On the ’Wing...

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Jim Marske’s *Monarch G*

We have been enthusiastic supporters of Jim Marske’s designs for two decades. The more we investigate the *Pioneer* and *Monarch* planforms, the more sense they make.

Simply put, Jim’s planform allows use of conventional sailplane control systems — elevator, ailerons, rudder and airbrakes — through straight forward linkages, producing an extemely safe aircraft. Additionally, performance of these sailplanes is very good, even when using basic construction materials and methods.

While the *Pioneer II-D* and the more recent *Pioneer III* are designed with the possibility of soaring competition in mind, the *Monarch* was designed purely to enjoy soaring with minimum expense.

The *Monarch* is light enough to be towed to soaring altitude by automobile using 3/16" polypropylene rope, certainly an inexpensive launching method. In practice, a strain gauge with remote readout is used in line with the tow cable. The driver simply starts moving the vehicle and maintains constant tension on the line (160 lbs.) by adjusting the throttle. (See the photo on page 33.)

Once off the tow cable, the *Monarch* pilot is free to explore the air in a way that enclosed pilots cannot. We talked with Mat Redsell about his experiences flying the Monarch, and he just beamed the entire time.

Being out in the open, the pilot can feel changes in air temperature and humidity, smell the pollen and other scents rising from ground level, and hear the environment without the sounds being blocked by a Plexiglas canopy.

Upon landing, Mat says that he often cleans numerous spider webs from his glasses and face as well as the leading edge of the wing and front of the fuselage and wing struts.

Mat is always enthusiastic about the ability of the *Monarch* to circle in tight lift due to its extraordinarily low wing loading. He’s come to call this sort of lift “micro” lift, sometimes to the consternation of others, but it does seem to us that the full size *Monarch* is perfectly capable of soaring in the same thermals as our own RC sailplanes.

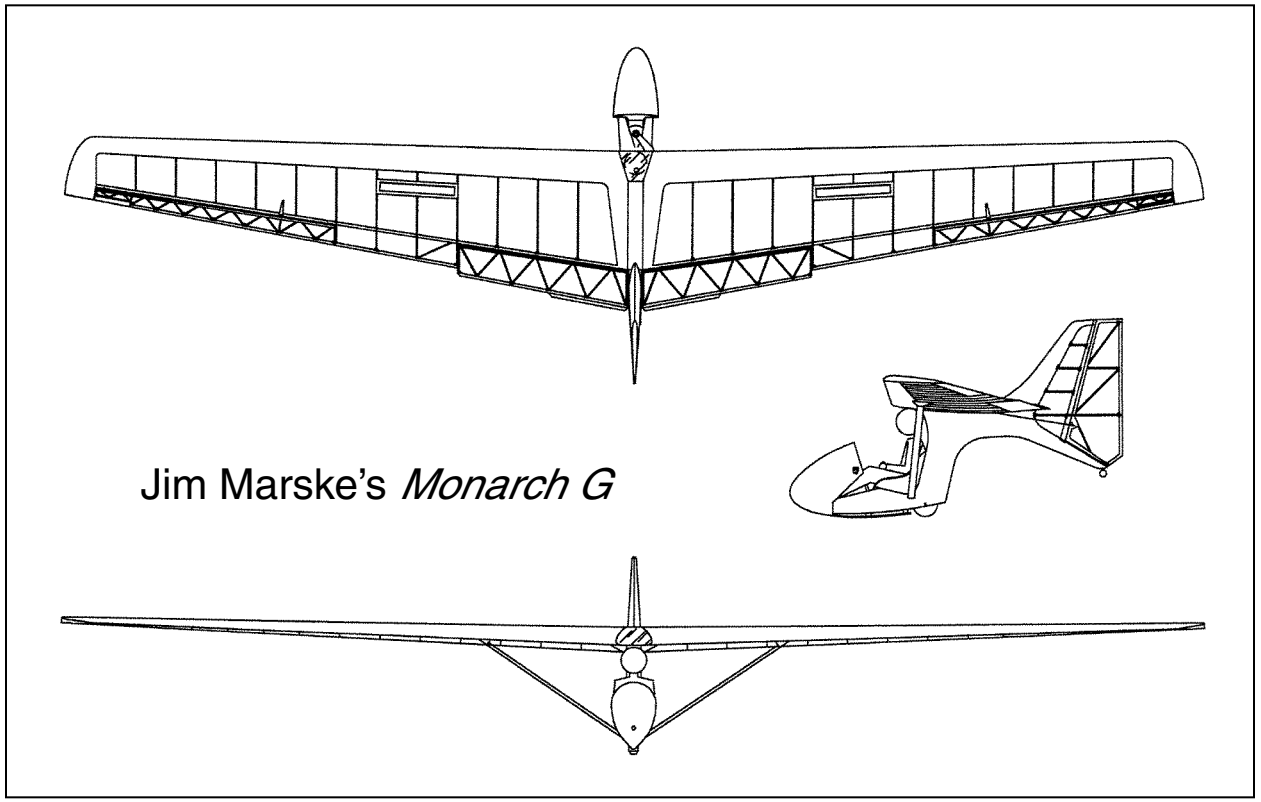
Because the *Monarch* is a relatively small aircraft (wing span just over $42^1/_2$ feet) a 1/4 size model would turn out to have a relatively small 10 foot 7 inch wing span. We would go with 1/3 scale, as the 14+ foot wing span will still break down into two panels of around seven feet each.

Model construction can be easily accomplished with an all wood wing and ’glass fuselage. The open wing structure lends itself well to this sort of construction, and the angled ribs within the control surfaces add significant torsional rigidity. Given today’s technology and miniaturization,

all of the servos can be enclosed within the wing and fiberglass fuselage structures.

One of the more interesting aspects of modeling the *Monarch* is the need to build a full body pilot. This is probably best accomplished with lightweight styrofoam and clothing of real fabric. Some ingenious person could more than likely develop a system whereby the pilot's extremities moved in unison with control surface deflections.

A large scale model of the *Monarch G*, complete with pilot and realistic fabric covering, would certainly be impressive. Anyone excited enough to build one?



	Monarch G	*Monarch G* (carbon)
Span	42.6 feet	42.6 feet
Area	163 sq. ft.	163 sq. ft.
Aspect ratio	11.1	11.1
Empty weight	180-200 lbs.	132 lbs.
Pilot weight	120-220 lbs.	120-220 lbs.
Flying weight	300-420 lbs	252-352 lbs.
Wing loading	1.8 - 2.6 lbs./sq. ft.	1.5 - 2.2 lbs./sq. ft.
Glide ratio	22 @ 36 m.p.h.	n/a
Minimum sink rate	138 ft./min. @ 30 m.p.h.	n/a