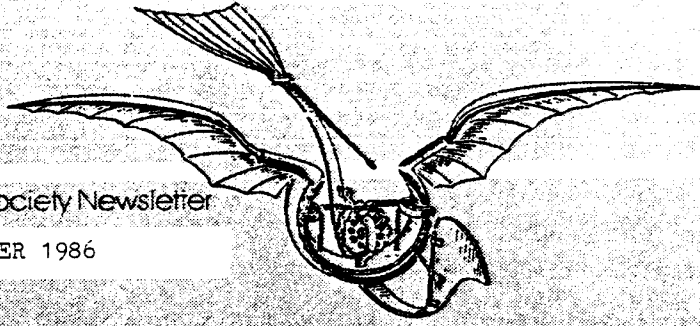


Ornithopter Modeler Society Newsletter

WINTER 1986



flapper
facts

VOLUME III NUMBER I

PATRICK J. DESHAYE, Ed.

IT'S ABOUT TIME...

Many apologies again for being so very late with FF. I am especially apologetic to all of our new members-- there are about thirty of you, and you have all been very patient. I am hoping that some of the programs introduced in this issue will help keep OMS a vital and appealing group, while making the jobs of our officers a bit more feasible.

The revised OMS manual is assembled and ready to be copied and distributed. It will be sent to all members who have not received the original proof copies, directly. Those who have gotten their manuals already but would like the updated version may follow the SASE plan outlined inside.

It is important to bear in mind that OMS was founded on a very experimental concept: membership in OMS originally meant contributing to a pool of information, from which one could also withdraw information and advice from his cohorts as needed. I would like to commend some members in particular for their great generosity in contributing plans, articles and information for the benefit of others: they include Warren Williams, Reg Parham, Bob Meuser, Hewitt Phillips, Philip Watson, Les Garber, Roger Schroeder, Al Rohrbaugh, Walt Erbach and, of course, our devoted President Frank Kieser and Secretary/Treasurer team of Roy and Shirley White. Our more creative members may use the Garber plans/article in this issue as a guide for the best format in which to submit a model for publication.

Please give serious consideration to the new contest announcement within. As a group we have focused too much attention on indoor duration, while neglecting other possibilities... and with the likes of Stan Chilton added to our ranks, making a significant mark in indoor duration may, as Dave Erbach perhaps points out, be just as difficult as building a stainless-steel flapper. The contest prize trophy will be pictured in the next issue.

True,

OMS SASE BIBLIO COOP

Because, as the response to the OMS questionnaire (Aut. 85) reflects, our members crave information, it is our duty to one another to create a source. The OMS manual can serve only as sort of a distillation of information, and while those who use it are almost assured of being able to build a functioning flapper, hardly anyone could be expected to

accomplish great things quickly on its advice alone. Now it has become evident that many of our members have old magazine articles and plans that others do not have, while others have a great deal of technical expertise and have written papers, etc. of great interest to our club. Still others have no expertise or literature whatsoever, but can simply build things that inspire fear and awe... these people tend to draw up plans that other people covet. As your humble, lowly, grovelling editor, I have neither the capacity nor the postage money to reprint and distribute it all.

SO:

--Those of you who write or collect technical articles, please send FF a list of what you have!

--Those who have rare magazine articles or books or plans, ditto!

--Those who build record-setting or distinctive models, send us a list of your plans and/or construction articles!

We wish to provide this list to members through FF so our members can acquire, by SASE, copies of the literature they want from other members. Of course, for one- or two-page copies this is easy and inexpensive and should be done without charging repro costs out of courtesy to other members. For multi-page dissertations and books, however, reproduction costs can break you, as I've been discovering. The list you provide should then include: 1) the postage required on the SASE for the lit. 2) the reproduction cost per mailing for the job IF it amounts to more than two bits. This is one way we can really help one another, so please be generous... And, of course, many thanks to those who have already shown such generosity!

For my part, I have some reprints of Flapper Facts, and will have the updated OMS manuals when they are printed. Please use the editor's list as a guide for your own.

<u>POST.</u>	<u>REPR.</u>	<u>TITLE</u>	<u>DESCRIPTION</u>
0.44	0	Sum.84	Bipe issue, Watson's 'Radical Chick' + hodgepodge of old bipes stolen from Zaic and elsewhere
0.44	0	Aut.84	Best of pre-Rohrbaugh: White's 'Rara Avis', Erbach's 'Redbird', Yamanashi's 'Fairy V', + Watson's 'Octoflapper' and Baxter's 'Seesaw' bipe.
0.44	0	Win.85	Reports of Rohrbaugh perform., Kieser's linkage design article, part I, Watson's 'Gossamer Gnat', Japanese 'Kamo-3' Canard, Orthof's antique tailless.
0.44	0	Spr.85	Rohrbaugh's 'Ornithopter 84' plan+article, two P. Schoenky outdoor plans stolen from Zaic, Japanese tailless, Kieser linkage article part II.
0.22	0	Sum.85	Kieser's record bipe canard, notes on MacCready dinosaur, Japanese flapper propulsion model.
0.22	0	Aut.85	Garber's unique 'Dragonfly', membrane stiffener notes, dragonfly aerodynamics article (Science, June 14, 85)

0.22	0	Redbird	Construction article to accompany plans in Aut. 84 <u>FF</u> . Six pages of great construction tips.
0.66	0	Manual	OMS Design Manual. 24 pages, ill. Send 5x9 env.

VIDEO FILM of INDOOR FLYING

A short TV film of the 1985 U.S. Indoor Championships at Niagara Falls was made by PM Magazine. It was shown in September on a local Philadelphia station. Although it is primarily about microfilm models, there are several good shots of ornithopter flyers and flying. The total running time is about three minutes. I have obtained a copy of the film and made a VCR VHS tape. I intend to add shots of other ornithopter flying being sent to me by Roy White. When this project is complete, I would like to have copies available for loan to our members. There won't be any charge for loan, except to cover postage and some sort of refundable deposit to insure return. Anyone that is interested please write me and enclose a SASE. I will get back to you when things are finalized.

Frank Kieser

2219 Gordon Ave. Jacksonville Bch., FL 32250

OMS QUESTIONNAIRE

About half our members have returned the questionnaire from the last issue of Flapper Facts and here are some results:-

1. Our members feel that the main function of the OMS should be to act as a source of information on ornithopters and as a means of exchanging ideas, concepts and theories. Several said that the OMS is just about the only source of information.

2. We got practically a unanimously good rating for our effectiveness. The only weakness expressed was in getting publicity in the modeling press.

3. There was little interest in holding an OMS office or being newsletter editor. There were a few offers of assistance or possible future interest.

So at this time it appears that we will continue with our present organization. I am discussing with Pat what we will do about the newsletter. I hope I can convince him to continue his fine job of editing. You all can help by contributing material to him. If you want the OMS to be a source of information, you must do your part by contributing what you have. We don't have any one person who has it all. Our value comes for the collective expertise of all our members. I hope we can continue to make this a worthwhile and interesting Society.

Frank Kieser

71 Brixford Crescent
Winnipeg, Manitoba R2N 1E1
21 October 1985

Dear Patrick and Frank,

In the interests of some kind of efficiency, I'll send you both the same letter, since you had both asked for similar information.

So far Frank's is the only entry for the new postal. That doesn't surprise me particularly. Last time it was the last minute before many of the entries arrived (particularly the Japanese ones).

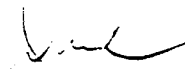
Of course, there may be a deterrent effect from Frank's, Rohrbaugh's, and Harlan's tours de force. When I was in Boston a couple of weeks ago, Ray invited me for dinner. He mentioned Patrick's crack about "you creeps spoiling it for the rest of us" (which he took in good spirit). But there is some truth in it. Surely one of the main problems now is to attract new people and keep others from getting discouraged. After all, 5 minutes isn't exactly trivial, yet it's only half what it takes to be really competitive these days. While there is still lots of fun to be had in dabbling, there is no longer any chance of getting a record out of it.

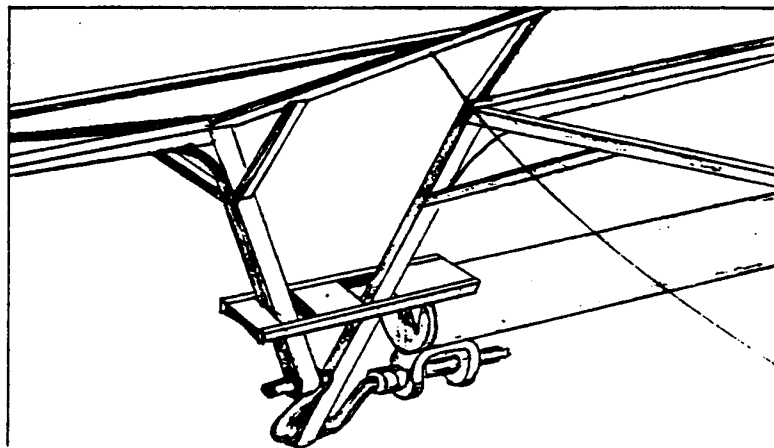
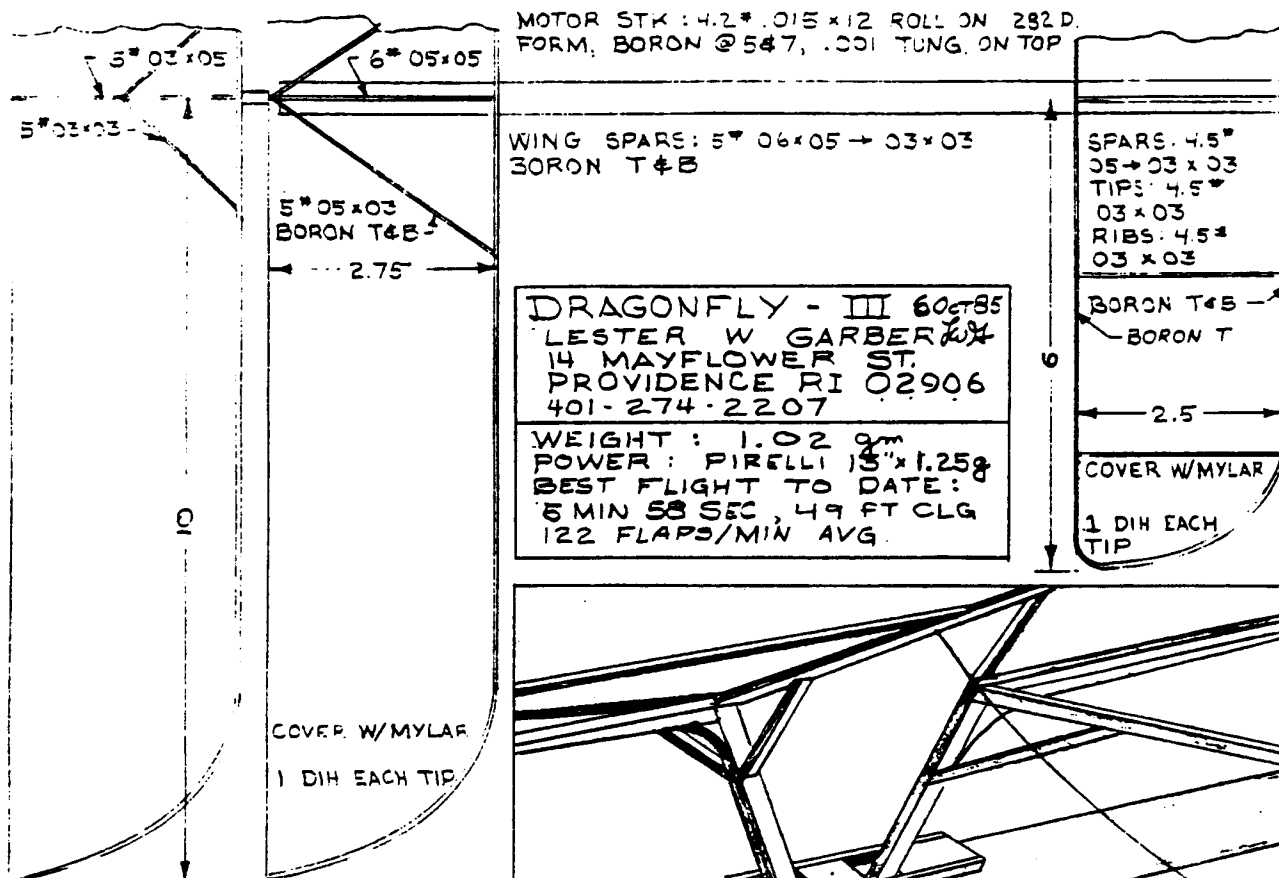
Harlan's ornithopter is definitely not a beginner's model. Not when it's got four strands of stressed boron on each of the flapper spars. Such techniques can plainly help push performance to previously unimagined standards. They may also be capable of destroying the nascent interest in the event, since they make it impossible for beginners even to copy someone else's competitive design.

Frank also wondered about publicity. I haven't gone to the lengths I did with the previous contest since I assumed Flapper Facts would go to everyone who ought to know, either as competitor or as media type.

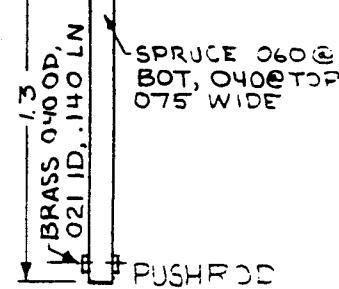
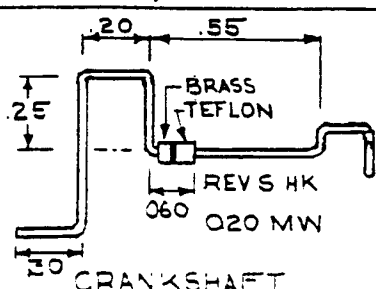
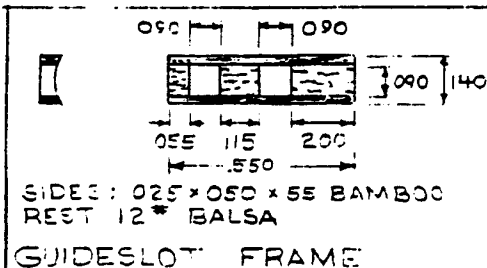
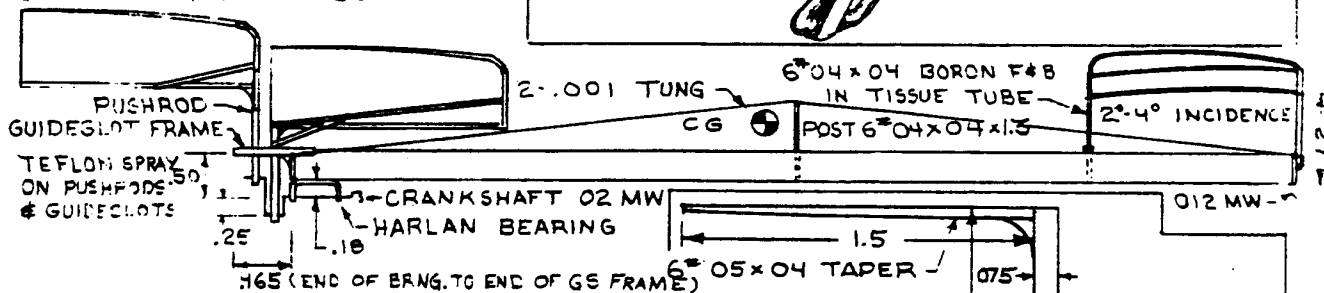
I'm sorry I didn't make it to either the Nats or the USIC this year. With a two-year-old in the family and another child on the way, my building time is rather restricted. (But if this one's a boy, maybe in a few years I start having better excuses!)

regards,





CRANKSHAFT RADIUS: 0.25
DISTANCE C/L CRANKSHAFT
TO CENTER OF GS FRAME: .50
FLAPPING ANGLE: 60°



DRAGONFLY III

Dragonfly III is a development of Dragonfly as shown in the autumn 85 issue of Flapper Facts. Following Frank Kieser's lead I began to experiment with canard ornithopters using my 'teeter-totter' mechanism. Dragonfly III is a dramatic improvement over my previous tractor ornithopters.

Unlike other designs, Dragonfly has a very simple flapping mechanism. This minimum of parts minimizes the final weight. I'm sure that some indoor builders could build this design to .9 grams. A simple energy analysis shows that flight time is inversely proportional to weight to the power of 1.5. This means, for example, that a 20% decrease in weight should result in a 31% increase in flight time. Weight is ever so critical!

I have limited access to flying sites and these models have only been tested in one 4 hour flying session under a 49 ft. ceiling. Four out of six flights were over 5 min. 30 sec. with the longest being 5 min. 58 seconds. Flight patterns were very smooth and consistent and the models appear to have much more potential once I figure out the right rubber combination.

Construction Comments

The guideslot frame, crankshaft, and pushrods must be built and assembled with great accuracy. They must be built and assembled in the following order: 1) Make guideslot frame. 2) Make spruce members of pushrods, drill .040 holes for brass bearings, and insert bearings. 3) Bend crankshaft, sliding spruce members into position as you bend. 4) Slide guideslot frame onto spruce members of pushrods. 5) Finish pushrods by gluing horizontals and fillets into position. 6) Slide this assembly into bearing on finished motor stick and glue guideslot frame into position. The flapping mechanism must be perfectly square and rotate freely or the model will, at best, fly poorly.

Note that I use large amounts of boron for increased stiffness and strength. For competition class models this is a necessary evil. We are truly in an era of composite construction, if performance is important it is mandatory to use boron. I don't like to use the stuff, it is dangerous and greatly increases the building time but there is no other way!

The motor stick uses two boron fibers at 5 and 7 o'clock and two .001 tungsten wires on a 1" post. This provides more than adequate stiffness and strength at minimum weight.

The model, if built accurately, does not require a rudder and should turn nicely to the left without any warps in the canard. If it turns in very tight circles this indicates that the wings and flapping mechanism have not been built and aligned with sufficient accuracy.

Lester W. Garber
14 Mayflower St.
Providence, RI 02906

O.M.S. Powered Ornithopter Postal Contest



BEGINS JANUARY 1, 1986

CONTEST DIRECTOR: PATRICK J. DESHAYE

PURPOSE:

To promote the development of engine-powered outdoor flapping-wing model aircraft.

RULE:

- 1) Craft must be powered by an internal-combustion engine which is to be wholly responsible for actuating the flapping surfaces. No sources of propulsion other than the flapping surfaces themselves are allowed on the craft in flight or at the launch. Fans for engine cooling must be cowled or ducted in such a way that they do not augment flight.
- 2) The sum of the projected surface areas of any and all fixed or non-flapping horizontal surfaces must not exceed one-half of the sum of the projected surface areas of the powered flapping surfaces. The surface areas of the flapping parts may be measured at their maximum projection along the flapping arc.
- 3) All flapping surfaces must reciprocate in an anhedral/dihedral fashion, about an axis parallel to the direction of flight, and shall not sweep an arc of less than 30 degrees nor greater than 180 degrees from the axis of articulation of each flapping surface.
- 4) Flights must be made outdoors. The craft must rise from level ground under its own propulsive action and remain airborne in continuously-powered radio-controlled or free-flight for no less than two minutes from takeoff. No more than one such flight is necessary.
- 5) Flights must be made during a contest or record trial sponsored by a club or organization affiliated with the F.A.I. or one of its national representatives for aeromodeling. This shall include local contests sponsored by chartered clubs of the A.M.A.
- 6) No restrictions apply to the overall size, engine design, fuel, or airframe design save those mentioned above, but flight may not be assisted by any device or subterfuge. In the event of doubtful or ambiguous situations, interpretation of the rule shall be left to the contest director.

ENTRIES:

- 1) There is no entry fee, nor any restriction on who may enter.
- 2) Entries may be made any time after the date of announcement. There is no deadline. Winner will be selected by the earliest entry, by postmark, to satisfy the contest rule.
- 3) Entries must include:
 - a) Complete plans of the model, including airframe dimensions, materials, engine specifications, details of the running gear.
 - b) A photo of the craft in flight.
 - c) A statement signed by the director of the local contest at which the flight was made that all conditions of the rule were satisfied; the signatures of two additional witnesses are required.

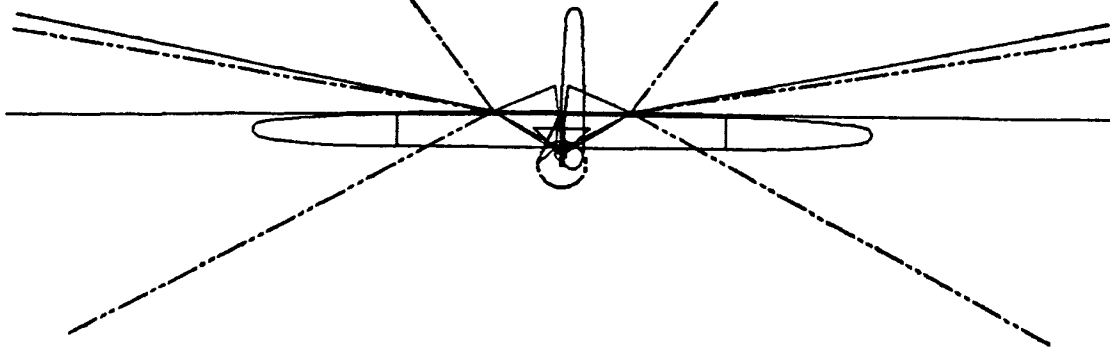
PRIZES:

A bronze trophy, commemorating the contest, will be awarded to the winner. A purse is now open for contributions to a cash prize to be awarded in addition to the trophy. Announcement of the winner, and full coverage, will be provided to much of the modeling press by the Ornithopter Modeler Society. A free, one-year membership in O.M.S. is also to be provided to the winner.

INFORMATION/ENTRIES:

Patrick J. Deshaye
2349 W. Newton, #103
Seattle, WA 98199
USA

MIDDLE OF TRAVEL:
TOP 12"
BOTTOM -10"

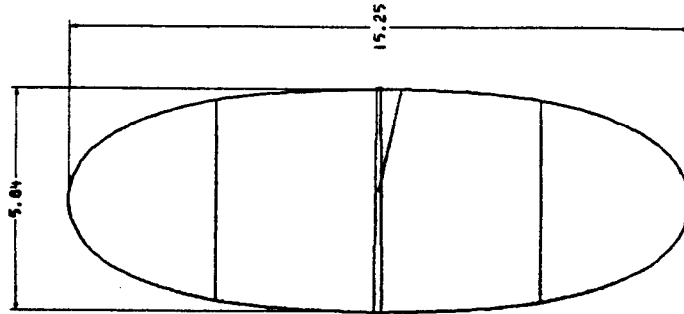


FLAPPER SHOWN FULL SIZE
TOP AREA 98.9 SQ. IN.
BOTTOM AREA 98.6 SQ. IN.
FIXED WING 15.0 SQ. IN.

TOTAL WING AREA:
98.9 x 2 x COS 92° = 44.9
98.6 x 2 x COS 10° = 19.1
FIXED WING AREA = 15.0
TOTAL = 156.0 SQ. IN.

STABILIZER SHOWN FULL SIZE

STABILIZER AREA:
5.84 x 15.25 x .8993 x COS 15° = 71.7 SQ. IN.



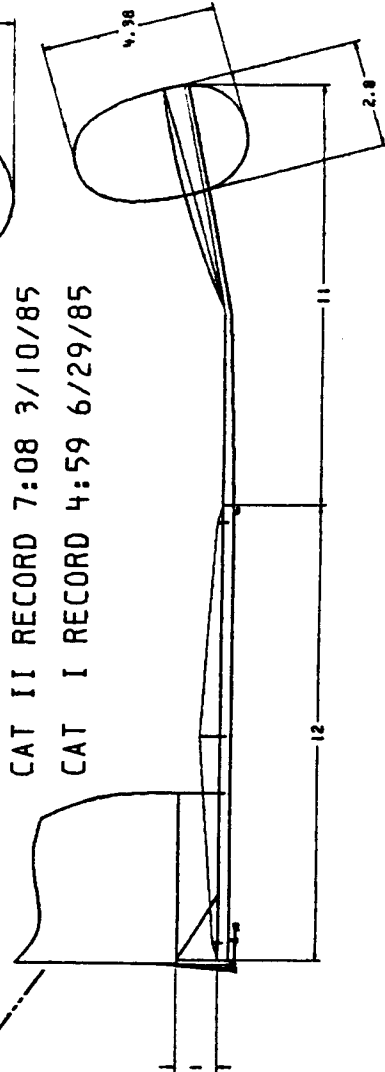
HEIGHTS:
FLAPPERS .0231
FUSELAGE .0575
TAIL .0044
TOTAL .0850 OZ.

FLAPJACK

BY
RAY HARLAN
OPEN

CAT II RECORD 7:08 3/10/85

CAT I RECORD 4:59 6/29/85



1986 ORNITHOPTER MODELER SOCIETY ROSTER

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24 CHAS. MCCUTCHEN	5213 ACACIA AVE	BETHESDA MD	20814	USA
25 AND. TAGLIAFICO	20801 NW REEDER	PORTLAND OR	97231	USA
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49 GERALD MALLETT	10 HIGH STREET	NEXT WARREN MA	01092	USA
50 R. T. BATES, MD	2505 WHITEEAGLE	CEDAR RAPIDS IA	52403	USA
51 OTIS C. OLSON	15 ARROWOOD	RT 1, KASOTA	MN 56050	USA
52 THOM. J. SCHMITT	11014 MARCLIFF	ROCKVILLE MD	20852	USA
53 GERVAIS R HOLTH	653 WOODHILL DR	FAIRBORN, OH	45324	USA
54 GEO. L. MYERS	29 N SHIPPEN	LANCASTER PA	17602	USA
55 FRANK L JAYNES	3000 VALENTINE	BROOK NY	10457	USA
56 HOWARD JOHNSON	6300 JACKSON DR	#11, SAN DIEGO	CA 92119	USA
57 JAN R KONIAREK	154 S STATE RD	BRIDGEMAN, NY	10510	USA
58 RAYMOND HARLAN	15 HAPPY HOLLOW	WAYLAND MA	01778	USA
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