. Run along grooves indicating control surfaces, cooling gills, etc. for increased emphasis. Apply with brush for greasy effect around engines especially behind cooling gills of radial engines.

Please note: After every application of pastel, blow excess away from model to avoid soiling areas that are to be kept clean.

When you are completely satisfied with the appearance, stand back and look at your model from afar, If it looks like the prototype, photo or real, then leave it alone for a day then, with great care, very lightly cover the finish with fuelproofer – and I mean *very* carefully; you do not want to smudge the work you have just done. This is where an airbrush is very useful and, in my opinion, is indispensable to this type of work

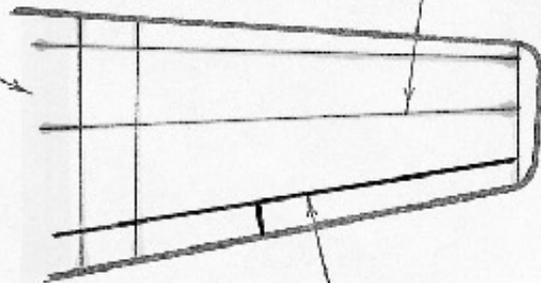
The examples shown in the drawings illustrate some of the techniques possible, it should be kept in mind each method can be used on different areas of the model.

Just keep in mind that practice makes perfect. Try out these ideas on an old model before you start on that winner for next year. If you have any questions don't hesitate to call me.

Norm Harris, 905-637-2868.

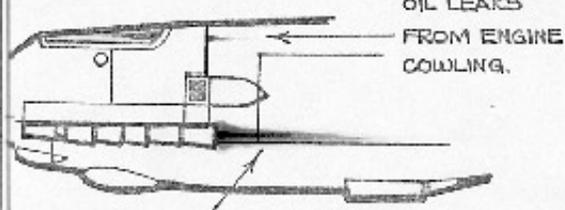
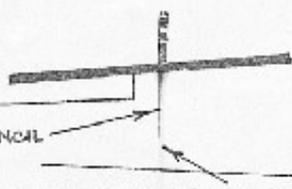
DARKEN AREAS OF WING AND TAIL CLOSEST TO FUSALAGE WITH WIDE BRUSH.

USING FINE BRUSH, TONE PANEL LINES LIGHTLY. NOTE THAT HORIZONTAL LINES ARE DARKER THAN VERTICAL. CARE SHOULD BE TAKEN HERE AS SUBTLE EFFECT WILL PRODUCE THE BEST RESULTS.



DARKEN CONTROL SURFACE SCRIBING WITH 3008 PENCIL.

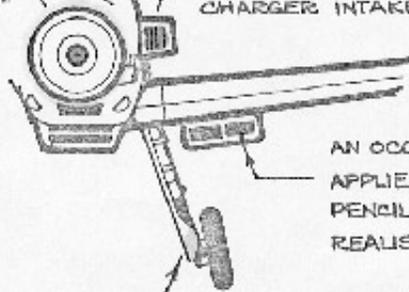
INITIAL PENCIL STREAK WHEN BRUSH IS PULLED BACK OVER PENCIL A SOFT FEATHERED APPEARANCE WILL RESULT.



EXHAUST STAINS ARE APPLIED IN A SIMILAR MANNER TO GUN STREAKS ABOVE EXCEPT THEY ARE USUALLY DARKER WITH A MORE OILY APPEARANCE. IF YOU WISH YOUR MODEL TO HAVE CLEAN RUNNING ENGINE(S) USE NO PASTEL WARM GREY.

TONE FUSALAGE BEHIND SPINNER.

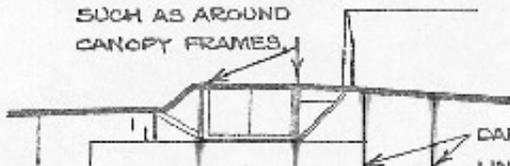
USING FINE #1 BRUSH WITH MEDIUM GREYS DARKEN RADIATOR OPENINGS, SPINNER, APERTURE, AND SUPER-CHARGER INTAKE.



AN OCCASIONAL OIL LEAK APPLIED DIRECTLY FROM PENCIL CAN OFTEN ADD REALISM.

DARKEN LOWER PORTION OF LANDING GEAR DOORS.

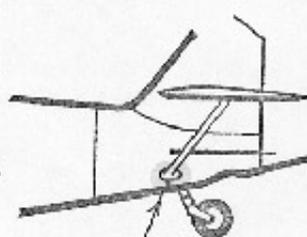
DARK STAINS WILL USUALLY RESULT FROM OPENINGS AND CRACKS SUCH AS AROUND CANOPY FRAMES.



DARKEN PANEL LINES ON FUSALAGE TO SAME TONE AS HORIZONTAL LINES ON WING.

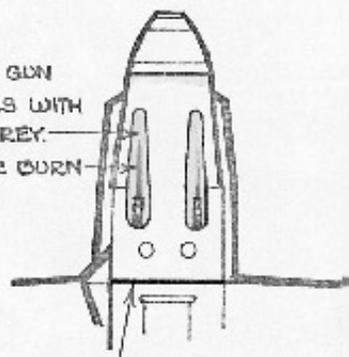
CENTRE OF MOTILE APPLIED DIRECTLY FROM PENCIL OR WITH BLENDING STUMP.

SOFTEN WITH BRUSH OR STUMP.



TONE IN GUN TROUGHS WITH LIGHT GREY. DARKER BURN MARKS.

SURFACE OF AIRCRAFT WHERE OTHER PARTS INTERSECT WILL USUALLY HAVE A DARKER APPEARANCE AND STAINS WILL RESULT FROM THESE AREAS.



ENGINE COWLING SEAMS AND PANEL LINES AROUND INTAKES MAY BE EMPHASIZED WITH 3008 PENCIL.

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## A Story

*In my second edition of Skywords – February 1999 – I published “Euro-English.” This went down very well and I thought it worth repeating. Here it is:*

The European Union commissioners have announced that agreement has been reached to adopt English as the preferred language for European communications, rather than German, which was the other possibility. As part of negotiations, Her Majesty’s Government conceded that English spelling had some room for improvement and has accepted a five-year phased plan for what will be known as EuroEnglish (Euro for short).

In the first year, “s” will be used instead of the soft “c”. Certainly, sivil servants will reseive this news with joy. Also, the hard “c” will be replased with “k”. Not only will this klear up kon-fusion, but typewriters can have one less letter.

There will be growing publik enthusiasm in the sekond year, when the troublesome “ph” will be replased by “f”. This will make words like “fotograf” 20 per sent shorter.

In the third year, publik akseptanse of the new spelling can be expekted to reach the stage for more komplikated changes. Governments will enkourage the removal of double letters, which have always been a deterrent to akurate speling. Also, al wil agre that the horrible mes of silent “e”s in the languag is disgrasful, and they would go.

By the forth year, peopl wil be reseptiv to steps such as replasing “th by “z” and “w” by “v”.

During ze fifz year ze unesesary “o” kan be drop from vords kontaining”ou” and similar changes vud of kors be aplid to ozer kombinations of leters.

After zis fifz year, ve vil hav a reli sensibl riten styl. Zer vil be no mor trobls or difikultis and evrivum vil find it ezi tu understand ech ozer. Ze drem vil finali kum tru.

*As I remarkd at ze tim, zis plas hel viz ze spel cheker!*

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## Ernie-isms

A conscience is what hurts when all your other parts feel good.  
A balanced diet is a cookie in each hand.  
Artificial intelligence is no match for natural stupidity.  
Junk is something you throw away three weeks before you need it.

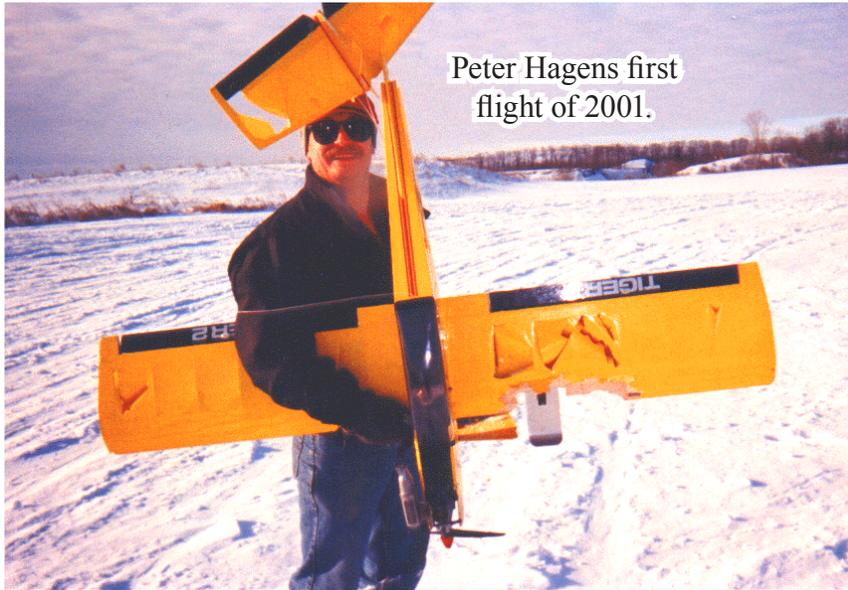
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## Squawks

*This from Bill Montgomery:*

Never let it be said that Ground Crews and Maintenance Staff lack a sense of humour. Here are some actual maintenance complaints/problems, generally known as squawks, recently submitted by Pilots to maintenance engineers.

After attending to the squawks, maintenance crews are required to log the details of the action taken to solve the pilots’ squawks.



Peter Hagens first flight of 2001.

### Key:

P - The problem logged by the pilot.

S - The solution and action taken by the Maintenance Crew.

### Actual Log Entries:

P - Left inside main tyre almost needs replacement.

S - Almost replaced left inside main tyre.

P - Test flight OK, except autoland very rough.

S - Autoland not installed on this aircraft.

P - No. 2 propeller seeping prop fluid.

S - No. 2 propeller seepage normal - Nos. 1, 3 and 4 propellers

lack normal seepage.

P - Something loose in cockpit.

S - Something tightened in cockpit.

P - Dead bugs on windshield.

S - Live bugs on backorder.

P - Autopilot in altitude-hold mode produces a 200-fpm descent.

S - Cannot reproduce problem on ground.

P - Evidence of leak on right main landing gear.

S - Evidence removed.

P - DME volume unbelievably loud.

S - Volume set to more believable level.

P - Friction locks cause throttle levers to stick.

S - That’s what they are there for!

P - IFF inoperative.

S - IFF always inoperative in OFF mode.

P - Suspected crack in windscreen.

S - Suspect you’re right.

P - Number 3 engine missing.

S - Engine found on right wing after brief search.

P - Aircraft handles funny.

S - Aircraft warned to “Straighten up, Fly Right, and Be Serious.”

P - Target radar hums.

S - Reprogrammed target radar with words.

P - Mouse in cockpit.

S - Cat installed.

# Burlington Radio Control Modelers

## Executive

### 2000

#### Officers:

Bill Swindells	905-387-7706	cdnflyer@mountaincable.net	President
Dick Fahey	905-637-5469	rjfahey@yahoo.com	Vice President
Bill Montgomery	905-681-0509	william.montgomery@cciw.ca	Secretary
Ivan Wismayer	905-331-2280	lakeshor@ican.net	Treasurer

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Peter Hagens	905-319-2339		Bayview co-manager
Don Mallory	905-527-1540	malloryd@technologist.com	Bayview co-manager
Howard McNamara	905-637-3798		Meetings and entertainment (with Dick Fahey)
Glen Richardson	905-522-3005	glennr@worldchat.com	Events coordinator
Bernie Sudol	905-634-3245	bsudol@sprint.ca	Memberships (with Ivan and Bill)
Art Titmarsh	905-319-2354	rcav8r@lara.on.ca	Bronte field manager

#### Special assignments:

Lawrence Cragg	416-622-3705	Lawrence.Cragg@Sympatico.ca	BRCM Auditor
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