USE OF THE GURNEY FLAP 
PRINCIPLE
by Dave Stott 
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Bay State Squadron’s Pilgrim Flyers, Mike Nasisse, Editor

In a past issue of Tailspin, Tom Nallen Sr. told us of how race 
car owner/driver, Dan Gurney, improved the effectiveness of the 
aerodynamic spoiler on one of his cars by attaching a right 
angle to the trailing edge, one flange of which was protruding 
upward into the air flow. This odd move provided a great 
improvement in the downward force created by the spoiler. 
Some readers may also recall rubber-powered endurance model 
flyers fine tuning the trim of their models by adding a short 
length of 1/16” sq. balsa to the trailing edge of the desired 
surface.

An entire season was spent by the author in trying to get a 
Scientific 20” Kawasaki biplane to stop dropping its left wing 
under power. There were no warps, and alignment was perfect. 
All the usual corrective measures, short of detaching the bay 
struts and warping wash-in to the left wing, were tried without 
success. In desperation, a much loathed and extremely large 
clear tab was added. This got the model to fly in a manner that 
could only be termed "acceptable".

Enter the Gurney flap! A 3-inch length of 1/16” square was 
tack glued under the trailing edge of the lazy wing and the 
offensive tab was removed. Presto! Problem solved. You have 
to admit, a piece of 1/16” square on the bottom of the trailing 
edge and painted the same color as the wing is much more 
unobtrusive than any tab.

When one considers the outstanding and perpetually good 
performance of the traditional simple ROG stick model, could 
it be because of the Gurney flap effect which was accidentally 
built in feature of the wing structure of these old favorites? If 
you think about it, it is present. The single surface cover of the 
wing with the exposed square trailing edge on the bottom is, in 
effect, a Gurney flap. The usually lesser performance of the 
ROG equipped with an all sheet balsa wing has always been 
attributed to its added weight. This is undoubtedly a factor. 
But, could the lack of that square trailing edge protruding down 
into the air flow as found on the built up tissue covered wing 
also be a significant contributor?

The author once built and flew for many years a truly accurate 
reproduction of a very old tow line glider. It was designed by a 
youth named Martin Moad and published in a children’s book 
of model airplanes in 1933. The wingspan was 6 feet. The 
aspect ratio about 7.8 to 1. It was a single surface covered 
wing! The leading and trailing edges, as can be seen in the 
sketches, were enormous and square in cross section. Only a 
slight rounding of the corners of those members was called for. 
Rib spacing was a whopping 5 inches! In spite of the terrible 
looking airfoil this structure created, the performance of this 
model was flabbergasting! In competition it proved itself over 
competitors 15 years more modern, such as the Jasco Trooper. 
Another faithful repro was built by fellow modeler, Tony 
Faranda, and flew just as well, establishing a lack of fluke 
being involved. Tony was such an expert in trimming hand 
launched and catapult gliders that he was nicknamed “Dr. 
Schweitzer, the Glider Doctor”.

The exposed trailing edge of the models discussed here certainly 
seem to produce the Gurney flap and its effect. What are the 
side affects of its use? What is the best wing chord/Gurney flap 
height ratio? Does it cause an increase in drag? Is it great 
enough to cancel its benefit? Does the Glue Guru have an 
opinion on this? Should any of us do further experimenting 
with it? Tailspin is certainly the place to discuss it further. 
Let's keep Mike and one another posted, clubsters.