

THE "QUICK-PIT" FLIGHT BOX

By RICH "von" LOPEZ . . . One of the nation's leading Combat fliers tells all about preparing for battle, and provides you with the means of "getting it all together" where you can find it when you need it!

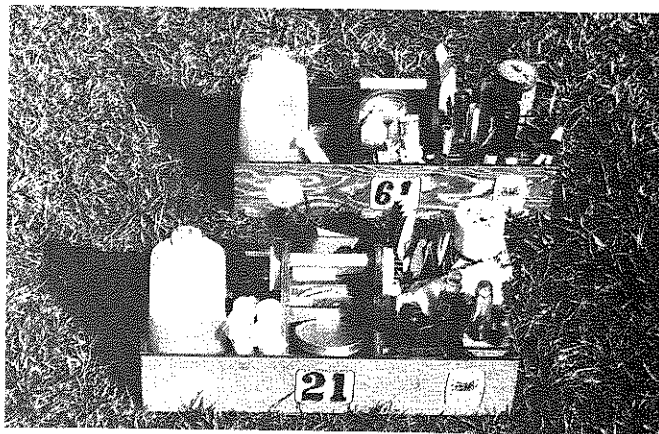
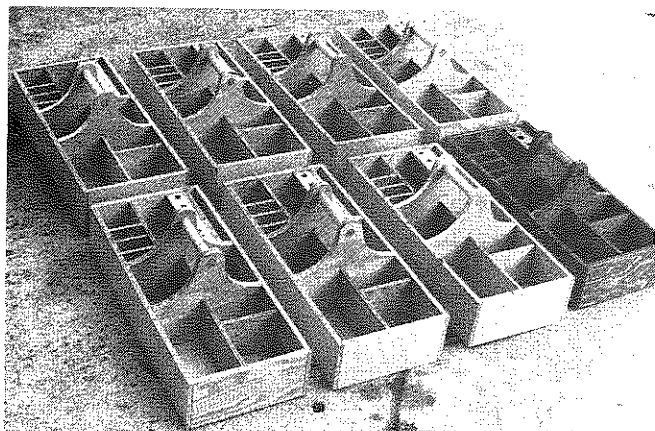
• In order to be a well prepared competitor, one's equipment must be in top condition and be readily accessible. One must know this equipment thoroughly and its value in competition. The Quick-Pit flight box that I have designed is laid out with all the equipment that I find necessary to fly competition combat, or that is needed in a contest situation. These needs will naturally differ slightly with the wants and needs of each individual pilot. It will, however, be a good starting point for the beginner, and even for some of the

more seasoned pilots who do not have the time to sit down and design a pit box around their needs. Hopefully, you will find this an informative and useful article and project.

The importance of pit work has been well recognized by race car drivers for a long time. Races are often won or lost in the pits. Given the Academy of Model Aeronautics (AMA) Combat rules, it is to the competitor's advantage to have a fast start. I have seen a great number of matches won through the work of an efficient pit crew. Give yourself the

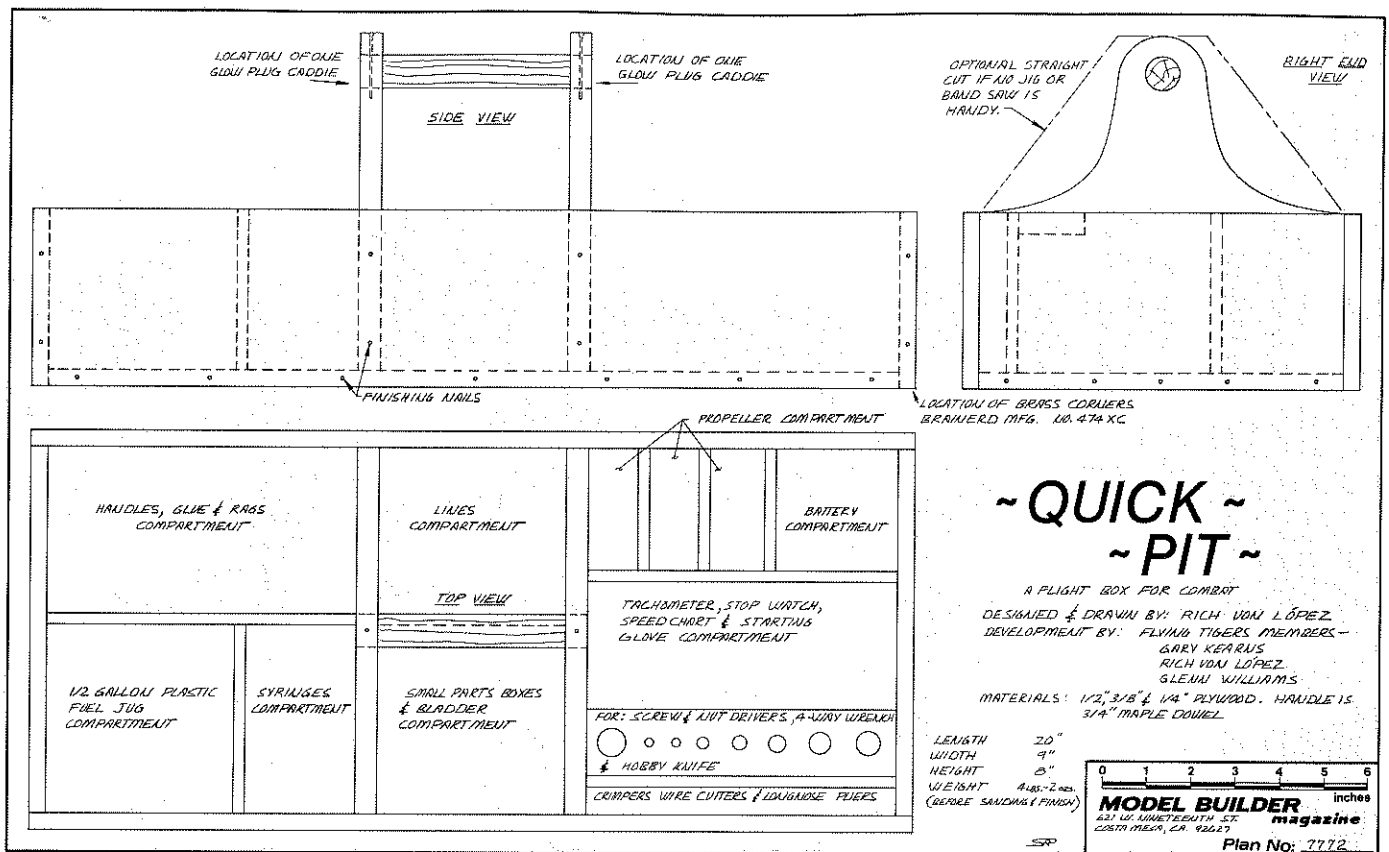
best possible chance of winning by practicing your pit work. This is even more important in the now World Championship event, FAI Combat.

I have been flying combat in competition since 1965 and have achieved a considerable amount of success. This is due in part to having reliable equipment and knowing how to use it. I have tried to minimize equipment failures such as dead batteries, old glow plugs, not having the right wrench, not enough props, no spare needle valve and spray bar assembly, and many other such little



"Somebody forgot to turn off the machine!" A total of 36 man-hours (3 men, 2 evenings, 6 hours each, cranked out these plus two more.

"Quick-Pit" boxes belonging to Rich "von" Lopez and Glenn Williams, all loaded up and ready for fast action in the pit.



FULL SIZE PLANS AVAILABLE - SEE PAGE 104

items. I have seen a countless number of pilots running during a match from the flight circle to the pits in order to fetch a glow plug, wrench or bladder or some other such item that should have been in the flight box. This lack of the right equipment at the right time has been the cause of many lost matches or failures to get airborne. This is not only disgusting, it is also frustrating to the pilot who has spent countless hours of labor on his models and on traveling to a contest. As a result, some of these pilots never return to the combat circle, causing a drop in participation, something that the event cannot afford. The object in flying combat as I see it is to derive enjoyment. This is very difficult to achieve if you are fighting your equipment as well as your opponent, so some care and preparation is required. Enjoyment also means being competitive, so with this in mind, let's look at the equipment necessary to be proficient.

First of all, you need several first rate combat aircraft (I will be referring to fast combat aircraft, but the same holds true for slow, FAI or 1/2A combat), that is, combat wings that are light, straight, and trimmed out. Each individual should choose the design that suits him best, though my preference is, naturally, "Matador" (kit No. 248 by Midwest . . . published in July 1975 FM). Then you need at least two well broken in combat engines. You can choose from; the 1976 Fox Combat Specials, Super Tigre G21-Combat, G21-35 with Perry porting, the C-35

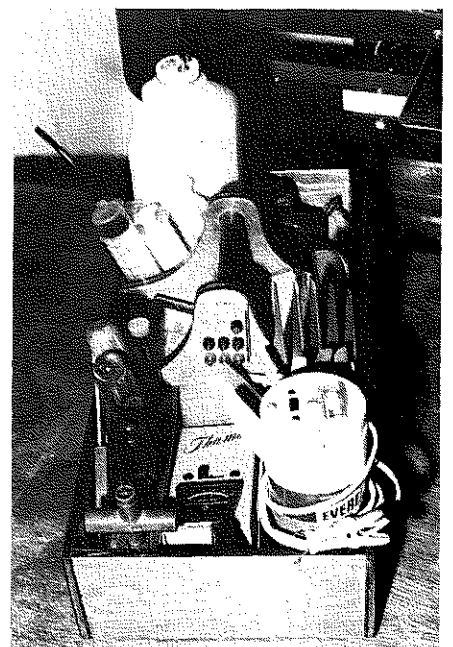
with Perry porting, the K&B 35 with or without a Ball Bearing front end, or the new K&B 5.8cc. That choice is entirely up to you. I have tried them all and they all seem to be adequate. Now that you have this part taken care of, take a close look at what you will need to operate this equipment.

Lines and handles are, of course, essential to control line flight. I use three different handles for combat aircraft, one for 1/2A (a Pylon brand unit No. 95), one for FAI or Class A (an E-Z-Just large handle). For Western Associated Modelers (WAM) competition, I take two sets of lines for each event, these having been cut and measured prior to the contest. For AMA combat, I like to have four sets of 60 foot lines, and FAI combat may require four to six sets of lines for a large contest. Check these lines often, making sure they are in good condition; that is, not badly kinked or frayed.

At this point we have an aircraft with engine, lines and handle. You next need fuel to run; the blend you wish to use is entirely up to you. The Quick-Pit flight box is designed to carry a half gallon of fuel; the container is a plastic 1/2 gallon jug from A&W Root Beer stores. It is set up with a filtered pick-up tube and a dry vent in the cap. This is done so that you only have to remove the cap to fill the container and not each time you want to fill a bladder. This system will always give you clean fuel. The filter used is a Du-Bro No. 161 R/C Tank Filter with a 1/8 inch diameter

brass pick-up filler tube. We drilled two 1/8 inch holes in the cap and soldered the tubes in place; one tube, the pick up tube, was made a 1/2 inch taller than the vent. We also added a flat washer to give a little extra support to the vents at the solder joint. A piece of flexible tubing can be looped from the pick-up tube to the vent to seal the container. To get the fuel out of the

Continued on page 93



End view off loaded pit box shows everything in its place, ready to be grabbed without a lot of time-wasting fumbling.

are being well-spent!
PARTING SHOT

It is nice to be important, but it's important to be nice!

Quick-Pit . . . Continued from page 37

container and fill the bladders, I use a 60cc disposable plastic syringe; there are a number of different manufacturers. The syringe marketed by Tatone Products (No. 74) is the best one I have used; it seems to last the longest before the rubber plunger gives up. The Quick-Pit flight box has a compartment that will hold three or four syringes, depending on the brand you use.

You now need a number of bladders to run your motors. Many pilots use pen bladders; these are available from Tatone Products (Sm. No. 71, Med. No. 72, and Lg. No. 73). Other pilots, like myself, prefer surgical bladders; Midwest Products markets surgical bladders (No. 1201), or they can be scratch built, provided you can find the right size tubing. I use 5/32 Bore x 3/64 Wall Surgical Latex Tubing. Still other pilots use baby pacifier tanks. Pacifiers can be purchased from a number of different sources, including drug stores. The clamp I use to pinch the fuel line is an electrical heat sink; it is small, inexpensive, and effective. I have, however, lost several of these units. Surgical forceps or clamps are nice, but they are expensive and can sometimes be too large. There are a number of other clamps that will work. Experiment and find out what works best for you.

Propellers are next. Experimentation is done at the practice field and not at a contest. Make sure you have enough props for a contest; seven or eight balanced wooden propellers for AMA Fast combat contests should be enough. Three props for each class at a WAM contest will get you by since you are limited to three flights per event. The new Top Flite Pylon racing props that are 8-1/2 inch in diameter are worth trying. I will not tell you what props to use, because each aircraft engine set-up will require a different prop to achieve maximum performance. This is something you will have to find out for yourself.

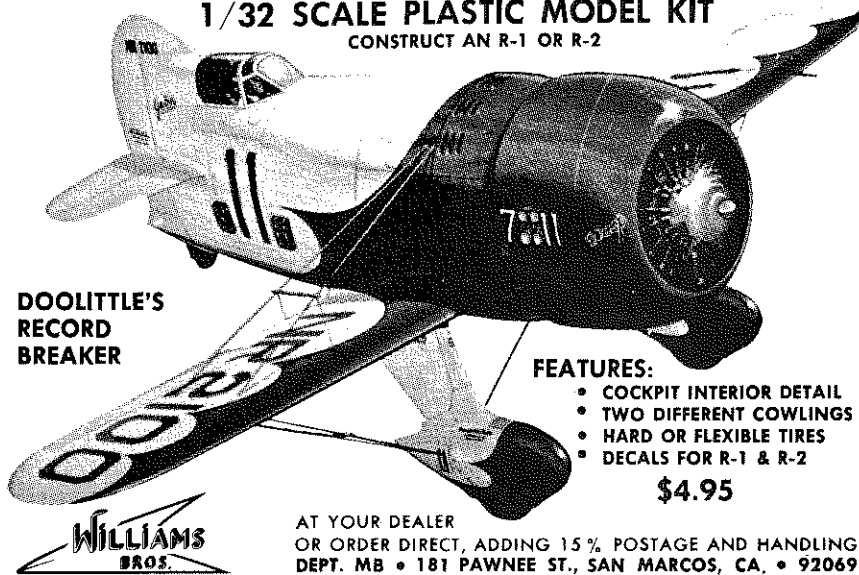
A battery is the next essential item. I like to use the tall, round No. 6, 1-1/2 volt Ignitor Dry Cell unit in conjunction with a Kraft Glow Plug Analyzer Model CPA-R and a Graupner glow plug clip no. 1608. Many combat pilots use a variety of rechargeable batteries that are either nickel-cadmium or wet-cell units. The new Fusite Fire Plug looks good and is compact; it is, however, a bit on the expensive side. Some sort of meter to determine the condition of your glow plug at a glance is a must in a contest situation.

Glow plugs are an expendable item because of their delicate nature. A new

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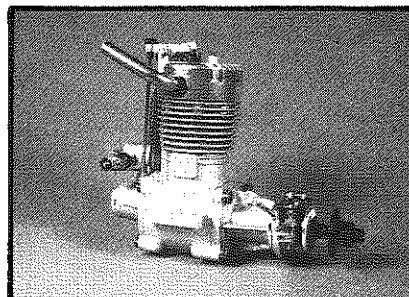
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glow plug, whether you need it or not for each contest flight, is a good policy to follow. The used plugs can be put in a separate caddy, and used during practice sessions. A full caddy of nine plugs, plus a new one in each engine, is a good way to start off for a contest. Experiment with the various brands to find the ones that work best for you and your set-ups. The Quick-Pit flight box uses two "Nifty" glow plug caddies by Sonic Tronics No. 260.

A starting glove is helpful in preventing prop-bitten hands and fingers. I have been using a motorcycle moto-x glove that is padded along the backs of the fingers. It has saved my hands and fingers many times, and is a cheap form of medical insurance. You can also use "chicken sticks" (Tatone No. 51), but you lose the feel of the motor. Bare finger starting is reckless and is just asking for injury. I have also seen pilots who use a piece of rubber hose over the fingers as an aid in starting motors; it seems to work for them. One pilot that I know used an archery finger guard glove. It made for a real neat unit and is worth looking into. If you have an effective idea in this area, use it and let other pilots know about it.

TOOLS

A four-way wrench (Austin Craft No. 227 or Fox No. 70104) is a standard item used in every tool box, and the Quick-Pit flight box is no exception. It is handy for prop nuts, glow plugs, and mounting bolt nuts. Some nut drivers are also nice to have in your flight-box. I carry a 5/16 driver for glow plugs, .15 size prop nuts and mounting bolt nuts. I also use a 1/4 inch nut driver for 1/2A and Class A or FAI mounting bolt nuts. The Quick-Pit flight box has spaces set aside for large, medium and



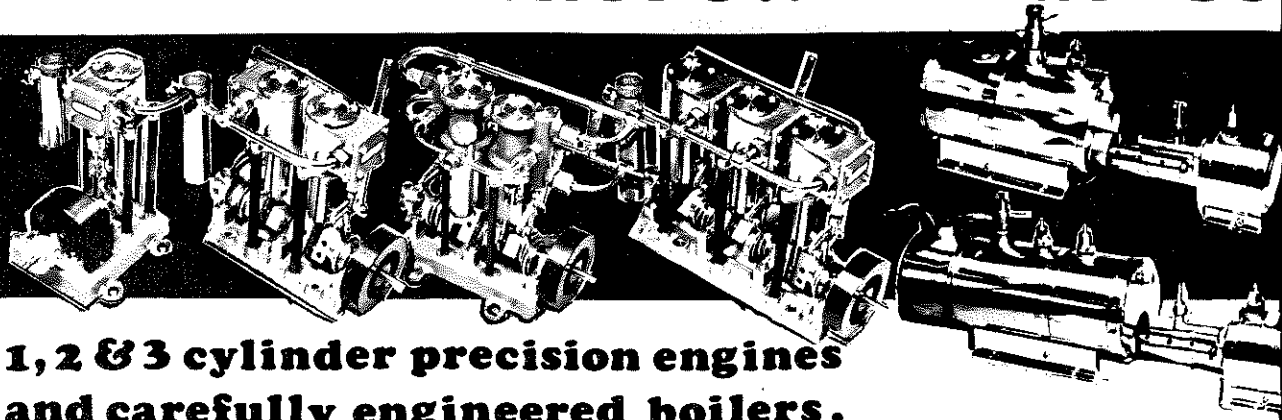
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small screw drivers. There is a space set aside for an X-Acto super knife (No. 3111) in its case; you can always find a use for this item (*Mainly to cut your throat for not using an Uber Skiver! wcn*). The Quick-Pit flight box has a long deep slot for a pair of long nose pliers, a pair of wire cutters, a crimping tool, and a pen. These items fit in the box standing up so they are easy to get to.

These days, competitive pilots have to carry 5-minute epoxy and cyanoacrylate glue for quick field repairs. Make sure that these items are in your tool box. A competitive combat pilot should have the following items available to him at a contest: a sealing iron, heat gun, pieces of Fascal, and a pair of scissors. These items do not have to be at the flight circle, but should be nearby. A clean rag is one of the most forgotten items, yet it is one of the most useful accessories at a contest or at the practice field, I like to wipe off my aircraft after a day of contest use or after a practice

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Like so many things in our lives, we get charged up on one or several items, then the enthusiasm drops off, and all is forgotten. This happened to me and pendulums. It wasn't until I met Jack McCracken a few years after that Nats that my interest was rekindled. Jack has done a tremendous amount of work and experimentation with pendulums, and I've learned more from him than any other source.

Before getting too far along, let's look at some of the early applications of pendulums. Apparently, the first attempts with pendulums were for rudder. These initial trials worked out quite satisfactorily, with the rudder movement hardly noticeable. As the use of pendulums increased, modelers found their models either spiraling to the ground or looping frantically. The probable cause was either too much movement or sticky controls. Even though pendulum rudder was first used, the elevator is, or has been the most popular. With rudder control, if there is over-correction, the model spirals to the ground. With pendulum elevator, theoretically this should never happen. Usually, with the nose down the pendulum will pick it up, or visa versa.

One big disadvantage to a pendulum elevator is that all flights should be done R.O.G. Why? When you hand launch, the first thing that happens is that the pendulum is surged back (For every

action there is a reaction.). This causes immediate down elevator, and at shoulder height . . . sure disaster. About six years ago, for the first Flightmaster Scale R.O.W., I built a Sopwith Schneider that had both pendulum rudder and elevator. When I first flew the model, I had to run like mad, then toss the model into a very steep climb. The model would gently stall and continue on a reasonably stable flight. The only reason I could endure such tactics is that I was waist high in grass.

My personal feelings about pendulum elevator (I won't even consider pendulum rudder) is that even a rock will remain straight and level if there is enough energy behind it . . . meaning that a model can be trimmed for a flat glide regardless of its weight, as long as there is enough flying speed involved. So that brings up the point about pendulum ailerons. Unquestionably the biggest problem with many scale models is spiral instability. This can be caused by several factors, with lack of dihedral being the major one. Therefore, it logically stands to reason that pendulum ailerons would be the most sensible control to use.

What kind of designs should you consider for using pendulum ailerons? Certainly not the old Stable Mabels that have been done and over done, such as the venerable Piper Cub, T-Craft, Tiger Moth, S.E.5, etc. These and similar

aircraft have such good full-scale proportions that additional help from pendulums is not necessary. However, what about a Staggerwing Beech, or even a Fokker DR 1 or a Boeing F4-B4? It's certainly a challenging thought, wouldn't you'd say?

The photograph of one type of aileron control is that used by Jack McCracken. As the weight swings to one side, the corresponding aileron works to pick up the low wing. This system is suited to models which have the ailerons on the bottom wing, if its a biplane, or for any low-wing design. If it is a parasol or a biplane with the ailerons in the upper wing only, then refer to one of the sketches.

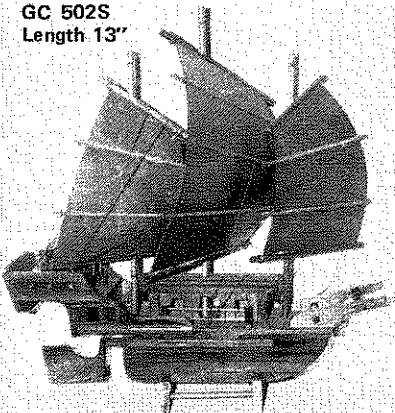
Is there a drawback to this particular system? Yes. Jack had this system installed in his magnificent Staggerwing. On the first test flights, it was found that due to the speed of the model (it is built to one-inch scale, with a 30 inch wingspan, and is fairly heavy for its size, powered with a Cox .049 engine . . . It has to fly fast) that as the model banked sharply to the left, you could see the pendulum trying to pick-up the low wing. However, as the speed of the model increased, the pendulum was swung to the opposite side due as a result of the centrifugal force set up by the tight spiral. This, of course, caused the model to continue spiraling into the ground. Fortunately, in this case . . . tall grass. Jack has since revamped the

• All hardwoods.

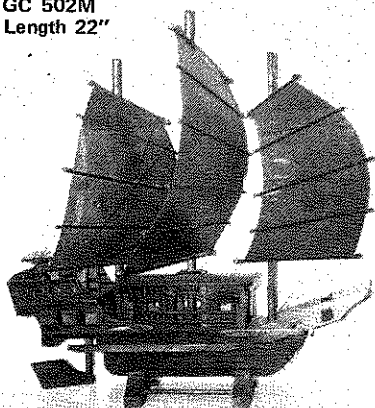
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system, and I'll discuss it next month. So, for a model that does not have an excessive wing loading and will fly at a reasonable speed, this particular set up should be quite satisfactory.

On my Heath Parasol, I have the pendulum in the wing, but as of this writing, I have not flown the model. It has a flat wing and therefore should prove quite interesting during testing. I should have further information in the next column. I'll also go into how to construct the system as to wire size, leverages, etc. I just hope this article gets some of you motivated into coming up with some ideas of your own . . . that you may want to share with the rest of us.

Peck-Polymers has just released a new kit . . . the Walnut size, 17-1/2 inch wingspan Baby Ace. Baby Ace is known as the king of the homebuilts, and the model is an ideal size to be flown with rubber or CO2 power. The kit plans show rubber and CO2 motor installations. Kit is complete with photo instructions, 3-views for proof of scale, formed plastic wheel pants, nylon thrust gearing, contest balsa, wheels, plastic propeller, and correct size rubber for flying. It is priced at \$4.75. This may be the beginning of a whole new line for Bob Peck. This model should make an excellent flyer due to its ideal proportions. ●

Letters Continued from page 7
to discount, it's less than that.

To compensate for the limited variety a hobby shop can offer, many try to special-order those items he doesn't normally stock. This is NOT easy! A customer special orders a \$5 item or even a \$30 kit. What the customer doesn't see is the minimum order restrictions ranging from \$50 to \$250 dealer cost (not retail) and only 1 or 2 of the dealer's regular distributors may stock the item (Sometimes less than that!). The dealer places this customer's item on the first order going out (maybe 2 or 3 weeks later) to a distributor who may stock it with enough other merchandise to make minimum order. If all goes well it will be back in 1 to 6 weeks. If it doesn't go well, the item will be back-ordered, out-of-stocked or discontinued. So he repeats the process to another distributor as soon as he needs enough merchandise to make minimum order with the next company . . . if there's another to try. When he eventually gets the merchandise, hopefully the customer still wants it!

There's a lot you, the customer, can do when you special order. First: BE PATIENT! Second: Offer to pay at least half when you place your order. Third: BE PATIENT! Fourth: If you're in a hurry for the item, offer to pay any special charges your dealer might otherwise have to absorb, such as a long distance phone call to place the order, extra charges assessed if he cannot make minimum order, and even the shipping charges and insurance. Fifth: BE PATIENT! Finally: Pick the item up as soon as possible after the dealer lets you know it has arrived. If you find the item someplace else in the meantime, contact your dealer immediately. Have him cancel your order if possible. If it's too late, offer to pick it up anyway or find a friend

who can use it. NEVER order something and leave your dealer stuck with it. It doesn't take long for hundreds of dollars to get tied up in unwanted, unpopular merchandise.

Let's go back to the idea your dollar is a vote. Also keep in mind that volume is essential. In so doing, we suggest you select a hobby dealer . . . local or mail order . . . and support him, for whatever your reasons; reliable help, good stock, low prices or convenience, as much as possible. If your friends agree with your selection and aid in the support, your favorite dealer will grow and expand while the not-so-good will perish. In a couple of years, your support will be showing with new merchandise and good help. MODEL BUILDER: As hobby shop owners, we appreciate your support! MODELER: As modelers, we sympathize with your problem!

Sincerely,
Matt & Gail Gewain
Aero Hobbies
Midwest City, Ok.

Thanks for your calm and comprehensive analysis. Perhaps it will help more of us to understand the problem from both points of view.

Dear Will-yum;

The comments about mail-order vs. local shop simply points out the fact that only an individual's immediate circumstances can determine the appropriate course of action. I am fortunate in being within 5 minutes of our local shop, Sailair, run by a couple of fine people, Dottie and George Dennis. George's only complaint is that work interferes with his building! Sound familiar? My main reason for being willing to pay a little more than mail order for big-ticket items is, that tube of glue, sheet of balsa, piece of music wire that I need right now! They couldn't survive on the nickel-and-dime stuff, and I