

free flight • vol libre





\$500 grant Through Susan Snell's efforts and initiative, SAC got a \$500 grant from Investors Group's "Community Service Support Program". We want to thank the Investors Group for their renewed support to SAC, and Susan for taking the initiative of submitting an application on our behalf.

Putting the risk on everybody's shoulder At the start of every season, we all choke when we see cost of the insurance and many of us look elsewhere for an opportunity to pay less. Nothing wrong with this. However, many of these "less expensive" insurance packages have limitations, or lower amount of public liability. These owners believe that, in a single seater, you cannot hurt anybody but yourself, so, they say, less than a million dollars in public liability is ok.

However, let's look at the following scenario. What if, with their single seater, they hurt someone on the ground? And what if the settlement in court exceeds the limit of their public liability coverage? And what if the other assets of the owner of that single seater

do not cover the remainder of the settlement? Is there a possibility that the lawyers of the injured party may want to include in their lawsuit your club and its officers?

If you believe that there is absolutely no chance of what I describe of ever happening, read no more. Go directly to page 3. For the others, my own personal feeling is that a pilot who inadequately insures his/her glider with regards to public liability, transfers part of the risk to their fellow club members and puts his club at risk. I would love to read the opinions of our members who practise law on this topic.

Answer your /&?%? mail, please A few weeks ago, Jim sent an e-mail or a letter to all clubs asking for their participation in the SAC Air Cadet program. We got a reply from 60% of clubs, most of them favourable. Our most sincere gratitude to those who granted us the courtesy of a rapid response. However we did not hear from the other 40%. This is especially frustrating when, on the other hand, SAC gets flak for not doing enough on recruiting etc, etc. We regularly suffer delays because of lack of rapid response. Most of our requests require a minimal response, in this case, it was yes or no. Help us serve you better, answer SAC mail.

Badges, records etc There is quite a healthy debate in clubs, on the Roundtable, and in *free flight* on how to grow the membership, increase member retention. The topic was discussed at the CAS seminar in March. The promotion of cross-country flying and FAI badges was clearly identified as a must to keep new pilots challenged beyond their second year. Canadian records are another source of challenge, often ignored. A look at the current records list in the last issue shows that many are within the reach of many of us. Records are *not* limited to hot shots flying super-exotic (and expensive) birds. Dave Hennigar submitted two record certificates to me for signature in the "multiplace open" category. Charles and Kris Yeates flew these two records in a Twin Astir on January 24 & 28 "down under" flights of 260 and 392 kilometres respectively. Congratulations Kris & Charles.

Gilles André Seguin m'a communiqué l'adresse internet des utilisateurs de GPS Garmin. Beaucoup d'entre nous utilisons ces équipements. L'intérêt de ce site est que l'information est disponible en plusieurs langues <http://pfranc.com/projects/g45contr/g45_idx.htm>.

J'ai envoyé aux clubs opérant au Québec une copie d'un document de renonciation de responsabilité fait par deux avocats ontariens membres de l'AVVC. Je tiens à souligner que ce document ne supporte peut-être pas les exigences du code civil utilisé au Québec. Ailleurs au Canada, au civil, c'est le "common law" qui prévaut. Mon but était de souligner l'importance de revoir ses documents afin de suivre l'évolution des lois. Sylvain Bourque a eu la gentillesse de vous envoyer par courrier copie du document que Champlain utilise et qu'il affirme avoir été revue par un avocat dans les derniers 12 mois.

Je veux rappeler que les compétitions nationales auront lieu à Champlain du 29 juin au 8 juillet. Venez voir. Aussi, ils ont besoin de volontaires. Contactez André Pepin à arcapep@cam.org.

Pierre Pepin president

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Le journal de l'Association Canadienne de Vol à Voile

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**regenerative battery-augmented
soaring**

6

extending soaring flight with an electric motor ♦ *Paul MacCready*

who'd a thought it?

9

soaring Table Mountain, Capetown ♦ *Barrie Jeffery*

a new competition task concept

10

computer generated tasks ♦ *Hal Werneburg and George Dunbar*

DEPARTMENTS

5

Letters & Opinions — GPS concerns, new motorgliding magazine, cairn ceremony at Pendleton, Canadian turnpoint set needs to be developed

12

Hangar Flying — stop press - Environment Canada in forecast scandal, a lot of bull at Seniors nationals landout, Gil Parcell finally hangs it up, new trailer stability factor, shot down by an eclipse?, the legal size of glider registration letters has shrunk, virtual soaring - a fast growing baby, Canadian Advanced Soaring news, glider destroyed by lightning

16

SAC News — SAC board meeting summary, price change on "A" pin

18

FAI Page — record approved and new club category claims, badge register

Cover

Say hello to Walter Weir, your friendly FAI Badges chairman. Walter flies an ASW-20 (2W) very well.

Photo: Tony Burton





– honorary team captain –
Dr. David Williams, Canadian Astronaut

– team pilots –
Nick Bonnière
Ed Hollestelle
Ulrich Werneburg

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is a non-profit organization of enthusiasts who seek to foster and promote all phases of gliding and soaring on a national and international basis. The association is a member of the Aero Club of Canada (ACC), the Canadian national aero club representing Canada in the Fédération Aéronautique Internationale (FAI), the world sport aviation governing body composed of national aero clubs. The ACC delegates to SAC the supervision of FAI-related soaring activities such as competition sanctions, issuing FAI badges, record attempts, and the selection of Canadian team pilots for world soaring championships.

free flight is the official journal of SAC.

Material published in *free flight* is contributed by individuals or clubs for the enjoyment of Canadian soaring enthusiasts. The accuracy of the material is the responsibility of the contributor. No payment is offered for submitted material. All individuals and clubs are invited to contribute articles, reports, club activities, and photos of soaring interest. An e-mail in any common word processing format is welcome (preferably as a text file), or send a fax. All material is subject to editing to the space requirements and the quality standards of the magazine.

Prints in B&W or colour are required. No slides or negatives please.

free flight also serves as a forum for opinion on soaring matters and will publish letters to the editor as space permits. Publication of ideas and opinion in *free flight* does not imply endorsement by SAC. Correspondents who wish formal action on their concerns should contact their Zone Director whose name and address is listed in the magazine.

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Deadline for contributions:

5th January, March
 May, July
 September, November

L'ASSOCIATION CANADIENNE DE VOL À VOILE

est une organisation à but non lucratif formée d'enthousiastes et vouée à l'essor de cette activité sous toutes ses formes, sur le plan national et international. L'association est membre de l'Aéro Club du Canada (ACC), qui représente le Canada au sein de la Fédération Aéronautique Internationale (FAI), laquelle est responsable des sports aériens à l'échelle mondiale et formée des aéro-clubs nationaux. L'ACC a confié à l'ACVV la supervision des activités vélioles aux normes de la FAI, telles les tentatives de record, la sanction des compétitions, la délivrance des insignes, et la sélection des membres de l'équipe nationale aux compétitions mondiales.

vol libre est le journal officiel de l'ACVV.

Les articles publiés dans *vol libre* proviennent d'individus ou de groupes de vélioles bienveillants. Leur contenu n'engage que leurs auteurs. Aucune rémunération n'est versée pour ces articles. Tous sont invités à participer à la réalisation du magazine, soit par des reportages, des échanges d'idées, des nouvelles des clubs, des photos pertinentes, etc. L'idéal est de soumettre ces articles par courrier électronique, bien que d'autres moyens soient acceptés. Ils seront publiés selon l'espace disponible, leur intérêt et leur respect des normes de qualité du magazine.

Des photos en couleurs ou noir et blanc seront appréciées, mais s'il vous plaît, pas de négatifs ni de diapositives.

vol libre sert aussi de forum et on y publiera les lettres des lecteurs selon l'espace disponible. Leur contenu ne saurait engager la responsabilité du magazine, ni celle de l'association. Toute personne qui désire faire des représentations sur un sujet précis auprès de l'ACVV devra s'adresser au directeur régional, dont le nom et l'adresse sont publiés dans le magazine.

Les articles de *vol libre* peuvent être reproduits librement, mais le nom du magazine et celui de l'auteur doivent être mentionnés.

Pour signaler un changement d'adresse ou s'abonner, contacter le bureau national à l'adresse à la gauche. Les tarifs au Canada sont de 26\$, 47\$ ou 65\$ pour 1, 2 ou 3 ans, et de 26\$US, 47\$US ou 65\$US à l'extérieur.

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GPS concerns

May I take objection to the "GPS Q & A" article (*in the 5/98 issue of free flight*). Some time back Dick Butler wrote in *SOARING* magazine, "the future of soaring lies with the computer, and it lies and lies and lies!" Furthermore I have tried to figure out the meaning of 'KISS' which was also used in soaring. (*Keep It Simple, Stupid!* - ed.)

In spite of this I agree with some of "Q & A", but I keep in mind that some flyers are carefully checking their financial resources, and also derive a great sense of satisfaction from having it *all* done by themselves. When they come back from a flight, they will proudly tell where they have been from their mind and map instead of from a kilometre figure plucked from a computer screen.

I do not know if gadgetry is going to draw more beginners to cross-country or do the opposite. Let's keep progress within the bounds of moderation and let's not throw overboard the equipment that has brought us this far, but move step by step and, above all, keep in mind the joy of soaring.

Karl Raufeisen

New gliding magazine

A new bi-monthly magazine, *Motorgliding International*, is being jointly published by the British Gliding Association and the Soaring Society of America. The editor is Gillian Bryce-Smith who was the editor of *Sailplane & Gliding* for 25 years.

She is looking for someone in Canada to sell subscriptions and will pay £5 for each new subscriber. If you are interested, contact her at [<bryce-smith@virgin.net>](mailto:bryce-smith@virgin.net). See Magazine section of "Trading Post" for subscription info.

GGC hosts cairn ceremony at Pendleton

We attended an interesting ceremony at Pendleton on Saturday, May 8. The Air Force Association, in conjunction with the Gatineau Gliding Club, dedicated a cairn commemorating the Commonwealth Air Training Plan Elementary Flying Training School No. 10 at Pendleton. David Smith flew the Yak aerobatic aircraft. The GGC side of the event was organized under the leadership of the sister of Andrew Robinson, the GGC president. There were refreshments for the gathering of Air Force and GGC members in the clubhouse after the ceremony. The Honourable Don Boudria, Minister of State and Leader

of the Government in the House of Commons represented the government of Canada.

Over the years, there were as many as 92 Tiger Moths at the School, and later, 72 Cornell. At the ceremony were two Tiger Moths and a Harvard.

Ovila "Shorty" Boudreault attended with his sisters Gabrielle and Georgette. One stalwart of GGC was missing because of 'minor surgery': Elvie Smith had been ill in April and was indisposed from said operation. But he is up and around and will be able to continue to fly.

Barrie Jeffery

A Canadian turnpoint database needed

I have recently acquired a flight recorder and also become Canadian dealer for a soaring flight planning and analysis program. In preparing a database for this program I used the available data from the Worldwide Soaring Turnpoint Exchange on the web. This database is provided as a depository of turnpoint data from all over the world. The data from Canada is still sparse, but this should change rapidly as more pilots use flight recorders.

Now would be a good time for us to discuss the best way to set up a Canadian database that eliminates overlap between clubs, uses a common format and accuracy and avoids duplication of turnpoint names from various geographic regions. Britain, for instance, seems to have such a database.

To avoid creating too much work for a few persons, I propose that we define a standard and then let each region of the country take care of its own turnpoint sets which eventually could also include restricted airspace. Comments are invited either in *free flight* and/or on the SAC Roundtable.

Svein Hubinette (MSC)

This is a fine idea. A standard format for a national turnpoint set is being established by the SAC Sporting committee, and it should be in place by the time you read this.

Details on the format for turnpoint data and who to send it to will appear on the SAC Roundtable and in the next issue. The "Canadian Turnpoint List" will be on the SAC documents webpage or the CAS web page [<www.sac.ca/cas/casindex.html>](http://www.sac.ca/cas/casindex.html) and be updated as data arrives.

Tony Burton, Sporting committee

Regenerative battery-augmented soaring

Paul MacCready, from Sailplane Builder

Some auxiliary powered sailplanes take off with a propeller turned by a battery-powered motor. During flight, using technologies developed for the regenerative braking of battery-powered cars, the propeller can be operated as a windmill and the motor be employed as a generator to recharge the battery. Some altitude is sacrificed during the charging which is usually done in upcurrents; a portion (probably less than one half) of this "altitude energy" can then be utilized as desired later in the flight. Thus the pilot has an additional variable to incorporate into flight strategy and the capability of extending the search for a safe landing site.

Several factors in combination support the concept that Regenerative Battery-Augmented Soaring (RBAS) may be an attractive aspect of future soaring.

Battery power is clean and quiet

The desire for clean and quiet self-launching puts a priority on exploring battery power for auxiliary powered sailplanes. Batteries are limited in the energy per kilogram they can store, but are adequate as an energy source to power the sailplane to heights where atmospheric energy sources can be utilized safely.

Strong upcurrents provide a high power resource

During thermal soaring, and to some extent in waves and slope currents, energy is normally stored as the potential energy of weight times height for later conversion to speed and distance. In moderate and strong conditions, the rate of energy supply (power) is large. Consider an ultralight sailplane with a gross weight of 400 pounds, having a minimum sink of 1.5 ft/sec and thus capable of flying on a minimum of 600 ft-lbs/sec or 1.09 hp (814 watts) of thrust power. In a strong upcurrent netting lift of 1000 ft/min, or 16.7 ft/sec, it stores potential energy at a rate of 12.1 hp (9042 watts) — huge compared to that used in still air at minimum sink of best L/D speeds. A heavy two-seat sailplane climbing at the same rate, grossing 1200 pounds including ballast, accumulates energy at triple the rate of the ultralight. Incidentally, all sailplanes will typically dash at high speed to the next thermal while consuming energy at rates 30 to 100% of the rate of power gain in the thermal.

Solar cells provide only low power

Direct solar power, in bright sunlight, on an area of 2/3 of a 120 square foot wing, will provide about 1000 watts from high grade photovoltaic cells. Sunshine on the cells and the rising thermal both represent the use of solar energy. In strong lift conditions the thermal, as a much stronger power source, is especially appealing, and some of its power can be used for battery charging. Supplementary charging from solar cells is still an attractive option during the flight, depending on sun availability.

A role model for battery replenishment is the regenerative braking of cars

Recently, with the attention put on battery-powered cars, there has been considerable development on regenerative braking: putting the kinetic energy of braking into recharging the battery rather than heating the brake linings. Thus technologies have become well advanced for charging batteries with rapidly-changing inputs, and the technologies are improving rapidly.

Recharge when the altitude penalty is small

While you are being given large amounts of power in thermals, and also in many wave and slope current situations, you can conveniently take some of that power and recharge the battery used for takeoff. Use the propeller in a windmill mode, extracting power as you sink relative to the surrounding ascending air, turning your electric motor into a generator. Charging is especially attractive on occasions when the sailplane is in a strong upcurrent but precluded from climbing (limited by cloudbase, an inversion lid, air traffic control, or oxygen requirements, or by the small vertical extent of a slope current).

Spend the energy when it buys you a lot

You can do such recharging on occasions throughout the flight and use the energy to speed to the next thermal, or hunt for lift, or propel you to a safe landing spot, and perhaps still have enough energy in the battery for a takeoff the next day.

What is soaring?

RBAS opens up consideration of some philosophical questions about soaring. Virtually all soaring exploits solar energy — almost no other source of energy powers our atmosphere and biosphere (nuclear and hydrothermal energy being the exceptions). Soaring utilizes air motion of thermals, winds against slopes, waves, perhaps even wind shear and turbulence. Launching by bungee, foot or horse (drawing on the solar energy in food) is solar use, as is winch (using electricity from various sources such as nuclear, hydro, or fossil fuels), or auto or airplane using fossil fuels (the stored energy of sunlight of millions of years ago) or more recently created biomass fuels. A few sailplanes have battery-powered electric motors, primarily for takeoff. Some charge the batteries by solar cells — usually on the ground before flight. The 1980-81 solar powered *Solar Challenger* was initially tested with battery power, but its major flights utilized only photovoltaic cell power (plus sometimes thermals).

So what is pure soaring, and what is future soaring?

Setting up new categories stimulates competitions that help to motivate pioneers and to advance soaring. However, rules can stifle innovation, especially in the early stages of a field when the potential, even the categories,

are unclear. Paragliders, hang gliders, ultralight sailplanes, Standard, 15 metre and Open class sailplanes, auxiliary power for various categories, and sometimes age or experience criteria — will *another* category help or hurt? This topic deserves discussion.

I suggest that RBAS aircraft be used for fun, without competition or any categorization. As experience grows, perhaps competitions with logical rules will emerge. In any case, RBAS represents a new variable in the soaring equation, an additional factor to optimize as you continually re-strategize your flight.

A brief look at natural flight helps illuminate some of the deeper issues of what defines soaring. True flight has evolved in nature by four different routes; insects first, and then three types of vertebrates: pterosaurs, birds and bats. As with humans, all four types of natural fliers derive energy from food — vegetation, or other creatures that consume vegetation. However, in contrast to surface-bound creatures, many of these natural fliers evolved to use another energy source — the aforementioned slope currents, thermals, waves, etc. that benefit sailplanes. For some super-soarers such as vultures, the atmosphere typically contributes far more than the food. Most insects fly, and their ancestors have been flying for over 200 million years. Some make use of upcurrents, but the real soarers came later. Pterosaurs survived over 100 million years before their extinction with the dinosaurs 65 million years ago. Birds, that coexisted with the pterosaurs and survived the dinosaur extinction, now demonstrate many excellent soaring techniques (and sometimes share tasks of hunting and using thermals with sailplanes). Bats, being nocturnal, rarely take advantage of soaring. Some giant pterodactyls, the 11 metre span *Quetzalcoatlus Northropi* (see ff 3/86) from over 65 million years ago, and a giant *Teratorn*, a condor-like bird from six million years ago, weighed over 200 pounds, perhaps over 300 pounds, and so fit the size and weight range of modern hang gliders and ultralight sailplanes.

With RBAS, sailplanes now are one up on birds. Natural creatures cannot internally store kinetic or potential energy; the RBAS vehicle can. And a plane that incorporates solar cells has another energy source unavailable to natural fliers. Perhaps our envy of the magnificent soaring techniques of birds will change to them envying us because we have several energy sources unavailable to them.

Mechanisms

A propeller optimized for thrust is not optimized for serving the windmill function, and a propeller of any sort idling in the airstream will create drag. There are several approaches to handling these issues. One is for the propeller design to be a compromise which yields good, but not ideal, effectiveness in both charging and power delivery modes. A “true pitch” twist with a symmetrical airfoil might be a good starting point, providing minimum drag when free to rotate. When neither charging nor powering is taking place, this propeller, even with no drag from the motor/generator, is still a source of drag. However, the magnitude of the drag is very small compared to the total vehicle drag (say only a few percent at the best L/D flight mode). The motor/generator drag can be eliminated by a clutch. Another method is to use a

low rpm induction motor; no gearing is required, and there is no drag from permanent magnets. However, such a motor will be relatively heavy.

A more desirable approach would be to fold the propeller back into the fuselage when neither propulsion nor windmill generation is needed. From the efficiency standpoint, the most attractive approach is somehow to use two separate props, one optimized for propulsion and one for generation, both being folded back into the fuselage when they are not in use. A compromise would be to have a four bladed prop on a fore-aft generator/motor shaft, just behind the top of the fin. Design two blades for propulsion and two for windmilling. Fold back and latch the unused pair along the rearward extended shaft, or fold back all four when none are needed. For good efficiency near the minimum sink (or power) speed at which the prop or windmill would often be operated, the diameter should be large. The fin location facilitates having a large diameter prop. All in all, there are many approaches to the electromechanical and aerodynamic compromises of RBAS.

The simplest electrical system is a direct drive to the motor/generator, plus a specific battery voltage. With this system the prop or windmill rpm can be altered by airspeed. Alternatively, the system can select for charge or power with the aid of a controllable pitch prop, or a continuously variable gear box, or a versatile power electronics module that can match battery, prop rpm, and charge/discharge or idling function as needed. System management can be automatic or pilot-operated.

Examples of power and energy

The following example suggests that for a representative system, for a foot of altitude sacrificed to charge the battery, 0.48 foot of altitude is available later in the flight. This calculation ignores the normal sink of the aircraft in a thermal or slope current, assuming we are interested in the *additional* descent rate caused by charging (a 1000 ft/min thermal assumes the aircraft, without the charging drag, ascends at 1000 ft/min). It also ignores the 1.5 ft/sec normal sink rate of the aircraft during the propeller powered climb. If the battery charge is used so slowly that it just covers the normal sink rate, there is no climb added although there is a duration and distance increase. If the battery, motor and propeller systems are reasonably efficient and can provide high power and high climb rate, the effect of normal sink during the brief climb period will be relatively small. Putting all these factors together, one can generalize that the RBAS system will return to you in altitude equivalent when you want it some 1/3 to 1/2 of the altitude equivalent you “deposited” earlier in the flight.

If the aforementioned 400 pound sailplane extracts an additional 2.7 hp (2000 watts) from the air (its drag power), causing it to descent an extra 3.69 ft/sec while charging the battery, then with 75% efficiency (from the combination of windmill and generator inefficiencies) 1500 watts will reach the battery. Whatever the flight speed, the 2.7 hp represents an increase in sink rate of 3.69 ft/sec. With the battery later returning 85% of its extra charge, and motor efficiency and prop efficiency combined to total 75%, then 63.8% of the 1500 watts

from charging for a given period is available as propulsion power and can later permit 956 watts to provide later climb for the same time interval. 956 watts of thrust power during climb adds 1.76 ft/sec. Thus per second of charge and discharge you lose an extra 3.69 feet but then later have an extra 1.76 feet of altitude to spend. For every foot lost in charging, only 0.48 feet is later recovered. This 48% factor is not as good as obtained with an advanced regenerative braking system or a car because propeller and windmill inefficiency are not part of the car case, and the premium on weight for the airplane compromises motor/generator and battery efficiency.

Lead acid and NiCad batteries typically deliver a maximum of 16-18 watt-hours per pound. This is equivalent to raising the battery weight some 8-9 miles. If a battery weighs 10% of the gross weight, and propeller and motor system puts half of the energy withdrawn into climb, the battery would let the sailplane climb up nearly a half mile (for a machine flight duration of over 1/2 hour in calm conditions). New nickel metal hydride batteries can double the stored height potential, and lithium polymer batteries increase the height over threefold. The battery must be able to handle the occasionally-rapid charge and discharge rates. Batteries designed for high power can deliver in the range of 100-200 watts of power per pound. For motor weight, a reasonable factor for planning purposes is to assume 4 pounds per kilowatt.

The systems designer will find complex interactions between the many design variables. For example, some batteries are inexpensive, some high energy, some high power, and some long life, but every real battery is a compromise because none score high for all factors. Ditto for motors and for associated power electronics and for the overall sailplane structural and aerodynamic design. As for motors, high power per pound motors are available, but operate at high rpm and require gear reductions that add weight, noise and some inefficiency. The pilot is also confronted with complex strategies for making most effective use of the battery system to improve the flight. Some batteries age rapidly if the maximum possible charge is taken from them.

This discussion has been hypothetical, not a report on a demonstrated concept, and so should be considered with caution. The regenerative braking system of a practical battery-powered car may deliver as mechanical energy less than 60% of the mechanical energy going into it. Compared to the car system, RBAS benefits from operating over a narrower rpm range, but there are the added propeller/windmill inefficiencies. Considering everything, the 1/3 to 1/2 overall regeneration efficiency suggested here as obtainable with RBAS is not unreasonable, but achieving it is not a trivial task.

A flight example

The 400 pound gross weight of the ultralight sailplane discussed above is the sum of:

pilot, chute, and some food and drink	200 pounds
airframe	155 pounds
lead acid or NiCad batteries	40 pounds
motor	15 pounds

With 10% of the gross weight invested in batteries, the fully charged battery can be used to climb nearly 2500 feet. The takeoff and climb to 1250 feet leaves the battery 50% charged. Some weak early morning thermals let you stay aloft, barely, as you drift to a hill with a good slope current. You could just stay aloft at an altitude of 400 feet above the hill, but instead you choose to go back and forth at hill top level where your climb could be 5 ft/sec. You recharge the battery (10 minutes, 5 ft/sec, means 3000 feet, that could be converted to 50% of the battery charge, later providing about 1200-1300 feet of climb capability). Now a thermal mingles with the slope lift and lifts you to 5000 feet. You dash toward where you suspect a thermal will be, but none is discovered, and after you descend to 1000 feet you use all of the battery to take you up to 3200 feet. Venturing further downwind you at last get good lift, but at 4500 feet you see that a stable layer at about 5000 feet puts a lid on what this thermal can do for you so you stay at 4500 feet, recharging at a fast rate that is the maximum your system can handle, say 3000 watts, and taking only about 15 minutes for a full recharge.

After a 150 mile triangle, late in the day, with battery almost fully charged, you start a long last glide back to the destination, the airport where you took off seven hours earlier. A headwind has increased, and you worry about falling short, but with the battery you climb up to 1200 feet over the airport. While descending to a landing you recharge the battery a bit while steepening your descent. You land with a 65% filled battery, enough for takeoff to lift the next day.

Some final considerations

The high power available from the windmill-charging mode in strong upcurrents can be used for other applications than later climb. It can operate a heater for flight in cold conditions (or, in concept, an air conditioner for hot weather flight). The electric power can also provide boundary layer control to improve glider efficiency, but in the practical case, at the Reynolds Numbers involved in the ducting and airfoil, and considering weight and complexity, converting stored energy to altitude can be expected to be more productive. For a two-seat sailplane, lights and heat might permit multi-day flights on a slope current. A radio-controlled model airplane, with GPS navigation and a windmill charging system, could make an autonomous, long duration flight on a mountain slope in continuous wind conditions.

For a sailplane, the potential energy of height times vehicle weight is analogous to money in the bank. RBAS gives the pilot an additional "altitude bank account," money that can be withdrawn whenever the pilot wants — as long as enough deposits were made previously to keep the account from being overdrawn. The pilot deals with an unfriendly, greedy bank which has a policy never to extend credit. It also charges a 50% (or more) service fee — consider it a tax — on deposits. The pilot makes deposits when times are so good that the tax is acceptable. Prudence dictates that the account never be completely depleted. The joy of flying will be increased if the pilot knows there is some "altitude" available in the account.

Electricity generated aloft, derived from upcurrents, can add a new dimension to soaring. ❖

Who'd a thought it?

Barrie Jeffery

Probably the last thing I expected to do in life was fly a sailplane over Table Mountain, Cape Town. Guess what? It happened! With a breeze from the south, we were able to soar off the southern slopes — nearly vertical ones — and with some help from the motor (it was a Fournier motorglider) to round the east end of Table to face a sudden panoramic view of downtown Cape Town. Then followed a couple of thrilling and chilling passes along at the 3500 foot height of the Table's top.

It all started with a South African doctor who was working with my physician son in Manitoulin Island. He spoke of good rates for flights to SA, and my son and his wife were inspired to treat my wife and me to air tickets to visit our South African cousins. It was to be a Trip-of-a-Lifetime.

We hadn't been in SA for more than a day or two when my cousin's daughter-in-law announced she had arranged with a friend to take me on a powered sailplane flight. The friend, Martin Grünert, had access to a 1970 Fournier R5 *Sperber*. This 17 metre span craft sports an 85 hp Limbach engine, conventionally mounted in the nose, a featherable propeller, and a 3.5 hour endurance under power. The equipped weight is 480 kilograms. Martin's early flying experience was in Switzerland; he has some 650 hours of gliding and soaring experience, as well as a power licence. In his early 40s, he lists himself as a hotelier. The aircraft is kept at the Stellenbosch Flying Club, about fifty kilometres east of Cape Town; and Martin often flies with the thriving Cape Gliding Club at Worcester, some sixty kilometres further over mountains to the northeast.

Having donned a serious parachute and been strapped securely into the rear seat I watched Martin run through checks and rumble the plane over the grass to the long paved strip of the flying club. We took off after a roll of several hundred feet and climbed away at about 500 ft/min. At 1000 feet, Martin swung around a colourful blimp that was visiting the club, while I snapped a photo. The day was perfect with a warm, light wind and gorgeous Cape Province scenery.

We headed west to cruise the shore of False Bay. A white sand beach some thirty kilometres long receives a continuous parade of breaking swells from the southern ocean. We dropped down to ten feet above the surf and enjoyed the exhilarating ride. Martin took care no gust would dip a long wingtip into the spray.

At the west corner of the bay, Martin pulled up to about 1500 feet beside Muizenberg Mountain, and chopped the engine. Then followed ten or fifteen minutes of ridge soaring, a stimulating first for me. The mountain disappeared into a cap of cloud at about 2000 feet. We clung to the slopes — steep, rocky, dressed in green shrubbery and probably home to families of baboons — and soared alongside the cloud. The views south along the picturesque towns and rugged capes of the Cape Peninsula added extra charm to a somewhat alarming experience of 50 or 60 degree banking into figures of eight between 1500 and 2200 feet

photo unavailable for this pdf file

Gondola terminal at the west end of Table Mountain.

on the mountain side. The concept of 'rock polishing', familiar from *free flight* stories, became reality. Martin is known in the Cape club as "The Polisher"; with his Swiss background, mountain flying is his bread and jam.

The Cape Gliding Club is centred on a broad plain at 600 feet altitude, between two ranges peaking at 5000 to 6500 feet. The resident caretaker, a husky artist, was the only sign of life when we visited one hot sunny weekday. He says they typically have a choice of waves on one range, ridge soaring on the other, and thermals in between. The club has about 150 members and 7 club gliders, 25 or more private gliders, and a Super Cub tug. Martin calls it his home club.

Leaving Muizenberg Mountain, Martin started a very responsive engine for a cruise across the peninsula, over the pretty fishing port and resort town of Hout Bay, and up against another higher peak. The lift was weak; Martin throttled back and made one or two passes. The cap clouds were gone from these peaks, several kilometres downwind from the shore. We passed over a saddle that turned out to be Constantia, a suburb and famous wine center of Cape Province, and found ourselves looking at the precipitous backside of Table Mountain. With engine throttled back again, we wound in close enough to the steep cliffs and cliffside roads to trade smiles and waves with the tourists.

Then there was the turn over the city of Cape Town, the ground dropping away thousands of feet as we crossed the Devil's Peak saddle, and then a climb up to table top height. A few miles off shore lay the barren pancake of Robben Island, where Nelson Mandela spent so much time as a guest of the apartheid government. ⇨ p14

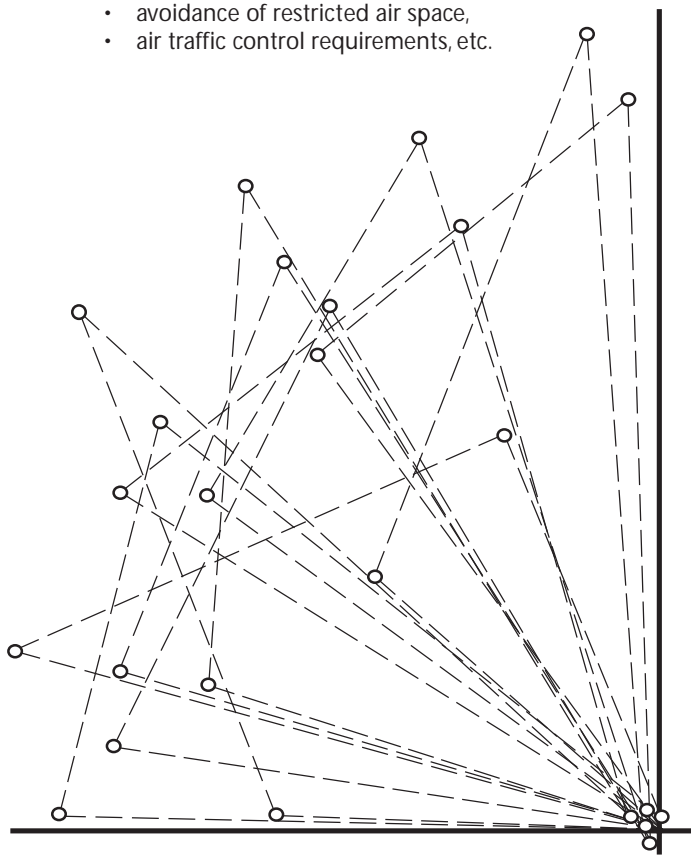
New competition task concept

Hal Werneburg & George Dunbar
Cu Nim

This article describes a new concept for competition tasking. This idea was developed in order to improve safety in competition flying while at the same time offering fairness and individual sporting challenges unique to our sport. The concept is based on the total utilization of GPS equipment for flight verification and also employs ground-based computer equipment for task generation.

The intent is to create a racing task having different courses of *exactly* the same length for each pilot with multiple startpoints and no common turnpoints. All tasks lie within a prescribed task area which is set by the competition organizers on a daily basis in many ways. The daily task area can be located and shaped according to the requirements which need to be taken into account such as:

- area of the most suitable weather conditions,
- avoidance of unsuitable terrain,
- avoidance of restricted air space,
- air traffic control requirements, etc.



Typical computer-generated task set
Computation constraints: task area – 90°NW quadrant, area exclusions – none, turnpoint minimum separation – 5 km, task geometry – triangle with legs a minimum of 30° apart, task length – 300.0 km. There were 91 possible triangles which satisfied these conditions, 10 of which are shown. Tasks flown counterclockwise.

This type of task will lead to safer flying conditions and increased sportsmanship while maintaining the basic idea of closed course glider racing within a defined geographical area.

Objectives The basic principle is that every pilot in a class is given a different course to fly with the start point and turnpoints indicated by sets of latitude and longitude coordinates. (Ground features will not constrain turnpoint selection.) All courses for every pilot in a given class will be of *exactly* the same length and have the same geometry (triangle, etc). This type of tasking will:

- Minimize the amount of gagging and “leeching” (aka “follow the leader”) flying.
- Provide closed-course racing rather than free choice as in PST or other types of open-ended tasks.
- Use multiple start points for increased aircraft separation and safety at the start.
- Use GPS technology for all aspects of the flight.
- Have fixed, closed course tasks in a defined, limited geographical area rather than pilot’s free choice as in PST tasks.
- Employ computers for task generation, in flight use, and flight evaluation.

Task setting The following illustrates the proposed system of task setting. It may be useful to refer to the diagram showing a typical task area.

1. Each competition day the task setters select a competition area based primarily on the met forecast. This task area would normally be restricted to a sector of specified size and orientation (sample shown). It can also be located in many different areas with reference to the home airfield. For instance the task area can be centered on the airfield, offset or even remote from the site. Many variations are possible.
2. A number of suitable start points are established which are clustered around the airfield. Start point separation could be 3-5 kilometres or whatever is deemed to be necessary.
3. The task setters choose a suitable task distance and task area for each competition class for the day.
4. The tasking software then computes a suitable number of courses which meet the requirement of the task length and having turnpoints a defined minimum separation from the turnpoint of any other computed task course. Task generation would be quite flexible and easily contain any defined constraints such as the task geometry (triangle, quadrilateral, etc.), min/max leg length (FAI task), excluded task areas, and others. The start point is randomly selected by the software for each computed course. The finish point would be common to all courses.
5. The computer converts the location of the task points (start, turn, finish points) into lat/long coordinates and these are given to each pilot as his/her unique task for the day to be loaded into the pilot’s GPS. ⇨ p15

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button to record and mark pilot-selected points (thermal marking etc).

- NMEA output for use with Borgelt and *WinPilot* (and others) and *Taskfinder* software.
- Task setting may be done with supplied PC program or directly via buttons.

Taskfinder \$315*

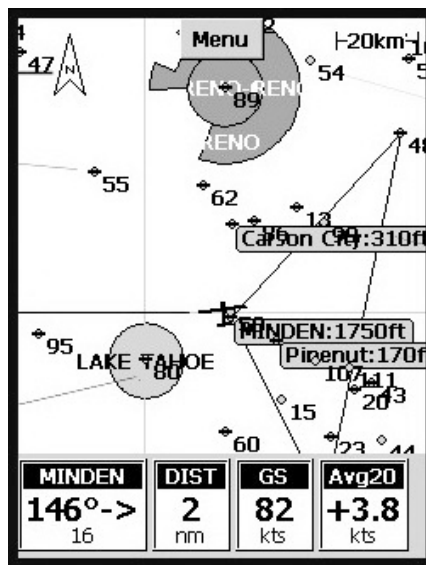
- This Windows program offers by far the most comprehensive approach to task planning and post-flight analysis available anywhere. The options are just too numerous to describe, but a good description is available on the website < <http://home.clara.net/eagle/> >.
- The program is only available in CD version and is complete with turnpoint data bases from many countries including Canada. It has the following modules: Flight Recorder Analysis / Task Setting / Task Distance / Thermal Analysis.
- It is strongly recommended for clubs and individuals who may wish to plan and review their flight traces or for use in competition setting of tasks (used by the BGA).

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- PRO's Thermal Analyzer page – helps you decide which way to extend the circle to maximize lift, and when to leave the thermal (need Volkslogger and Borgelt B50 or compatible inputs), automatic switching between thermal, turnpoint and final glide display PC interface.



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Stop Press – Environment Canada in forecast scandal

It was claimed today that Environment Canada issued a 24 hour weather forecast on Friday, 23 April which subsequently proved to be correct. The forecast for southern Alberta predicted strong southwest winds, easing in the afternoon. At 10 am on Saturday, 24 April, an eyewitness near the town of Okotoks observed that the wind was indeed from the SW and noted windspeeds of up to 30 knots using a handheld windspeed measuring device. Subsequent recordings clearly established a decrease in the velocity, to an average of 10-15 knots at noon.

A spokesman for Environment Canada strongly denied the allegation, claiming, "Weather forecasting is an inexact science in which there is a statistical probability that a forecast and the actual conditions may coincide; however, we cannot be held responsible when such an unlikely conjunction actually occurs."

He also called into question the validity of the report by noting that the eyewitness was observed to assemble a flimsy craft made of aluminum tubes and cloth, to which he attached himself. In attempting to move this craft while on a hillside, it was caught by a wind gust, lifting both the craft and the eyewitness into the air. What followed was a horror ride lasting more than an hour, with the craft at times observed to be at least a thousand feet above the ground. Miraculously, the gusts abated and the craft and its hapless passenger were wafted into the nearby valley where they came to earth without apparent injury. "After an experience like that, I would think that the eyewitness is in shock and unlikely to have a clear recollection of the facts," the spokesman claimed.

The eyewitness appeared remarkably cool after his ordeal, claiming to have 'enjoyed the ride, even though it was a bit rough at times.' He insisted that his actions were based on the forecast. The spokesman expressed grave concern that such an attitude sets a dangerous precedent: "We can't have people going around and making plans on the basis of our forecasts, can we?"

A lot of bull at Seniors Nationals landout

I've heard some great landout stories over the years but few beat the one that happened to François Pin in his PW-5. François got low on the second turn and had to pick a field to land in. It was a good field and he had no problems with the landing. Soon

after landing, cows began to show up around the glider. They began to lick the glider and slobber all over it. François made several attempts to run them off with little luck.

His biggest problem showed up soon after. A very large and aggressive bull came on the scene. The bull put a horn under the stab and raised the glider off the ground. François was able to back him up a little but he continued to have great interest in the glider. After a couple of runs at François, the bull seemed to claim the glider as part of his harem. The bull moved to the front of the glider and began to tear at the canopy cover which was soon in shreds on the ground. Then the bull suddenly rose up on its hind legs and, to the horror of François, tried to mount the glider!

The crunch of the canopy was loud and long as the bull's hoofs penetrated the Plexiglas. François continued to try and run the bull off but he appeared to be in love and wouldn't budge. Just in time the crew showed up and the bull seemed threatened by the four-wheeler and retreated from his new found love. As I write this, François and team are in the hangar supergluing pieces of the canopy back together in hopes that he can fly tomorrow.

Charlie Spratt, CD

Gil Parcell finally hangs it up

Gil, now 76 and a well-retired professional illustrator and contributor of drawings and cartoons for and about our sport for many, many years, wrote to me that he finds it difficult to continue contributing to *free flight* when I ask him. He wrote, "... I know you have an excellent publication but the articles are so far above my head that I'm ashamed to say I don't even attempt to read them. In other words, I'm so far out of being current that I can't even sketch anything topical. My experiences stop at 1970."

I knew we would see the end of Gil sooner or later, but I'm still sad that we will finally lose his wonderful drawing skills and sense of humour. I wrote back, saying: "I am sad of course, but completely understand your desire to retire from further work for the sport. You have had a magnificent run at being the world's premier soaring cartoonist. Many agree with me, so don't let modesty get in the way of graciously accepting the plaudit! Until you mentioned that the last time you were in a glider was 28 years ago (and only an LK-10 at best), I hadn't realized how quickly time has passed. You have been a great embellishment to the sport, and a large help to *free flight* over the years.

Thanks indeed."

Readers won't quite see the end of his great cartoons for a little while yet; I still have a small unused pile of his work which I mine from time to time when what he has drawn is just right for a new story.

Tony Burton

New trailer stability factor?

One factor which you may not have considered in improving the stability of a "lively" trailer/car combination is the shape of the trailer's fin. The front of the fin, if rounded or sharp, can allow the fin to generate lift hence variable side-forces depending on the cross-wind component or truck gusts on the highway. Anecdotal evidence from owners report that small increases in the size or shape of the fin can have a profound effect on the trailer's stability.

A fix is to make the fin shape nonaerodynamic, such as by making the front a flat plate. One report had the safe towing speed of a trailer rise over 30 km/h! If you have a squirrely trailer, it's a simple test, so it won't hurt to give it a try.

rec.aviation.soaring

Shot down by an eclipse?!

You may know that there will be a complete solar eclipse in central Europe on 11 August 1999 (around 10h30 UTC). You may also know that the 1999 World Championships will be held in Germany 6-13 August. That made me wonder about what interesting consequences it could have for the soaring competitions that day, just out of curiosity ... Of course I quickly checked whether the solar eclipse would pass over the Bayreuth area. Unfortunately, it will not. I don't expect this to be of much practical use for the soaring community, as solar eclipses are rather rare, but I feel it's simply interesting to know what effect it has.

Well, Walter Weir was "eclipsed" in May '94 on a cross-country on the Ridge (see ff 4/94, p23).

The legal size of glider registration letters has shrunk

I checked the new regs governing the size of registration marks on gliders and discovered that they only have to be 3" in height, and they don't have to be painted on the underside of the wing any more! Here are the applicable regs:

h) The display of marks on the bottom surface of the wings is optional,

i) Where the marks are not displayed on the bottom surface of the wings, the height of the marks that are displayed on the side surfaces in accordance with subsection (g) shall be displayed in accordance 222.01(2)(o).

o) The height of the letters in the marks displayed on a heavier-than-air aircraft, that does not display marks under the wing or cabin shall be 30 cm (11.8"), except where the dimensions of the structure does not permit the display of 30 cm (11.8") marks, in which case, the height of each letter in the marks shall be as high as possible while allowing for a border of 5 cm (1.97") in accordance with subparagraph 222.01(1)-(b)(iii). In no case shall the height of the letters be less than 15 cm (5.9"); except for gliders, amateur built aircraft and ultralight aeroplanes where the height of the letters shall be not less than 7.5 cm (3").

Jim Carpenter, on SAC Roundtable

Virtual soaring, a fast growing baby

At the IGC meeting in Seattle, Roland Stuck, the French IGC delegate and acknowledged guru in this area, was appointed as the FAI "specialist" for simulated gliding. The objective of the IGC is to monitor what is going on in this rapidly developing field.

Roland reports that simulated gliding is more than a fancy entertainment, it may also be a way to attract younger people to real gliding as well as an educational tool for training students. Therefore it may be useful to give you some information about this topic:

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To my knowledge there are essentially three software packages allowing virtual gliding:

SFS.PC This is the only software really dedicated to gliding simulation, developed by Uwe Milde and Detlev Schwetzer from Germany. Details can be found on their website: <http://members.aol.com/UMilde/sfs.htm>. SFS uses a very realistic model of the physical characteristics of a sailplane. All maneuvers which can be flown with the real plane can be done with SFS PC. Takeoff, landing, soaring and hang gliding as free flight or with evaluation are possible. You can fly cross-country and race with other pilots. In my opinion, the main limitation of this software is its low resolution graphics which make it look somewhat outdated when compared to the graphics of the most recent flight simulators.

Flight Unlimited Flight Unlimited featured a glider (Grob Twin Astir) in its first version but unfortunately this sailplane has disappeared from the most recent versions.

Flight Simulator 98 The most popular flight simulator is FS-98 from Microsoft and features a Schweizer 2-32 glider which unfortunately is not very well modelled and has poor flying characteristics. The basic program also allows soaring on a few spots and in some situations but it is not possible to find lift anywhere in the FS world. However, FS-98 is a very open program and a lot of designers all over the world are creating aircraft, scenery and utilities. Some of them have designed much better gliders than the stock Schweizer, and with realistic instrument panels. Here are some interesting links:

<http://members.aol.com/autofastco/soar.html>
(an American site with many gliders)
<http://ourworld.compuserve.com/homepages/WolfgangPiper/>
(a German site with many nice old-timer gliders)
<http://www.geocities.com/CapeCanaveral/Hangar/1018/>
(a Dutch site with some gliders and gliding sites)
<http://www.angelfire.com/al/flyfar/>
(an adventure that allows you to soar over California) and, of course,
<http://www.Flightsim.com/>
which is the most popular website for FS, where you may find anything.

At the IGC meeting in Seattle, I met Larry Sanderson, SSA President, who is also very interested in gliding simulation. Since he has some connections with Microsoft, he will try to persuade them to integrate thermal, ridge and wave lift in FS and to improve their glider. I am nevertheless afraid that it will be too late to implement in FS-2000 which is to be released soon.

I intend to make a demo of gliding simulation during the next World Gliding Championships in Bayreuth (Germany). I plan to

use FS-98 with good scenery of the Bayreuth airport which is in the commercial add-on "German Airports" as well as thermals randomly distributed, with a program created by Ed Dumas Sr. If I can find a second fast PC, it should even be possible to organize races in a multi-player mode over the task given for the real contest.

I also have another project to "replay" with FS-98 a real glider flight using the data recorded by a GPS flight recorder. With the use of satellite textures and 3D terrain maps, the landscapes are now becoming more and more realistic in FS and it would be very interesting to render a real flight in the 3D world of FS-98. This project is quite ambitious and I hope to find the necessary skills to realize it.

Alvaro de Orleans-Borbon responded to the above report with: "I am very happy that you formally undertook to promote "simsoaring" — I am convinced that with your knowledge and drive you will carry it very far. A few small comments concerning your project outlined above:

1 It may be useful to have either a unified format for the flight data of real *and* simulated flights, or a handy format converter between the real and the sim data files.

2 At the FAI level, we should urgently consider promoting a simple philosophy: all logged flights, real or simulated, produce logfiles of the same structure. For instance, it could be a "*.flt" file format, the *.igc format becoming a compatible subset of it. The *.flt format would essentially add info concerning the nature of the flight (real or simulated, gliding or aerobatic or air rally, etc.) ...

3 You may consider talking to the various companies and individuals involved in developing evaluation software for gliding flights. Some of them may see a bigger market for their products if they introduce bridges from real to simulated flights, and may therefore do a lot of the work for the project you mention above.

4 The quest for new gliding competition philosophies would become *much* easier if we could have a "simulated testbed" for them. Many such new philosophies require new software to score the flights, which in turn is a big deterrent, because of the long development cycle involved if you had to develop and test the software only in real flights."

It's an interesting development which I think will see rapid technical evolution. In the year 2000?, will pilots download their flight recorder data and the day's met info and tephigram, generate the countryside with 3D topographic data for the area, put on a VR helmet and fly the course again — against other pilots even? Could you re-fly a task to see where improvements could be made? Tony

Canadian Advanced Soaring

During the winter CAS has been quite active preparing for the upcoming cross-country and competition season. Nick Bonnière has completed the NMEA flight recorders and they are now being tested by a few people, myself included. All the details about the recorder and how to connect it to your GPS and battery can be found on Nick's webpage: <http://www.magma.ca/~bonnfutt/Varicalc/NMEArecorder/>. Nick has designed a very versatile unit — there are three separate methods in which power can be supplied to the unit and two methods in which the recorder may be connected to your GPS.

I have been using the recorder with my Filser GPS, and have encountered no problems. It took me about three hours one evening to do the wiring for battery and GPS connections as well as computer connections for download.

The recorders will again be tested at the MayFly contest prior to the Nationals to ensure that there are no bugs in the system. Remember that GPS is now the only means of flight verification allowed in the Nationals; so, if you need one of these units for the competition, make sure you get your entry fee in early so you can rent one of the recorders from 1 June until the end of the competition for \$50 plus postage.

The CAS Decentralized National Competition begins this summer. It is a ladder type competition and is open to all CAS members. The rules for the competition will follow a system similar to the previous Ontario Soaring Ladder. The plan is to have the scoring system automated through a web-based program that will instantly process your data and publish the results. There will be three

divisions for the competition, Beginners (no 300 km badge legs), a Weekend division, and an Open division for the lucky few who can fly mid-week. At the end of the soaring season (1 May – 31 October) the winner in each division will be announced and presented a trophy. Watch for details on the CAS web page.

There are several CAS sponsored events planned this summer that you should consider attending. The first, MayFly, is a low stress entry-level competition at the Gatineau Gliding Club on the Victoria Day weekend. For more information visit <http://www.cmw.ca/mgmzaqua/MayFly/index.html>. Next is the Canadian Nationals being hosted by Champlain, near Montreal, 27 June – 8 July. Immediately after that is the eastern CAS cross-country clinic being hosted by MSC at Hawkesbury from 19-23 July. SOSA's annual Mudbowl contest will be held on the August long weekend (31 July – 2 August). The southwestern CAS cross-country clinic will be held at SOSA from 16-20 Aug, followed by a weekend fun contest for the clinic participants and anyone else who is interested. Finally, the Ontario Provincials will be held on Labour Day weekend in SW Ontario. We are still looking for a host for the Provincials, so if your club is interested, contact me.

CAS now has a web page up and running in conjunction with the SAC site. You can get to it through the SAC site or directly at www.sac.ca/cas/casindex.html. Many thanks to Terry McElligott for designing the site. We hope to use it to publish the newsletters, CAS events and also as a resource for pilots who want to learn more about cross-country soaring. Send us your comments.

Another item of interest for cross-country pilots is the "Club" category of Canadian

records. This category was started in 1998 and is open to all sailplanes having a handicap of 1.00 or higher. No claims were made in this category last year, but you will see on the "Records" page that the gold rush has started, so if you are out just flying for fun why don't you add some spice and go for a RECORD distance and/or speed flight. The only thing you have to do beyond the usual badge flight preparation is to seal the camera to its mount and, if your OO also records an accurate start and finish time, you may also get a speed record.

Dave Springfield

Thought for the day

If a pilot buries his head in the cockpit then, sooner or later, someone will have to bury the rest of him.

BGA Gliding Safety newsletter

Glider destroyed by lightning

An ASK-21 from Dunstable, England was destroyed in mid-air after being hit by lightning Saturday, 17 April. The P1 was Pete Goldstraw and P2 Graham Cooper. They sustained minor injuries. The following report by club member Dave Kahn was posted on the *rec.aviation.soaring* newsgroup:

At about 5 pm on Saturday we saw heavy rain coming in from the west and decided to put the K13s in the hangar. There was also a huge cu-nim looming up. I was feeling a little disappointed that I hadn't been able to find a spare club glider a few minutes before as the sky was looking very interesting and I rather wanted to be up there. ➔ [next page](#)

Who'd a thought it?

from page 9

We cleared the gondola cables by a 100 yards or so, and reluctantly turned for the return trip. I had a few minutes at the controls: comfortable light elevator control, heavier but still very acceptable aileron resistance, and good rudder action. The trip home was only marked by an unexpected bout of circling in zero lift at 1000 feet above the False Bay surf. Martin explained that it was due to an ATC instruction to hold short of the takeoff line from the Cape Town airport as a Boeing took off.

With a fighter approach at Stellenbosch, we dived from our downwind leg at 2000 feet onto the final approach leg, and greased the Sperber on for a long landing run on a down-sloping section of the runway. Martin wouldn't even let me fill his gas tank. We retired to the clubhouse for a soft drink, and Martin was soon off to take another friend for a flight.

There was an odd coincidence we learned about on our return home to Ottawa. Dr. van Voxel, the South African doctor who had spoken to our son, paid a visit home while we were in his country. He visited the top of Table Mountain on the exact morning of our flight. Guess what he saw flying by ...? ❖

Barrie was one of the early members of SAC, and was a Director and the Secretary in 1949. That year, while with the Gatineau Gliding Club (then located at Carp airport west of Ottawa), he won SAC's BAIC trophy for the best flight of the year with a record 142 km straight distance flight in a Grunau Baby from Carp, Ontario. In 1955 he achieved Canada's first Diamond Goal and Gold C badge, completing a 315 km task from Carp to Windsor Mills, QC (north of Sherbrooke). This story is detailed in the free flight 1/95 anniversary issue.

In 1947, while at UBC, he was involved in getting one of the three German war booty Grunau Baby gliders from Arnprior, ON, to the

*UBC Soaring Club, where it was to undergo "flight evaluations."**

In 1952, Barrie was a member of the Canadian team at the World competition in Cuatros Vientos, Spain, flying with Frank Woodward in the two-place event.

Tony Burton

I claim a personal connection with Barrie — 13 Sept 1959 was the first time I was ever in a glider and he was one of my instructors that day in a Pratt-Read at Cold Lake. Barrie writes: "coincidentally, that year turned out to be the end of my soaring career (eye problems). But I had had a fine time for some fifteen years, enjoyed gliding in BC, Alberta, Ontario, Quebec, and even in Europe, and best of all, met some of my best and oldest friends through the sport."

* Trying their Wings – BC gliding history from the 20s to the 80s, 1989, by Lloyd Bungey, \$10 + \$3 p&h. Copies available from free flight editor.

Just as I was approaching the apron in front of the hangar there was a tremendous lightning flash followed about eight seconds later by a sharp and very loud clap of thunder. As we were putting the gliders away, rumours began to come in of an accident. Parachutes and descending wreckage had been seen, but reports differed. Some had seen two parachutes, others three.

Because of the wreckage we initially thought it must have been either a mid-air or a single glider caught in the cu-nim and breaking up. As the remaining gliders landed it became clear that we were missing only one. There was a very anxious fifteen minutes or so before we knew for certain that the pilots were only slightly hurt.

Pete is an experienced and popular instructor at Dunstable. Graham was his pupil on a one day course. It was his first ever day of gliding. They were flying under a clear blue sky at 2500 feet about three miles from the cloud's leading edge. According to a witness on the ground, a ball (yes, ball) of lightning flew out of the cloud and hit the glider. Immediately the right wing exploded and fell away. As the glider began to spiral down the left wing also came off and the pilots bailed out. Graham landed on the roof of a disused garage and,

I believe, managed to get himself down. He was slightly hurt, complaining of a sore arm and a stiff neck. Peter landed in a field but fractured his ankle. He also suffered slight burns to his neck and the back of his head. His yellow fleece jacket was blackened.

Both pilots have damaged ear drums but neither has lost his hearing completely.

Graham visited back at the club today (Sunday). We offered him a free week's course but his girlfriend suggested that they'd rather have book tokens. Peter is in hospital and will probably be discharged on Tuesday. He is dazed, but in reasonable spirits. He talked (or rather shouted) Graham out of the glider before baling out himself.

This was a bizarre accident. The skin of the right wing was completely blown off as was part of the skin from the fuselage. It probably accounted for the third parachute some witnesses had reported. The control rods were melted through. It appears as though the rapid heating caused air and/or water trapped inside the glass fibre structure to expand rapidly and literally explode. If the same thing had happened to a powered aircraft of similar construction, the fuel tanks would almost certainly have exploded too.

The wreckage is being removed to Farnborough for [examination].

We owe a debt of gratitude to our recently departed CFI Jed Edyvean who introduced the compulsory wearing of parachutes in club gliders. Up until about two years ago we generally did not use them in two-seaters except for aerobatics. A Dunstable parachute repacking rush is now expected and basic instructors are being doubly careful about parachute and bailout briefings. ❖



Coming Events

Western SAC Instructors' Course 4-10 July
Cu Nim, Black Diamond, AB. Minimum experience – 125 flights, 20 hours P1, CFI recommendation. We will be flying Blaniks on aerotow. Registration \$150, flying cost about \$200. Existing instructors are welcome to attend as a refresher (no fee required). Contact Terry Southwood (403) 255-4667.

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New competition task from page 10

6. All flight verification is done using the on-board GPS/FR equipment.

The turnpoint separation distance can easily be increased or decreased by a simple modification of the computer program. Changes in turnpoint separation may be desirable or necessary when extremely short or long tasks are being considered for the day in question. Decreasing the turnpoint separation obviously creates more possible turnpoints, which may be needed for the generation of short tasks. Different task sectors may be chosen for different classes.

Start and finish Current start and finish procedures would be used. The start

would be radio silent and use unlimited start height. As pointed out earlier, several GPS defined start points would be located near the airfield. Finishes would be conventional by flying across a finish line at the end of the task.

Objections Any major objections might be considered here with possible fixes suggested. Example – unfair if pilot's turnpoint is weathered in. Solution – pilot could be given two possible tasks with different last turnpoints which are fairly close together (5-15 kilometres).

Scoring The above proposed task concept would not affect the scoring. Therefore it is intended (at this time at least) to continue using the existing scoring algor-

ithms for speed and distance although there is no reason that new ideas for scoring cannot be developed in time.

Conclusion It is felt that this type of tasking will increase flying safety and reduce the amount of "follow the leader" flying while maintaining the philosophy of closed course glider racing in a defined and limited geographical area. Modern computer systems and the advent of GPS technology have made possible the exploration of new task ideas while maintaining most of the rich history of soaring competition philosophies. We invite your comments and are grateful for your critiques. It is clear that this is just the first step in the development of the above tasking concept, perhaps it might be the starting point for further discussions. ❖

Board of directors meeting

On Feb 27, 28 and March 1, in conjunction with the SAC AGM, the SAC board held its winter meeting. The meeting opened with a discussion of the AGM format and how we can make these meetings more appealing to the membership at large. The attendance at the last two meetings has been disappointing in spite of the efforts of the organizers. The conclusion was that SAC lacks the critical size to be able to afford the sort of speakers that will draw a crowd. One solution is to hold the AGM in conjunction with other aviation related organizations or events. Several possibilities were considered including holding an AGM in conjunction with the SSA, the hang gliding association, the sport aviation show in Toronto and a cross-country clinic. The board felt it would be best to rotate, from year to year, among these different events to maintain interest, and see which are best attended. While there may be some controversy over holding an AGM in conjunction with the SSA, it would give the boards of our two organizations an opportunity to meet and explore areas of mutual interest.

The board is monitoring the efforts by other national soaring organizations to combine or cooperate with their corresponding national hang gliding associations. We have had some discussions about the possibility of sharing office space and administrative support with the Hang Gliding and Parapente Association of Canada. These discussions have not produced any results to date.

Jim McCollum reported that SAC has successfully defended our ability to fly two seat motorgliders under a glider pilot licence. Transport Canada had wanted to modify the CARs to require a private pilot licence in order to fly a two seat motorglider. In another development it appears that SAC, in conjunction with COPA, has been successful in eliminating the radio licence fee. The savings to the soaring community from the elimination of this fee will in part offset the Nav Canada fees on towplanes that came into effect recently. SAC is continuing to defend our transponder exemption. The Airline Transport Association seems intent on eliminating this exemption. So far, Transport Canada supports our position.

Once again, we have had another poor year of accident claims. The total claims and reserves over the past three years exceed \$3.5 million.

Pierre Pepin was confirmed as President, Richard Longhurst as VP, and Jim McCollum as secretary and treasurer. The Steering & Finance committee is Pierre, Richard and

Jim, with Howard Loewen as an alternate.

The Aero Club of Canada has come up with a fee formula that was accepted to all of its member organizations. The aeroclub is Canada's representative to the FAI and the board has been working hard to press our case for a more equitable, and less arbitrary, fee allocation. The result has been a reduction in our assessment of over \$2500 per year. The board still feels that SAC's Aeroclub assessment remains excessive. There are two issues: the value SAC members receive from the FAI, and the fact that SAC's per member assessment is over four times that of another organization. The value and cost of FAI services is also an area of concern. There is a committee at the FAI studying their fee structure and the board felt it should wait until this committee presents its report before taking any further action.

The issue of contest funding was discussed. Current funding arrangements have been overtaken by events, with the increase in the number of world contests (there are now, or will soon be, sports class, world class, world air games, junior, motorglider, and 18 metre championships in addition to the traditional 15 metre, Standard and Open class championships). There is only a very limited amount of money available from the Wolf Mix Fund and allocating this money in a fair and meaningful manner is a challenge. A further complication is that Revenue Canada regulations must be adhered to.

David McAsey reported on his progress in updating the SAC Procedures Manual. The board reviewed a sample section that David had prepared. Once the manual is complete, it will be published on the SAC web site.

The board identified four priorities that SAC will address over the next few years. The four priorities are:

- Institute a new format for the AGM based on the ideas discussed earlier in the meeting.
- Institute an ongoing, effective member-

ship promotion plan at the national level.

- Improve member retention by instituting an ongoing, effective plan to promote cross-country soaring and competitions. The first step in this plan is to expand the mandate of the competition committee to include promoting cross-country flying.

- Split the Ontario Zone into two to provide better representation for Ontario. Currently a single board member represents Ontario, where over forty percent of our members reside. It is difficult for a single representative to maintain contact with so many clubs and represent their views to the board. The Ontario zone director also has an unreasonably high workload given that there are many organizations and activities that affect SAC in and around Southern Ontario. The board supported this initiative unanimously.

After the discussion of these priorities, the meeting adjourned. The board wishes all SAC members a good and safe flying season in 1999.

Howard Loewen

Price change on the "A" pin

I received a new shipment of "A" pins in the SAC office recently. As you know, we dropped the price of the "B" pin and the Bronze badge last year to encourage more clubs to issue them. While this marketing scheme was a failure, I wonder whether it would not make sense to price the "A" pin the same, ie. \$3.00. This way all pins issued by the clubs would be \$3.00.

Jim McCollum

Clubs should hold a stock of "A" badges to give to new solo pilots – it is a nice presentation to go along with the wildflower bouquet, and gives the proud new pilot something visible to wear on his hat. The "B" badge is also further encouragement to maintain steady progress in learning soaring skills which should be a major focus of club training beyond the basics. Do it. Tony

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(905) 263-4374, <waltweir@inforamp.net>

The following badge legs were recorded in the Canadian Soaring Register during the period 15 Dec 1998 to 10 May 1999.

DIAMOND BADGE

91 Larry Springford SOSA

SILVER BADGE

911 Bruno Begin Quebec

DIAMOND GOAL (300 km goal flight)

Bruno Begin Quebec 315.1 km Std Jantar St Raymond, QC

DIAMOND ALTITUDE (5000 m gain)

Larry Springford SOSA 5350 m LS-4 Omarama, NZ

GOLD DISTANCE (300 km flight)

Bruno Begin Quebec 315.1 km Std Jantar St Raymond, QC

SILVER DISTANCE (50 km flight)

Bruno Begin Quebec 157.5 km Std Jantar St Raymond, QC
Nigel Holmes SOSA 51.0 km 1-26 Rockton, ON

SILVER DURATION (5 hour flight)

Jean-Marc Piuze	Quebec	5:18 h	Grob 102	St Raymond, QC
Bruno Begin	Quebec	5:06 h	Std Jantar	St Raymond, QC
François Tanguay	Outardes	5:13 h	K8	Bromont, QC
J. Claude Corbeil	Outardes	5:10 h	Blanik L-13	Bromont, QC
Jacques Lemay	Outardes	5:08 h	Blanik L-33	Bromont, QC
Daniel Bernier	Outardes	5:20 h	Blanik L-33	Bromont, QC
Donald Lamont	London	5:21 h	1-34	Embro, ON

SILVER ALTITUDE (1000 m gain)

Jean-Marc Piuze	Quebec	1200 m	Grob 102	St Raymond, QC
Bruno Begin	Quebec	1190 m	Std Jantar	St Raymond, QC
Nigel Holmes	SOSA	1280 m	1-26	Rockton, ON

C BADGE (1 hour flight)

2612 Marc-André Boulianne	Quebec	1:26 h	Grob 102	St Raymond, QC
2613 André Lepage	Quebec	1:17 h	Blanik L-23	St Raymond, QC
2614 Antoine Babin	Quebec	1:04 h	Blanik L-23	St Raymond, QC
2615 Jean-Marc Piuze	Quebec	5:18 h	Grob 102	St Raymond, QC
2616 François Tanguay	Outardes	5:13 h	K8	Bromont, QC

404 Moray Street, Winnipeg, MB R3J 3A5
(204) 837-1585, <dhengr@mb.sympatico.ca>

The following record claim has been approved:

Date of flight	28 Jan 1999
Record type	Free O&R distance, citizen
FAI category	DOG[M] 3.2.5.6
Pilot / Crew	Charles Yeates / Kris Yeates
Sailplane type	Twin Astir, VH-IKU
Distance claimed	259.9 km
Task completed	Waikerie, S Australia to 35° 06.51'S, 140° 53.77'E
Previous record	Unclaimed

The following record claims have been received:

Date of Flight	5 May 1999
Pilot	Alan Hoar
Sailplane type	Std Cirrus, C-GEOD
FAI category	SAC only (Club category)
Task completed	Black Diamond a/p to Hwy 22 Oldman R. bridge to McGregor reservoir bridge (E side) and return
Record types	1. 300 km triangle speed, territorial – 61.7 km/h 2. Three TP distance, territorial – 319.6 km 3. Triangle distance, territorial – 319.6 km
Previous records	All unclaimed

2617 J. Claude Corbeil	Outardes	5:10 h	Blanik L-13	Bromont, QC
2618 Jacques Lemay	Outardes	5:08 h	Blanik L-33	Bromont, QC
2619 Daniel Bernier	Outardes	5:20 h	Blanik L-33	Bromont, QC
2620 Raymond Wood	SOSA	1:21 h	1-26	Rockton, ON
2621 Donald Lamont	London	5:21 h	1-34	Embro, ON
2622 Nigel Holmes	SOSA	2:10 h	1-26	Rockton, ON
2623 Denis Forget	Borden	1:14 h	2-33	Borden, ON

On August 22, 1999 Bruno Begin of the Quebec club flew a 315 kilometre Out and Return to earn his entire Silver badge plus Gold distance and Diamond goal. Congratulations Bruno!

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1	FAI 'A' badge, silver plate pin	\$ 6.00
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4	FAI 'C' badge, cloth, 3" dia.	\$ 6.00
5	FAI SILVER badge, cloth 3" dia.	\$12.00
6	FAI GOLD badge, cloth 3" dia.	\$12.00
7	FAI 'C' badge, silver plate pin	\$ 5.00
8	FAI SILVER badge, pin	\$45.00
9	FAI GOLD badge, gold plate pin	\$45.00
<i>Items 7-12 ordered through FAI awards chairman – see Committees list</i>		
<i>Items 10, 11 not stocked – external purchase approval given</i>		
10	FAI GOLD badge 10k or 14k pin	
11	FAI DIAMOND badge, 10k or 14k pin and diamonds	
12	FAI Gliding Certificate (personal record of badge achievements)	\$10.00
	Processing fee for each FAI application form submitted	\$15.00
13	FAI badge application (download from SAC website forms page)	n/c
14	Official Observer application (download from SAC website forms page)	n/c
15	SAC Flight Trophies application (download from SAC website forms page)	n/c
16	FAI Records application (download from SAC website forms page)	n/c
17	Flight Declaration (download from SAC website forms page)	n/c

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Insigne ACVV BRONZE (disponible au club)
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Insigne FAI ARGENT, écusson en tissu, 3" dia.
Insigne FAI OR, écusson en tissu, 3" dia.
Insigne FAI 'C', plaqué argent
Insigne FAI ARGENT
Insigne FAI OR, plaqué or
<i>Les articles 7-12 sont disponibles au président des prix de la FAI</i>
<i>Les articles 10, 11 ne sont pas en stock – permis d'achat externe</i>
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Insigne FAI DIAMAND, 10k ou 14k et diamants
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Formulaire de demande pour insignes
Formulaire de demande pour observateur officiel
Formulaire de demande pour trophées de vol de l'ACCV
Formulaire de demande pour records FAI
Formulaire de déclaration de vol par feuille

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Personal ads are a free service to SAC members (please give me the name of your club). \$10 per insertion for nonmembers. **Send ad to editor**, not the national office, Box 1916, Claresholm, AB TOL 0T0
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Ed Hollestelle (519) 461-1464 ph/fx
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magazines

SOARING—the monthly journal of the Soaring Society of America. Subscriptions US\$43. Credit cards accepted. Box E, Hobbs, NM 88241-7504. (505) 392-1177, fax 392-8154. 74521.116@compuserve.com

NEW ZEALAND GLIDING KIWI—the bimonthly journal of the New Zealand Gliding Association. Editor, John Roake. US\$32/year (seamail). Private Bag, Tauranga, NZ. john@roake.gen.nz

SAILPLANE & GLIDING—the only authoritative British magazine devoted entirely to gliding. Bimonthly. BGA, Kimberley House, Vaughan Way, Leicester, LE1 4SG, England. £17.50 per annum. fax 0116 251-5939 bga@gliding.co.uk

AUSTRALIAN GLIDING/SKYSAILOR—bimonthly journal of the Gliding and the Hang Gliding Federations of Australia. \$A40.50 surface mail, air \$A55. Payable by Bankcard, Visa, Mastercard. Box 1650, GPO, Adelaide, South Australia 5001. fax (03) 9379-5519. AdminOfficer@gfa.org.au

MOTORGLIDING INTERNATIONAL—NEW bimonthly jointly published by the Soaring Society of America and the British Gliding Association. \$US34 per annum, (505) 392-8154. info@ssa.org

suppliers

Canadian Soaring Supplies Borgelt instruments and soaring software. Svein Hubinette, 343-150 Rue Berlioz, Ile de Soeurs, QC H3E 1K3, (514) 765-9951 svein@videotron.net

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Flying High Parachute sales, repairs, repacking, custom containers. Al MacDonald (403) 687-2225.

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Solaire Canada SZD-55-1, Krosno, PW-5, trailers, GPS, instruments and other sailplane stuff. Ed Hollestelle, ph/fax (519) 461-1464, solairecanada@compuserve.com

XU Aviation Glider repairs in all materials. Chris Eaves (519) 452-7999, fax (519) 452-0075, xu-aviation@sympatico.ca

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Speed max.	138 kts	Tail tank
L/D max.	44/1	Roomy and very comfortable cockpit
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