THE VALLEY FLYER

JULY 1979

PACKARD PHOTOGRAPHY
BURBANK

President: LARRY LAULOM | Vice Pres.: RALPH ROSEN | Secretary: JAY ROSS

Ass't. Sec.: DICK HAGER | Treas.: WAYNE MCELRATH | Ass't. Tres.: TONY DI LEO

PRESIDENTS PAGE

Just returned from our 24 June Quickie 500 Race. A great turnout and great success. If you want to get into racing, you can't beat a Quickie Type Airplane and K+B 6.5. Fuel and drops are supplied at the contest. Your don't have to be an expert flyer to race. To prove my point, I brought out 4½ dozen props to the race, the racers broke 3½ dozen. Seven gallons of fuel was used. Wayne McElneath's contest report further on.

So for this year the three contests we have sponsored have been quite successful. Though membership brings in the bulk of our finances, contests bring in their share. Give or take a few bucks i'd say so far they have made close to 400 dollars - clear. We should have a super Xmas Party this year. Worker turnout as well as flyer turnout has been excellent at all contests. My only concern has been spectator safety. It seems a contest doesn't go by, that we get some bike riders going right through the race course via the dirt road adjacent the runway. I guess as long as there are spectators there will always be a safety problem. The only thing we can do as members is politely remind these people of the dangers an R/C airplane can present when struck by same. Often you're at the field, and you see someone break the rules, don't be afraid to tell the person. Nine times out of ten he doesn't realize what he's done and will gladly take the suggestion.

I was reading the paper yesterday and came across some good news for a change. The city is really looking into some other alternative sites for their rowing, cycling etc. Enclosed are some excerps from that article.

Larry

Los Angeles Times

Metro

MONDAY, JUNE 25, 1979

ROWING—With doubts rising that a reclamation facility needed for putting the rowing course in the San Fernando Valley's Sepulveda Basin will be completed in time, even if the federal money does come through, the Olympics staff has examined not only Mission Bay in San Diego but at least two other bodies of water outside Los Angeles, Puddingstone Reservoir near Pomona and Lake Castaic north of Newhall. Neither would require such expensive dredging and lining as needed in the Sepulveda Basin.

Bradley is asking $15.3 million from the government for rowing.

CYCLING—The prime alternative is the Claremont proposal. Apparently, the Olympic organizers would have to contribute only about $500,000 toward construction of this permanent facility. The land would be donated and the rest of the money to build it would be raised in Claremont.

This strikes many cycling federation officials in Southern California and elsewhere in the nation as a better proposal in any case, than the mayor's desire to put it in the Sepulveda Basin. An added benefit would be that the national cycling federation has said it would move to Claremont were a permanent velodrome constructed there.

Bradley is asking nearly $9 million in federal aid for a velodrome.

FROM THE EDITOR

Time sure seems to move faster than it used to. It seems that no more is a newsletter put to press than next month's issue needs work. And do you know what? All of the begging and pleading that went on trying to get the members to contribute some helpful hints for Aero-Modeling or to advise on who should be the subject of the next member profile was for naught. No one has come forth and again the editor must reach into the bag of tricks and try to come up with something.

A couple of months ago we published the results of a poll that was copied from a sister clubs questionaire. We said at that time that the questions asked then did not necessarily give a true picture of what the governing board would like to know of the members wants and desires. So in this issue another questionaire is printed. It would be deeply appreciated if each news letter recipient would fill it out and bring it to the next meeting, or mail to the editor. It will be available loose at the meetings for those who wish to keep their newsletter copies intact. Put your thoughts on paper when you answer the questions and, if you have an opinion, express it!

Your Editor has been authorized by the Board of Directors to act as the club's representative in the group known as "The Coalition to Save the Basin". As a member I hope to be able to get some insight into the developing situations, so we can take advantage of them, if possible. The reprint from the Times as a part of the Presidents page seems to offer a glimmer of hope that our field won't be swallowed up in a rowing stadium.

I'm again going to end with a plead to all members to turn in some interesting items that are pertinent to our hobby. This is your newsletter - help keep it going.

MODEL OF THE MONTH WINNERS

Sport Division - Wayne McElrath - with his carboard monoplane trainer type painted like "Jaws"

Scale Division - Herb Hoyer - with a Beautiful Concept Fleet Bipe. Rebuilt once after giving an "up" while flying inverted too close to the ground. Very aerobatic with a Quadra and an 18-8 prop.

Racing Division - Larry Laulom - with a scratch 1/2A CAM Racer. Slipperly and with thin wings. Flies good but doesn't glide for S--T.

Honorable Mention was won by Walter Clark for the well constructed "Voly Stik"

All winners were presented our own Valley Flyers coffee cups with the molded in emblem.

MEMBER PROFILE

We all know, and have the highest regard for, the subject of our profile this month. When first contacted and told he was the one to be written up, he said, "I ain't done nuttin", but as you'll see as you read on that's not so.

Jay was born in 1939, lucky to have a father who when Jay was growing up, was a model enthusiast in "U-Control". The sport rubbed off on Jay and soon he was doing better than his Pop. He also dabbled a bit in single channel R/C (one push for left - two pushes for right - three pushes for engine up or down as the case may be) but decided he couldn't afford to rebuild his planes enough to keep flying.

He left his home town of Martinsburg, Pa. and went to Penn State. His education sort of took pre-eminence over modeling during this time. In 1960 he was graduated from Penn with an A.A. in drafting and design technology. He was hired out of college by Xerox to help set up a service group in California, which is where he wanted to go anyhow, he says. After he landed in sunny Cal he went back to his old love of the control-line modeling and flying. For two years he flew at the basin and became more and more intrigued by the R/C planes he saw flying around him. He finally made the acquaintance of a gentleman who was flying an R/C plane with a new type of control called analog-proportional. Jay pevailed on him to let him take the stick a few times and immediately was hooked. The upshot of the day's fun was that Jay bought the Orbit 3+1 right out of the man's model even though it took all his cash and damn near all he had in his checking account. He put the radio in a Tory Pattern type high wing trainer and by God, he taught himself to fly.

In 1963 he joined the Valley Flyers, which even then had about 60 members. The flying site was over nearer the dam than our present field and was nowhere near as improved as is the present field. He became skilled enough in flying to enter contests such as pattern and scale and was soon into Formula One racing, and joined the NMPRA in 1968. In 1972 Jay was elected secretary of the Valley Flyers, which was honored by having Ron Schoor and Larry Leonard as President and V.P. respectively. The following year, 1973, the present style of Board of Directors, with two years terms for six rotating members and officers elected by the board came into being. In 1974 Jay was President of the Valley Flyers and Secretary of the NMPRA.

He spent a little over 15 years with Xerox during which time he rose from Service Representative to Service Manager, and saw the group grow from seven mem in the Southern Cal. area to over seven hundred service people. Then he decided to take over the Hobby House from his fellow club members and flyers, Ken & Loretta Hall, who were anxious to get down to their Fallbrook avocado farm. So he bought them out in 1976, and Ken and Loretta moved out but the club still considers them as lifetime members.

Jay has some definite ideas on the aims, purposes, and reasons for a club such as ours. He feels that the club should be primarily a social club where members can meet people with like interests and each help the others in any way possible. He feels very strongly that each member, by the fact that he has elected to join the club, owes the club a little of his time and talent. He says that it might be well to have one of the condidtions of membership be that the new member agree to assist in club activities in some matter before being accepted. He stated that although he can't put his finger on the reason for the change, he feels

that little by little the club has lost it's purpose and there needs to be a re-awakening on the part of the general membership to help with the activities of the club that is now being borne by a few members.

Jay feels that the model hobby and industry is viable and has a good future. The potential fuel shortage may cause more people to spend more time out of their cars and building models. The ever decreasing lack of flying sites close into population centers may increase the proportion of small models either gas or electric but there will always be a few who will build the extra-large models.

Editors note: Upon rereading the above, and after having seen Jay fly in contests and test flights of new and untried models, I would say that when Jay taught himself to fly, he had a damn good teacher.

HOW IT CAN BE DONE

This month's 'How It Can Be Done' article has been submitted by I.M. Nobody. He stated that the way that he got something done that needed doing, was to wait until someone else did it. By doing it that way he didn't do it wrong. So didn't have to do it over. He also found out that it was cheaper that way. He also stated that he was sick and tired of those people who are always telling him how to do things. If they have found what seems to be a better way of doing things, they should keep it quiet, because he doesn't want his mind cluttered with unessentials other than keeping it occupied with walking and breathing, not necessarily in that order, and not necessarily at the same time.

Nobody stated that he hated to take up valuable space in the news letter but he felt that the club members could profit by his findings. To finish the project he suggested that to save a lot of work don't even start it.

Editors note: The above has been edited to a more readable version from the original copy which just said Go Away Don't Bother Me.

The following questions will be of unestimable help in future planning for thie club. Your input is important so put down your own thoughts.

1. When and how often do you fly? _____

2. Do you need help in building? Yes ___ No ___
   Do you need help in flying? Yes ___ No ___
   If yes how would you like the help to be given? _____

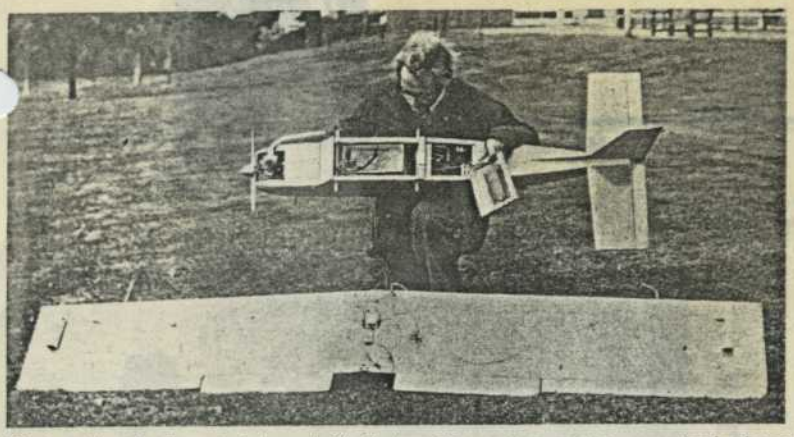
3. Should club membership be limited? To what extent and to whom?

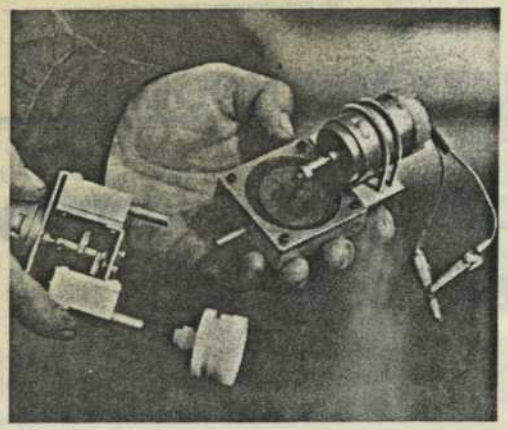
4. Do you fly anywhere other than the Basin? Where and how often?

5. How should club dues be spent? _____

6. How should meeting time be allocated? _____

7. Have you worked on any of the Valley Flyers Club events the past 12 months? If yes describe - if no please tell us why.





What makes it all work (above left): first, a 11-cc glow motor, then going aft, the ozone and temperature transducer and fuel tank, the microprocessor, transmitter, and radio controls. Miniature pumps (above, right) are for chemical samplings

that the plume levels out just below its upper boundary, half of the gases are reflected downwards, and the ground-level concentrations within a few miles of the station may be up to twice the value of those under well-dispersed conditions.

Airborne observations

To understand how the mixing layer behaves, it is necessary to be able to measure temperature and humidity from ground level right up to about a mile high. Such measurements are the responsibility of the Central Electricity Research Laboratory's (CERL) Environmental Measurements Group, as headed up by Rob Varey. To achieve this function some kind of airborne device is required.

Balloons are the most commonly used method for this type of meteorological work and can be used in free flight or tethered in one position.

However, due to turbulence, one can never be certain that a free-flight balloon will travel in the desired direction. And because the sensing devices attached to such a balloon are difficult to recover, these are generally designed to be expendable.

Beyond this disadvantage, tethered balloons are not satisfactory because prevailing winds in England often force the balloon cable into a near horizontal position.

Radio-controlled model aircraft

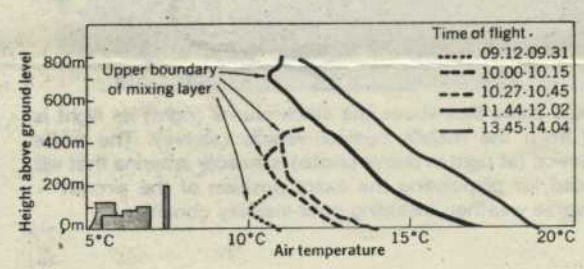
CERL, therefore, decided to look at the feasibility of using model aircraft since these have several distinct advantages over these other methods. They are easily maneuverable and therefore able to traverse plumes and carry out rapidly repeated measurements in areas of particular interest. In fact, it is possible to fly them into the wind and hold them virtually stationary with respect to the ground.

Another advantage is that when it becomes clear that instrument packages are not lost after every flight, more expensive systems with greater sensitivity and with the capacity for measuring a larger number of variables can be developed—and recouped after a flight.

And, beyond this advantage, experience at CERL has shown that, even taking into account possible air-frame repair and replacement costs, these model aircraft cost one-quarter less than balloons.

The development of these flying mini-labbratories has now reached the stage where model aircraft have been designed at CERL to carry instrumentation, sensing devices, and microelectronic and radio equipment.

Although the original aim of using model aircraft was to measure temperature and humidity, the team involved in the project has been able to develop systems that take other measurements vital to the research program.



Model plane measures mixing layer

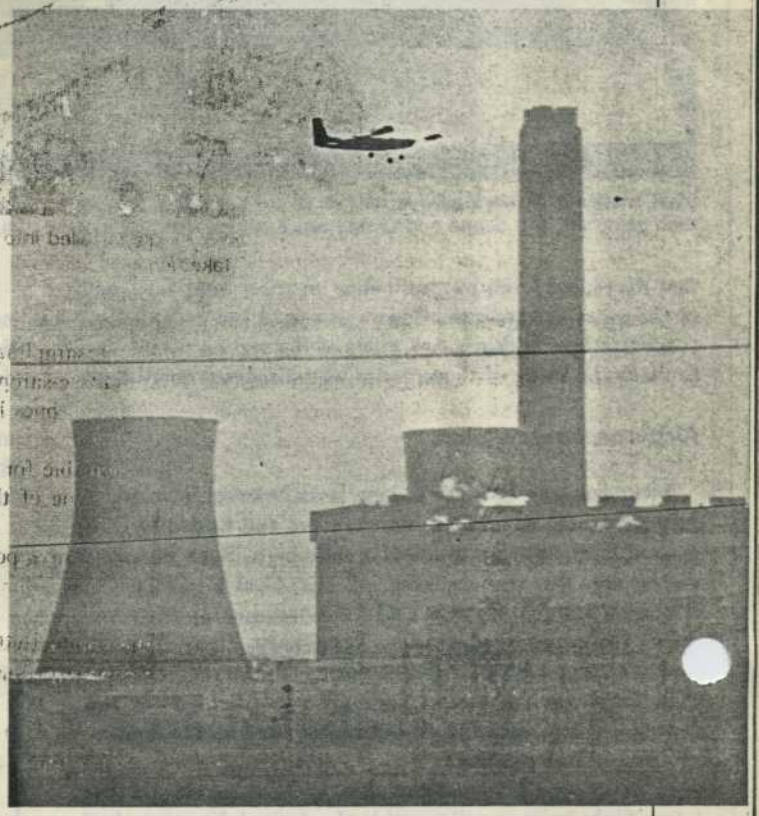
The diagram above shows how temperature readings made by the CERL model aircraft at CEGB's Didcot power station highlight the behaviour of the mixing layer. Each line represents the temperature profile as the aircraft flew higher. Normally, one would expect the temperature to fall steadily as altitude is increased—1 deg C for each 100 meters (656 ft). But as can be seen in the diagram, about 100 meters above the ground, on the first flight the temperature rose.

A similar temperature inversion occurred at 300 meters (984 ft) on the second flight, at 450 meters (1,476 ft) on the third, and at 700 meters (2,276 ft) on the fourth. The inversions pinpoint the upper boundary of the mixing layer, and it can be seen how this rises as the day progresses.

On the final flight a normal temperature-altitude gradient was recorded indicating that the upper boundary had risen above 800 meters (2,624 ft) and was, therefore, well above the power station's plume.

Michael G. McGraw

Model planes identify stack pollutants



As the model plane flies above the stack plume (right) its flight is monitored from the mobile control vehicle (above). The white spherical device (at right in above photo) is a radar antenna that will soon be used for pinpointing the exact position of the aircraft—even in adverse weather, including poor-visibility conditions

The Central Electricity Generating Board (CEGB)—which is responsible for the production of electric power throughout Great Britain—is carrying out a major effort to minimize the industry's impact on the environment. Among other efforts, the use of radio-controlled model airplanes, fitted with sophisticated instrumentation for sampling the environment, is proving to be a highly successful tool for the collecting of data required in making intelligent, environmentally sound decisions.

No large industrial operation can be conducted without making some impact on the environment—be it visual, thermal, chemical, or acoustic. Other things being equal, the lower the required impact, the higher the cost of construction or operation, and it becomes a matter of judgment where the balance should be struck. Thus, the object of the board's environmental research is to help provide a basis of scientific understanding on which informed, rather than arbitrary judgments, can be made.

The CEGB's environmental research—now involving one in 10 of the board's research staff—covers a wide field from fuel combustion right through to the possible ecological consequences of atmospheric emissions.

By Dr. Peter Chester, Director of CERL, Central Electricity Generating Board, London, England

One of the most important elements in this research program involves the study of power-station plume behavior, with the aim of developing methods for predicting pollutant concentrations both close to power stations and at all distances downwind.

The board's scientists have developed several devices that measure concentrations of sulfur dioxide, for example, at ground level. They have also developed laser techniques, known as Lidar, that detect particles and the composition of gases in the plume as it travels downwind.

When hot flue gases leave a power-station stack, the first stage of dispersion—usually extending up to a mile or so from the stack—is governed mainly by thermal buoyancy and wind speed. But there are other meteorological factors, such as temperature and humidity, which play a big part in the behavior of the plume.

Normally there is a turbulent atmospheric layer, called the *mixing layer*, extending from ground level up to about a mile high. In those conditions, we would expect to get a well-dispersed plume.

But under certain conditions, the top of this mixing layer may, in fact, be below the top of the chimney, and this results in a long narrow plume traveling long distances above the mixing layer with hardly any pollution reaching ground level. On the other hand, if the mixing layer is such

Ozone sampler and related gear (above) are installed into the model plane just before each flight takeoff

Because there is no substitute for direct sampling of plume contents, chemical-sensing and particulate-sampling devices have been modified, miniaturized, or new ones have been developed, for use in the model aircraft.

CERL chemist, David Ames, who is responsible for this part of the program, recently described how one of these devices—an ozone sampler—works.

"The ozone sampler consists of a bottle containing potassium iodide solution through which the atmosphere is bubbled as the plane flies through the plume.

"Since we know that the changes in the conductivity of this solution are proportional to the ozone concentration, we are able to find the concentration by measuring the current flowing between two terminals in the bottle. This information is relayed to the ground team via the microprocessor and radio transmitter aboard the plane."

The use of another device, known as a cryostat, which freezes a sample of the atmosphere in the plume, is also being investigated. This device should prove to be of great benefit in the research, for it effectively takes an instantaneous "picture" of chemical reactions.

By the time a given quantity of air taken by an ordinary sampler—say a balloon—is transported down to ground and then to a laboratory for microscopic examination, its chemical content is likely to have changed. With the cryostat, the sample will remain in a solidified state, thereby enabling extensive studies to be made of it in a laboratory.

The use of model aircraft at CERL has also opened up other possibilities. Aerial photography is one; it has also been suggested that a scanning radiometer could be used. The latter would be very useful in building up aerial-temperature maps.

In the words of Ron Scriven, section head at CERL in charge of Environmental Physics Research, "During the short space of time we have been involved with model aircraft, it has become clear that the sky is really the limit as far as their potential in research is concerned."

Building souped-up model planes

Our initial project target was to study the feasibility of flying a model aircraft that could carry a payload of one kilogram (2.2 lb) to a height of 1,000 meters (3,280 ft).

One of the first problems to be overcome was the fact that commercially available model-plane kits are designed for speed and aerobatics but not for carrying instruments. We knew that model aircraft were being used for military purposes—for reconnaissance, radio jamming etc. But this classified information was not available to us.

Accordingly, Tony Fuller, a qualified pilot and chairman of the local model-flying club, was assigned to help Mike Ellis, an aero engineer responsible for the model-aircraft aspect of CERL's environmental-research program, to develop airframes that were light, easily maneuverable, and capable of carrying the newer radio-sensing devices.

How well that original aim has been achieved can be gauged from the fact that the CERL model aircraft are capable of carrying a load of 2.5 kilos (5.5 lb) up to a height of 1,200 meters (3,935 ft). In fact, Ellis and Fuller have so improved the power-payload ratio that the aircraft can now carry even more equipment than originally envisioned.

The fuselage of each aircraft is made of balsa and plywood and the wings of veneered polystyrene. The whole structure is covered by a plastic heat-shrink film. These aircraft have a maximum speed of about 40 mph, making them eminently suitable for the kind of sampling work and environment involved.

Sophisticated control

Until recently we have had to make do with standard radio-control equipment. But the team has recently taken delivery of a Plessey radar device, which will enable them to fly the aircraft by means of auto-pilot.

With this device, the model aircraft will be able to fly in most weather conditions, even in poor visibility. The radar also has the advantage of pinpointing the exact position of the aircraft at any time—a vital feature for scientific studies of plume dispersion.

While designing and testing the air frames has produced models capable of the required flying abilities, David Ames, another member of the team, has been developing suitable sampling and sensing devices for the planes, with Dave White, the electrical engineer who is responsible for the electronic gadgetry.

Now, in addition to the sensing devices aboard the planes, we have a scanner, a microprocessor, a radio receiver, and a transmitter—all powered from small batteries.

Each of the sensing devices is scanned by an analog multiplexor, and the signals from the sensor are passed on to the microprocessor—which weighs just 170 grams (0.376 lb). These signals are then transmitted by radio to the ground.

Mobile ground-control vehicle

In the team's ground-control mobile vehicle, there is another computer that displays the information graphically on a video screen. When the radar is fully operational, the aircraft's flight path and data will be synchronized by the computer, so the content of any part of the plume can be identified and its exact position logged and correlated with meteorological conditions. ■