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February, 1964 • 50 cents

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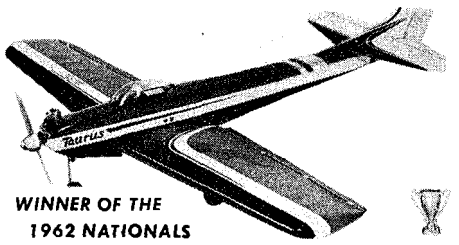

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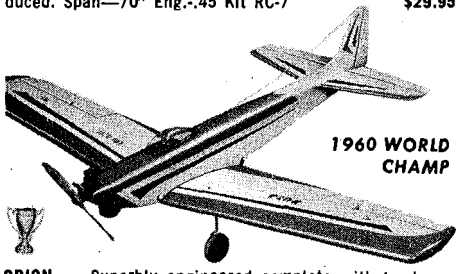

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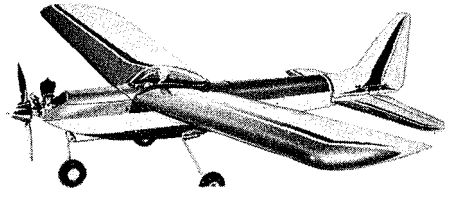

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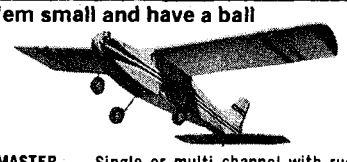

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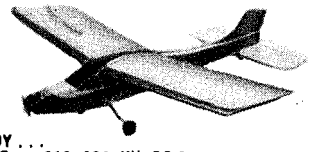

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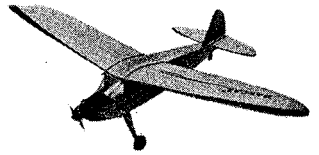

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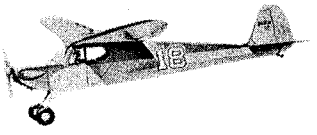

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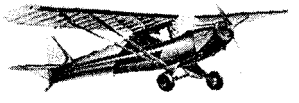

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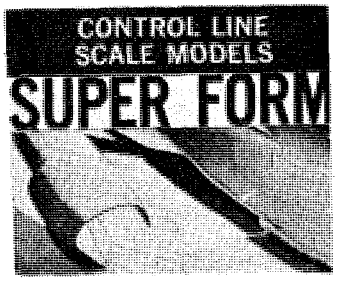

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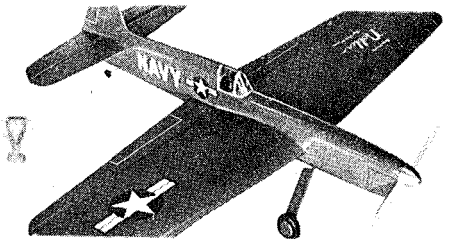

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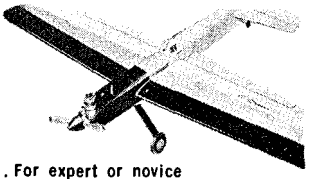
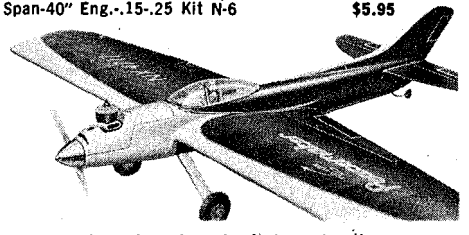


JUNIOR NOBLER . . . For expert or novice Span-40" Eng.-.15-.25 Kit N-6 **$5.95**



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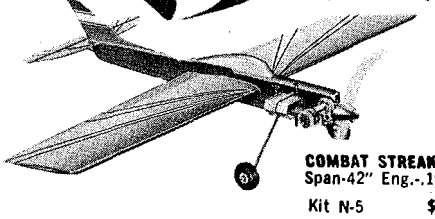
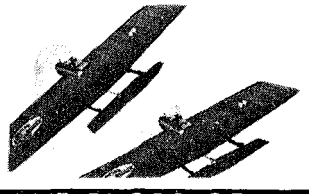


COMBAT STREAK . . . Span-42" Eng.-.19-.35 Kit N-5 **$4.50**

CONTROL LINE COMBAT MODELS



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35th Year of Publication

MODEL AIRPLANE NEWS

JAY P. CLEVELAND, President and Publisher

WALTER L. SCHRODER, Editor

February, 1964 Vol. LIXIX, No. 2

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m.a.n. at Work

by Walt Schroder

► Never have we seen such interest as is currently directed to the Junior in our hobby. Everywhere we go the major topic of conversation is "What are we going to do about the Junior problem?" Latest letter from John Worth, AMA prexy states, "The big push coming will be on the Junior problem." That there is a problem is becoming more and more apparent, the how-to's regarding it is another story and the solution will not be an easy one. Resolve it we must if the hobby is to continue—here then is where we all enter the picture as the resolution cannot be the effort or thought of single individual but has to be the consensus of the collective thinking of all of us in the hobby.

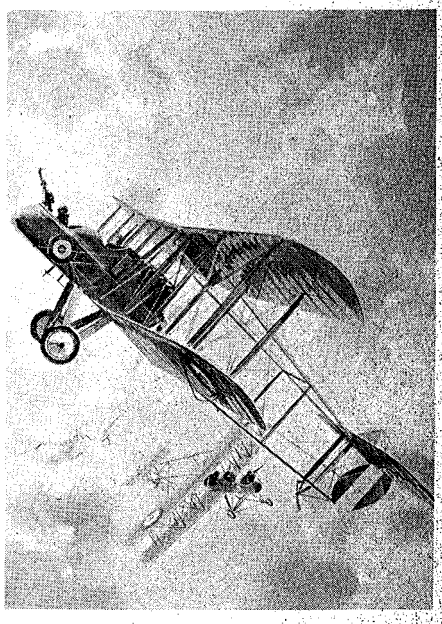
We undoubtedly will have to change our habits that have been developing over the years, the first of which is to accept the fact that juniors are important—that they must be cultivated and above all be accepted.

To accept is to lose our present superior adult manner of toleration and realize that they have much to contribute and of course, it is important that we believe they are important. When we recognize both of these facts, it will be a simple thing to bring them within the scope of our activities on the flying field and within the clubs.

Who among us, adults, have not looked on some of the results of junior building practices and in our superior way passed silent judgment on their product, not realizing that at one time our own by-products were of the same quality and might not even measure up to what we are critical of. And then in our own fashion critically weigh their skills and methods for adjusting and flying their efforts. Think back, who was it that helped you develop the proficiencies that permit this critical assessment of their efforts?

The message here is a simple one, accept them, know them and bend every effort to help and to bend is to waive one or two or even more flights each flying session. Use this time to help them get in the air. What's wrong with passing on a few of your trade secrets, your special flight adjustments, it will all come back in the form of extra recognition because these juniors will certainly let their friends know that whatever success they are achieving is only because of your help.

If they don't come to you, go to them as after all who are they to butt in on you with their (*Continued on page* 66)



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ON THE COVER

Direct descendant of the 1914 Schneider trophy-winning Tabloid, the Baby had a two piece fuselage, the rear portion of which was detachable to ease stowage. It differed from the Schneider mainly in having a 110 hp (later 130 hp) Clerget rotary engine in a more conventional type cowling with a speed of 93 mph at sea level, 88 mph at 10,000 ft.

VECO 29R

GP-29R / $18.95

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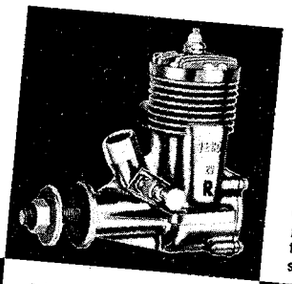

VECO 29 stunt

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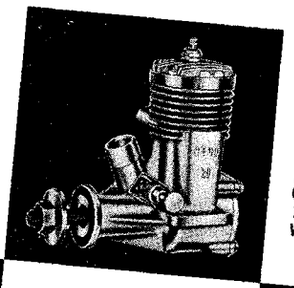
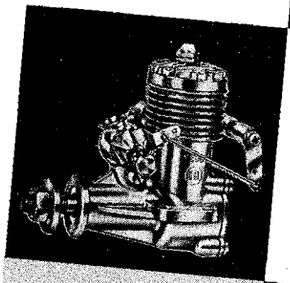


29 SERIES SPECIFICATIONS

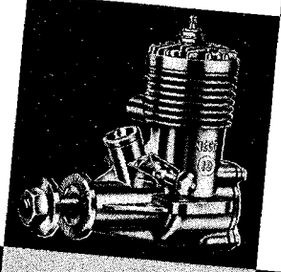
Bore .725 • Stroke .725 • Displacement .299 • Compression 8:1 • Max. Power GP-29R 20,000 rpm; GP-29A 10,000 to 12,000 rpm • Weight 7½ oz.



VECO 19RC

GP-19RC / $16.95

Here's the engine for that small R/C job. Smooth running at low rpm and power to spare when you open her up. Instant response from idle to full throttle for servo or escapement control. Exhaust/throttle control, adjustable idle stop and TCC.



VECO 19

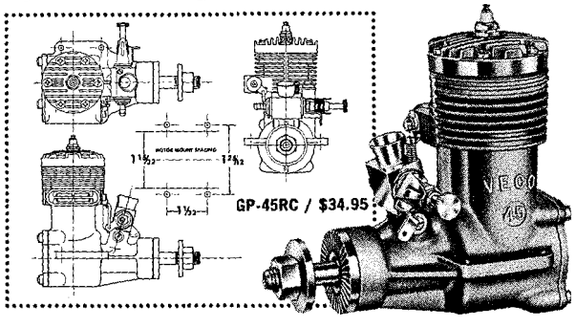
GP-19 / $12.95

A versatile, powerful engine that has become a consistent winner in Free Flight and R/C pylon racing. This easy-to-start engine will provide many flying hours at low cost. A standout value.

19 SERIES SPECIFICATIONS

Bore .634 • Stroke .633 • Displacement .199 • Compression 8:1 • Max. Power GP-19RC 12,500 rpm; GP-19 16,000 rpm

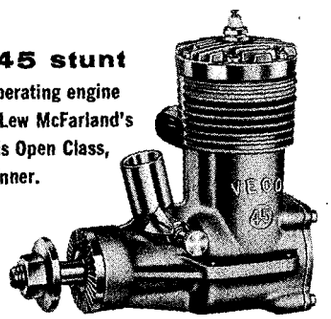
Fly VECO and get into the winner's circle



VECO 45 RC Powers U. S. Team to victory in 1963 Internationals at Genk, Belgium . . . Dr. Ralph Brooke, 1st place; Ed Kasmirski, 3rd place; Jerry Nelson, 5th place . . . each of these world champion RC winners used the Veco 45RC and Veco Power Fuel 1.

VECO 45 stunt

The smooth operating engine that powered Lew McFarland's 1962 Nationals Open Class, First Place Winner.



A powerhouse for large models. Ball bearing durability, high velocity venturi—perfect for stunt flying. **GP-45 / $27.95**

What Makes The VECO 45RC a Standout Winner?

It is a combination of Clarence Lee's superb engine design and VECO's unmatched production skill and quality control. Nothing has been spared to make this the best R/C engine available . . .

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- tough, hardened steel crankshaft, fully counter-weighted
- fully machined leaded steel sleeve to resist galling
- precision engineered coupled intake-exhaust system for reliable, linear low-speed response

VECO products

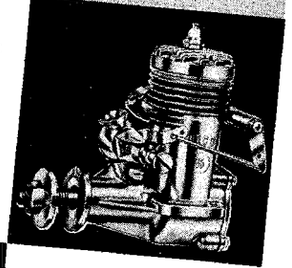
45 SERIES SPECIFICATIONS

Bore .850 • Stroke .820 • Displacement .465 • Compression 7.2:1 • Max. Power 10,000 to 12,000 rpm • Weight GP-45 11 oz. • GP-45RC 12 oz.

VECO 35RC

GP-35RC / $20.95

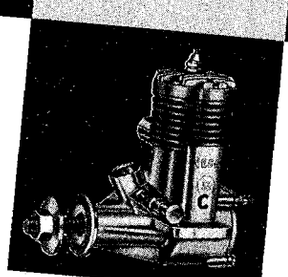
Power-packed, highly linear operation over a wide rpm range for great R/C performance. Precision engineered exhaust-throttle control, adjustable idle stop and TCC.



VECO 35 combat

GP-35C / $18.95

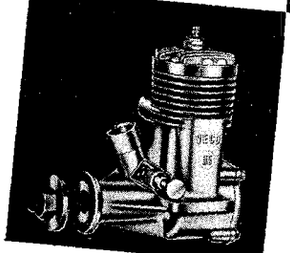
A tough, high-performance, ruggedized engine for combat, rat-race, free flight and sport flying. Top rpm and thrust where it counts. Holds Class C Open Free-Flight record.



VECO 35 stunt

GP-35A / $16.95

The GO engine of stunt flying. A reliable work-horse that delivers that extra burst of powor when you need it. Extremely easy-to-start and smooth running.



35 SERIES SPECIFICATIONS

Bore .784 • Stroke .725 • Displacement .350 • Compression 8:1 • Max. Power GP-35A, GP-35RC 10,000 to 12,000 rpm; GP-35C 16,000 rpm • Weight GP-35A, GP-35C 7½ oz.; GP-35RC 8½ oz.

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Foreign Notes

P. G. F. CHINN

► It is becoming customary with some engine manufacturers, both domestic and foreign, to announce their new season's offerings during February and March—usually to coincide with one of the national or international trade exhibitions. We may expect, therefore, to have to wait a little longer before the 1964 plans of all the major manufacturers are known. However, several 1964 models have already been announced by certain overseas manufacturers and a number of other new engines are about to be released, so we propose to devote this month's Foreign Notes to as many of these as possible.

West Germany: Ten years ago, a .15 contest diesel appeared in Germany that became accepted in many countries as "the next best thing" to an Oliver Tiger for FAI .15 free-flight. This was the original Webra Mach-1 designed by Gunther Bodemann. Later, Bodemann left Webra to join the Graupner-Taifun engine firm, but, just twelve months ago, he returned to the now reorganized Webra company and, during 1963, he has been engaged in upgrading certain existing Webra engines and in designing new models to replace the obsolete ones. One of his first tasks has been to provide a successor to the old Mach-1 and we have just received a production sample of this new model.

Although it has been given the name "Mach-II," mainly because it is aimed at reviving the Webra name in the contest engine field, the new engine is not a rehash of the Mach-1; it is an entirely new design and uses none of the Mach-1 parts. With hot glow .15's, like the Cox and Super-Tigre, having wrested popularity from the diesel .15's, in the international free-flight .15 class, Bodemann has wisely aimed the Mach-II at the FAI teamrace class, still dominated by diesels. Its general design does, in fact, follow certain FAI teamrace diesel design precepts, such as in the adoption of a stroke/bore ratio of 1.15 : 1 (thereby getting right away from the ultra short stroke of the Mach-1).

Briefly, the Mach-II is a shaft-intake, twin ball bearing, radial port motor of high grade construction. Its crankcase is a robust and well produced die-casting with long beam mount lugs and has been evolved from the .21 cu. in. Webra Bully casting. The cylinder liner has four exhaust ports and external flute type bypass ports, the inside of the case also (*Continued on page* 64)

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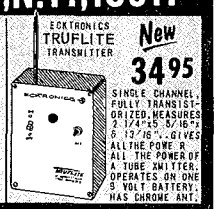
24.95 New

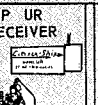
3 VOLT TONE RELAY RECEIVER, FULLY TRANSISTORIZED, MEASURES: 1"x 1 5/8"x 2"....HIGH IMPACT PLASTIC CASE....100% ARC SURPRESSED....WILL FOLLOW FAST PULSING. ASSEMBLED, LESS BATTERY

ECKTRONICS TRUFLITE TRANSMITTER New 34.95



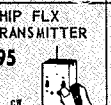
SINGLE CHANNEL, FULLY TRANSISTORIZED, MEASURES 2 1/4"x5 5/16"x 1 3/16"... GIVES ALL THE POWER OF A TUBE XMITTER, OPERATES ON ONE 9 VOLT BATTERY, HAS CHROME ANT.

CITIZENSHIP UR 27¼ MC RECEIVER 27.95



SINGLE CHANNEL CW. WT. 1¾ OZ. SIZE: 1"x 1 5/8" x 2 1/4". FOUR TRANSISTORS SUPER REGENERATIVE RECEIVER.. ASSEMBLED

CITIZENSHIP FLX 27¼ MC TRANSMITTER 19.95



SINGLE CHANNEL CW. SIZE: 2¾"x2½"x9 5/8" SINGLE TUBE CRYSTAL CONTROLLED, HIGHEST OUTPUT.....BUILT IN TUNING INDICATOR & WITH ONLY 1 ADJUSTMENT! PRINTED CKT..

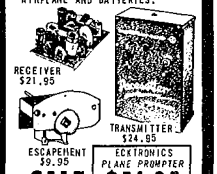
SALE 59.88 WEN-MAC R/C OUTFIT

REG. $69.95

BOTH RECEIVER AND TRANSMITTER, FULLY TRANSISTORIZED....FULLY ASSEMBLED. RECEIVER: 1⅝"x2"x3¾"WT. 4oz. XMITR: 1⅝"x3¾"x6½" WT. 1LB.

SPECIAL BUY!

COMPLETE PACKAGE LESS ENGINE, AIRPLANE AND BATTERIES.



RECEIVER $21.95 — TRANSMITTER $24.95 — ESCAPEMENT $9.95

ECKTRONICS PLANE PROMPTER SALE $54.95

COMBINATION INCLUDES: COURIER RELAYLESS RECEIVER, PACESETTER TONE TRANSMITTER....TRANSLATOR ESCAPEMENT, ANTENNA, SWITCH, PLUG & CONNECTOR, HOOK UP WIRE...AND INSTRUCTION MANUAL. A COMPLETE RADIO CONTROL SYSTEM IN ONE PACKAGE. TOP QUALITY ECKTRONICS EQUIPMENT, RETAIL VALUE..$60.55

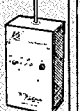
Citizen-Ship MDL SINGLE CHANNEL TONE RECEIVER

SINGLE CHANNEL TONE SIZE: 7/8"x1"x1 1/16" WEIGHS ½ OZ. SMALLER THAN A POSTAGE STAMP RELAYLESS, USES STD. RELIABLE COMPONENTS 24.95

CITIZENSHIP SPX TRANSMITTER $39.95

SINGLE CHANNEL TONE, WEIGHT 1 LB. 14 OZ.. COMPLETE WITH BATTERY, FULLY TRANSISTORIZED, SAME OUTPUT AS TUBE TRANSMITTER.... COLLAPSIBLE EXTERNALLY LOADED ANTENNA FURNISHED, USES ONE 9 VOLT BATTERY.....

F&M ELECTRONICS ECHO 27¼ MC TONE TRANS. 29.95



SINGLE CHANNEL: FULLY TRANSISTORIZED, 6VOLT OPERATION, LOADED INTERNALLY...MOPA TYPE CIRCUIT.....WITH .005 TOLERENCE....ANTENNA INCLUDED..ASSEMBLED

F&M ELECTRONICS PIONEER 27¼ MC RECEIVER 18.95

SINGLE CHANNEL WT. 1 1/8 OZ. SIZE: 7/8" x 1 1/2" x 2 5/8" RELAYLESS OPERATION NO VIBRATION OR CONTACT PROBLEM. 3 V OPERATION, ACTUATOR USES SAME BATTERIES..... ASSEMBLED

OTARION TONE REC' VR SALE 19.95 MODEL #021

AHC LIST $24.95

SINGLE CHANNEL TONE. WT. 5/8oz. SIZE: 1"x 1¾"x 5/8" TRANSISTORIZED RELAYLESS RECEIVER. HAS A BUILT IN SYNCRO TUNING INDICATOR, PRINTED CIRCUIT BOARD.

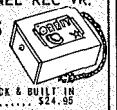
TOTAL VALUE $100.00 HURRY! QUANTITIES ARE LIMITED!.. ORDER NOW!

ORBIT 12 CHANNEL SIMULTANEOUS TRANS. 129.95

NI-CAD PACK AND BUILT IN CHARGER $29.95

12 CHANNEL TONE, SILICON TRANSISTORS IN CRITICAL CIRCUITS FOR MAXIMUM STABILITY.....

ORBIT SUPER-HET 12 CHANNEL REC' VR. 99.95



NI-CAD PACK & BUILT IN CHARGER..... $24.95

12 CHANNEL SUPER-HET RELAYLESS RECEIVER, FULLY TRANSISTORIZED. QUICK & SIMPLE TUNING PROCEDURE...6 VOLT OPERATION.....

MIN-X TONE T-2 POWERMASTER TRANS. 32.88

SINGLE CHANNEL TONE POWERFUL HAND HELD TRANSMITTER. 'HI-LO' SWITCH EASILY TRIPLES BATTERY LIFE. A 300 TUBE. FOR EXTRA HIGH OUTPUT. TRANSFORMER IS MODULATED 100% AT 700 CYCLES.

MIN-X SRP-1 COMPACT RECEIVER 29.95

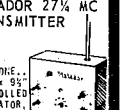
SINGLE CHANNEL TONE, WT. 2 OZ. SIZE: 1"X 2 1/8"X 1 11/16" ALL TRANSISTORIZED CIRCUIT OPERATES ON 3 VOLTS WITH A 4 STAGE AMPLIFICATION. HEAVY DUTY GOLD ANODIZED CASE. FOR ANY ¼A MODEL

ACE KRAFT K3 VK TONE RECEIVER KIT SALE! 99.95 WAS $13.95

SINGLE CHANNEL TONE, WT. 4oz. SIZE: 1 11/16"X1 1/16"X3/4"... PRINTED CIRCUIT BASE ON EPOXY BOARD. COMPLETELY DRILLED. HIGH QUALITY COMPONENTS. 400-600cps

ADD ON SWITCHER KIT ADSK 2.25

F&M ELECTRONICS MATADOR 27¼ MC TRANSMITTER $99.50



TEN CHANNEL TONE.. SIZE: 3½"x 7"x 9½" CRYSTAL CONTROLLED PIERCE OSCILLATOR, MEETS ALL FCC REQUIREMENTS, 95% MODULATION.. ASSEMBLED.

F&M ELECTRONICS MIDAS 27¼ MC TONE RECEIVER 79.95

TEN CHANNEL TONE,...WT. 4½ OZ. SIZE: 1" x 2 1/8" x 3 1/4" SIMULTANEOUS SUPERHET, USING NO RELAYS, CONTAINING 4 IF TRANSFORMERS, ASSEMBLED

SPECIAL OFFER!

ALL-TRANSISTOR R/C OUTFIT

WHILE-THEY-LAST!

Ready-To-Operate COMPLETE ASSEMBLED Verified $55.00 OUTFIT

$39.95 Less Batteries

SINGLE CHANNEL

CITIZEN BAND THE WORLD'S FINEST TONE EQUIPMENT

OPERATES ANY MODEL BOATS, CARS & PLANES

From 1/4 A to the Very Largest

TRANSMITTER WEIGHS ONLY 12 OUNCES....MEASURES 3 1/4"x 5 1/2"x1 7/8" NO REDUCTION OF RF SIGNAL WITH MODULATION. HI-EFFICIENCY EXTERNALLY LOADED ANTENNA.....PRINTED CIRCUIT CHASSIS..REQUIRES NO LICENSE.

RECEIVER SUPER REGENERATIVE RELAYLESS..WEIGHS 1 OUNCE & MEASURES 2 1/8"x1 1/4"x1/8" TWO PENCELLS OPERATE BOTH THE RECEIVER AND ESCAPEMENT..... SMALLEST & LIGHTEST WEIGHT R/C SYSTEM AVAILABLE

FREE OF EXTRA COST WITH THIS RADIO CONTROL COMBINATION

- R/C ROSIN CORE SOLDER
- RADIO CONTROL TUNING WAND
- 1/2"x 3"x 6" FOAM RUBBER
- CLEAR PLASTIC HINGED PARTS BOX
- R/C GUIDE TO RADIO CONTROL 64 PAGE BOOK
- 10 FEET MULTI STRAND HOOK-UP WIRE
- R/C HARDWARE: NUTS, BOLTS, AND SPAGHETTI TUBING

R/C MODELS

TAURUS 29.95 *WINNER OF 1962 NATIONALS

70" WINGSPAN FOR .45 ENGINES. DIE-CUT WOOD PARTS, FINEST SHEET BALSA BUILT-UP CONSTRUCTION, 1962 MULTI R/C CHAMPION, FOR MULTI-CHANNEL

R/C AERO 9

8.95

A SUPPER R/C FLYER, DESIGNED TO WITHSTAND SHOCK. 48" SPAN. FOR .09 TO .15 ENGINE

AERO 7 ..... 41/2" SPAN 6.50
AERO 15 ..... 57" SPAN 11.95
AERO R/C SPECIAL 54" SPAN 12.95

BUSTER R/C PYLON RACER Berkeley's 9.88

SALE! REG. $19.95 TERRIFIC R/C SCALE MODEL 48" SPAN, FOR .15-.35 ENG.

CITATION 24.95 Jetco

82" WINGSPAN, FOR .35 TO .45 ENGINE DIE CUT BALSA & PLYWOOD PARTS.. SHAPED & NOTCHED LEADING & TRAILING EDGES, ALL HARDWARE INCLUDED FOR MULTI OR SINGLE CHANNEL R/C

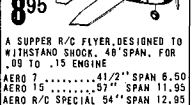
RASCAL R/C 2.95 TOP FLITE

27" WINGSPAN FOR .010-.020 ENGS ALL DIE CUT SHEET BALSA CONSTRUCTION AN IDEAL BEGINNERS R/C MODEL. HARDWARE INCLUDED IN KIT

TAURI 18.95 TOP FLITE

57" WINGSPAN 10 CHANNEL TRAINER FOR .15 TO .25 ENGINES. DIE CUT WOOD PARTS, FINEST SHEET BALSA, BUILT UP CONSTRUCTION!

Sale IMPULSE 4.95 Berkeley's



IDEAL R/C TRAINER SINGLE-CHANNEL——.074 TO .099 ENGINES—45" WINGSPAN——PERFECT FOR PYLON RACING, INTER-CONNECTED RUDDER AND ELEVATOR.

CHALLENGER 18.95 VK MODELS

60" WINGSPAN FOR .29-.45 ENGINE FINISHED WING HOOKS-EASILY ASSEMBLED WING PANELS, KIT INCLUDES COIL SPRUNG STEERABLE NOSE GEAR, DESIGNED FOR MULTI-INSTALLATION

SUPER CUB 14.95 deBOLT MODEL

56" WINGSPAN FOR .15-.19 ENGINE SELECTED PREMIUN BALSA, BUILT-UP AND SHEET BALSA CONSTRUCTION HARDWARE AND STEP BY STEP INST.

KRACKERJAC Sale 9.95 Jetco

REG. $14.95

62 1/2" WINGSPAN FOR .09-.19 ENG. SPORT OR CONTEST, SINGLE CHANNEL R/C, DIE-CUT & SHEET CONSTRUCTION,

AHC BEST BUYS

TUBES

	REG.	SALE
3A5	.....	1.95
3S4	1.40.....	.98
XFG1	3.85.....	2.95
XFY34	3.95.....	2.98
6007	.....	1.95

CRYSTALS 2.89 EA. 13.627

26.995	27.045, 27.095	
27.145,	27.195, 27.255	

CRYSTAL HOLDER..... 25¢

WIRE-FLEA WEIGHT 39¢ REG. 60¢

MULTI COLOR R/C FLEA WEIGHT HOOK UP WITE. 8 COLORS 24 FT. MULTI 11 STRANDS LIGHT WEIGHT

RELAYS SIGMA' 9,000 OHMS 1.99

DELUXE RECEIVER INSTALLATION KIT VALUE $1.98 98¢

INCLUDES: SLIDE SWITCH, R.C.A. PLUG & JACK, 5 PIN PLUG & JACK 6 COLORS CODED WIRE, ETC

TELESCOPING ANTENNA BY BERKELEY

55" R/C WHIP ANTENNA 33" COLLAPSED 1.39 REG. $3.00

TRANSMITTER CASE REG. $4.95 2.95

8"x10"x10" BLACK-CRACKLE FINISH

MILLIAMP METERS

	REG.	SALE
0-3	4.95.....	3.95
0-5	3.95.....	2.95
0-50	2.75.....	2.29

R/C SOLDERING IRON 1.69

50 WATT HANDY PISTOL GRIP...LONG TIP FOR HARD TO REACH AT PLACES. A GOOD BUY.....

TUNING WAND ALIGNING TOOL 39¢ REG. 65¢

HEX OR SCREWDRIVER TYPE.

CANNON PLUGS 15 PIN CANNON PLUG 4.95 REG. $7.00

PENCELL BATTERY BOX 25¢

ALUMINUM 2 CELL HOLDER.. 3 VOLT POSITIVE CONTACT.

FOAM RUBBER 25¢ FOR MOUNTING RECEIVER

¼" THICK, HIGHLY RESILIENT, AND CRASH PROOF....A MUST

6 x 6 25c 6 x 12" 50c

NYLON GEARS

NYLON GEARS 20¢ EACH

*	TEETH	I.D.	DIA. OD
N1	12	3/32"	6/32" 20¢
N2	24	1/8"	17/32" 20¢
N3	36	3/16"	3/4" 20¢
N4	48	3/16"	1 1/32" 20¢
N5	80	3/16"	1¼" 35¢

NYLON ACCESSORY DEAL INCLUDES: BELLCRANKS L.G. CLIPS, CONTROL HORN, ETC.. 60¢

98¢ BRASS WINDER

4½-1 RATIO FOR WINDING RUBBER ON ESCAPEMENTS.

MINI PLUG & JACKS 15¢

MINIATURE PLUGS AND JACKS WITH MACHINE SCREW FOR LOCKING IN WIRE ASSORTED COLORS. PR. 30¢

SELECTRONIC TWO SPEED TANK 2.95 REG. $5.95

W/BUILT IN ESCAPEMENT.. HI-LO SPEEDS & SHUT OFF 2 OZ. CAP. 2"x2½"x1 1/8"

MINITONE REG. $2.95 1.95

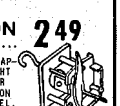
2½ OZ. SIZE: 1 5/16"x 1 11/16" SILVER TREATED BRUSHES.. CURRENT DRAIN: 250 MILLIAMPS....

MINIATURE SWITCH DPDT 1.49 REG. $2.39

DPDT SUBMINIATURE TOGGLE SWITCH...

ESCAPEMENT AND SERVOS

AMTRON 2.49



MODEL #11-SE... STANDARD ESCAPEMENT—FOR RIGHT & LEFT RUDDER CONTROL—USE ON ANY SIZE MODEL. WELL BUILT!

SALE 3.95

MODEL #11-CE....COMPOUNO ESCAPEMENT. GIVES RIGHT AND LEFT RUDDER, AND ALSO HAS A CONTACT WHICH IS USED ALONG WITH THE STANDARD ESCAPEMENT TO OPERATE A MOTOR CONTROL!.

BONNER RE VARICOMP

A COMPOUND ESCAPEMENT WHICH GIVES RIGHT & LEFT RUDDER & UP ELEVATOR. BONNER ESCAPEMENT USED FOR ENGINE SPEED CONTROL..

$9.75 BONNER VARICOMP..... $8.95
BONNER DUAL VARICOMP.... 18.95

BONNER DURAMITE SERVO $12.95

SELF NEUTRALIZING TRIMMABLE OR PROPORTIONAL CONTROL SYSTEM... OVER 4 LBS. THRUST, WT. 2¼ OZ. FEATURING A SPL. DESIGN MOTOR..

BONNER TRANSMITE SERVO $29.95

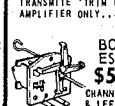
FOR RELAYLESS OPERATION.. SELF NEUTRALIZING OR TRIM

R/C SYSTEM, BUILT-IN 6 TRANSISTOR CIRCUIT PERFORMS FUNCTIONS OF 2 RELAYS & REED FIKTERING.. TRANSMITE 'TRIM ONLY'.. $27.95 AMPLIFIER ONLY..... 19.95

SUPER MULTITESTER SALE 7.95

HIGH QUALITY VOM METER, 18 POSITIONS SINGLE ROTARY KNOB SELECTED RANGES: AC & DC VOLTS, DC CURRENT & RESISTANCE. W/LEADS & BATTERIES 2"x 3 3/4"x 5 3/4"

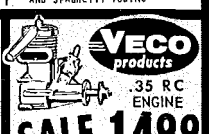
BONNER SN ESCAPEMENT $5.95 USED ON SINGLE CHANNEL SETS, RIGHT, & LEFT RUDDER CONT.



VECO products 19 R/C ENGINE 11.95 REG. $15.95

RPM 12,000 HP .39 WEIGHT 6½ oz. BEAM MOUNT REGULAR PRICE....$15.95

VECO products .35 RC ENGINE SALE 14.99 AHC LIST $19.95



SMOOTH DEPENDABLE POWER FROM IDLE TO TOP RPM'S WITHOUT A FALTER.....

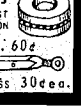
R/C PENNANT

FREQUENCY	FLAGS
26.995	BROWN
27.045	RED
27.095	ORANGE
27.145	YELLOW
27.195	GREEN
27.255	BLUE
52 MC	WHITE

25¢ ATTACH FLAG TO TRANSMITTER ANTENNA

BALL BEARINGS

BALL BEARING THRUST WASHER. WITH PRECISION STEEL BALL BEARINGS. 1/16", 5/64", 1/8" ea. 60¢



WORKING TURNBUCKLES 3/8" OR 5/8" ALL BRASS 30¢ ea.

ORDER - BY - MAIL FROM THE COMFORT OF YOUR HOME

AHC FAMOUS BRANDS SALE SPECTACULARS!

ORDER YOUR FAVORITES FROM AHC

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ENGINES

FREE OF EXTRA COST WITH EVERY **GAS Engines**

BONUS ITEMS INCLUDE: TUBE OF REV-EM LUBRICANT FOR A PROPER BREAK IN, OWNERSHIP DECALS, 64 PAGE GLO ENGINE HANDBOOK, THE CORRECT PROPELLER, NUMERAL AND ALPHABET DECALS, MOUNTING NUTS AND BOLTS, ETC. ALWAYS NEEDED

McCOY 60 $40.00
McCOY 19 $4.95
McCOY 29 5.95
McCOY 35 **6.95**

TEE DEE .010 SO SMALL YOU HAVE TO LOOK TWICE RPM 27,000 **7.98**

020 P-WEE $3.98 · 020 T-DEE $6.98
049 BABEE 3.98 · 049 T-DEE 7.98
049 RR1.. 5.98 · 051 T-DEE 7.98
MEDALLION · 099 T-DEE 9.98
049 ..... 6.98 · 15 SPORT. 7.98
099 ..... 8.98 · 15 OLYMP 12.98
15 ..... 10.98 · 15 SPL.. 14.98

VECO 45 R/C 34.95 TWIN BALL BEARINGS 1st PLACE WINNER 62 NATIONALS
45 STUNT 27.95
19 .... $11.95 · 29R.... $16.95
19 R/C. 15.95 · 35 .... 15.95
29 .... 15.95 · 35 COMBAT 16.95

OK CO2 NO BATTERY NO IGNITION NO GLO FUEL **5.95**
99% RUNNUNG WITH 1% STARTING. INSERT CO2 CAPSULE AND FLIP PROP TO START..

ENYA 15 12.50
06 GLO.. $3.95
06 DIES. 4.95
09....... 6.95
15 GLO.. 9.50
15 DIES. 15.95
19....... 12.50
29 III.. 9.95
29 SPL.. 19.95
35....... 17.50
60....... 25.00
06 R/C... $4.49
06D R/C.. 5.95 · 19 R/C. $14.50
09 R/C... 10.00 · 29 R/C. 19.50
15 R/C... 12.50 · 35 R/C. 22.50
15D R/C.. 19.95 · 60 R/C. 29.50

THUNDERHEAD .074 6.98 · .11 $8.98
QUICK EASY STARTING, NO PRIMING REQUIRED, NEEDLE VALVE ASSEMBLY AT REAR OF ENGINE AS A SAFETY FACTOR.. POWER PRODUCED BY THIS THUNDERHEAD WILL AMAZE YOU! HOT

STALLION 049 3.95 FEATURES THE MOST ADVANCED DESIGNS.. EXTRA POWER, WHEN NEEDED.

STALLION 35 HIGH QUALITY DIECAST ALUMINUM ALLOY, DEPENDABLE SOURCE OF POWER, FOR FUN OR COMPETITIVE FLYING. RUGGED ½" DIAM. CRANKSHAFT. **9.95**

049 STAL. $3.95 · 29..... $15.95
049 TORN. 3.95 · 29S.... 15.95
099...... 9.95 · 35..... 15.95
19....... 13.95 · 35 R/C. 22.95
19 R/C... 19.95 · 45..... 19.95
201...... 14.95 · 45 R/C. 27.95
SERIES 61 ENGINES 15R...$19.95
29R......$21.95 · 35BB.. 19.95

OK CUB 024 4.95 TWIN EXHAUST FUELVUE TANK & NYLON PROP
049A..... $3.95
049B..... 4.95
049B KIT. 3.95
049 W/STR 6.95
074...... 5.45
074 W/STR 7.95
099...... 5.95
099 W/STR 8.95
14....... 6.95
19....... 7.95

FOX 049 SPECIAL 9.95 EACH FAI SPL MUST TACH A MINIMUN OF 20,000 RPM.. BEFORE LEAVING FACTORY.
15X R/C. 10.95
29X BB.. 24.95
049...... $3.95 · 35X..... 9.95
049 W/TANK 4.95 · 35 COMBAT 19.95
07....... 5.95 · 40 BB... 24.95
10....... 4.95 · 40 R/C.. 24.95
10 R/C... 5.95 · 59...... 22.95
15X...... 6.95 · 59 R/C.. 34.95

JETEX 50 PAA LOADER

ENGINE	THRUST	PRICE
JETEX ATOM 35	.5	$1.49
JETEX 50	.75	.98
JETEX 50HT	5.	1.49
JETEX PAA LOADER	2.25	1.98
JETEX 600	7.5	3.95
JET FUEL CARTRIDGES		
JETEX 50 (10) 59¢	(20)	.98
JETEX 50HT		1.49
JETEX 150		1.25
JETEX 600		1.59

OS PET 09 6.98
06....... $8.98
09....... 5.98
09 R/C... 6.98
15....... 10.98
15 R/C... 14.98
19....... 10.98
19 R/C... 15.98
29 SPEED. 11.98
29X...... 9.98
29X R/C.. 13.98
35X...... 11.98
35X R/C.. 15.98
49....... 19.98
49 R/C... 24.98

DYNAJET REDHEAD 39.50
HOLDER OF MANY WORLD RECORDS FOR JETS.....POWERFUL ENGINE DEVELOPES 4¼ POUNDS THRUST, 21½"LONG, WEIGHT 16 OUNCES..

FORSTER 29R 14.95
29R.... $14.95
35R.... 14.95
29 R/C. 19.95
35 R/C. 19.95
FRONT ROTARY VALVE..LIGHT WEIGHT..EASY STARTING AND SMOOTH POWER

JOHNSON 36 R/C 24.95
JOHNSON 36 BALL BEARING $17.95
JOHNSON 29 RACING...... 17.95
JOHNSON 35 COMBAT...... 18.95
JOHNSON 35 STUNT SUPREME 17.95
JOHNSON 35 SPECIAL..... 12.95

BULLDOG 09 (Dynamic Models, Inc.) CIRCUMFERENTIAL CYLINDER PORTING HONE-LAP FITS BETWEEN PISTON AND CYLINDER. FINE NV ADJUSTMENTS..HOT **9.95**
BULLDOG R/C 099.........$14.95
HOLLAND HORNET 049...... 6.95
HOLLAND HORNET 051...... 6.95
HOLLAND HORNET 051 R/C.. 10.95

CAMERON POPULAR MARINE INBOARD ENGINE THAT IS LOADED WITH POWER, AND IS WATER COOLED
CAMERON 19 MARINE
SINGLE JET.......... $14.95
DOUBLE JET.......... 16.95
AIRPLANE ENGINES
CAMERON 15............. $8.95
CAMERON 15 2 SPEED..... 12.95
CAMERON 19............. 9.95
CAMERON 19 2 SPEED..... 11.95

SUPER TIGRE CODE: PISTON · FL: FLAT PISTON · BL: BAFFLE LAPPED · BALL BEARINGS-BB
29 BB. $17.98
35 FL. 13.98
35 BL. 13.98
15 FL BB $14.98 · 35 BB. 17.98
15 DIES. 14.98 · 40 BB. 17.98
15D R/C. 18.98 · 40 R/C 21.98
19...... 13.98 · 51.... 19.98
19 R/C.. 17.98 · 51 R/C 24.98
23...... 13.98 · 56.... 19.98
23 R/C.. 17.98 · 56 R/C 34.95

OK CUB 049 DIESEL HERKIMER'S RUGGED DIESEL SHOCK PROOF CONSTRUCTION..EXCELLENT PERFORMANCE **6.95**
SIMPLICITY ITSELF..NO IGNITION ACCESSORIES NECESSARY, NO BATTERIES..NO GLOW PLUGS..ALL YOU NEED IS DIESEL FUEL ....
CUB 075 DIESEL $7.95

ENGINE TRADE IN
WE MEET ALL COMPETITION! IF ANY ONE ADVERTISES A HIGHER TRADE-IN ALLOWANCE IN THIS ISSUE, CLIP THE ADD AND SEND IT TO OUR N.Y. OFFICE WITH YOUR ORDER...BONUS ITEMS INCLUDED AT NO EXTRA CHARGE. YOUR OLD ENGINE IS WORTH 25% OF THE AMOUNT OF YOUR PURCHASE...ONLY 1 ENGINE ACCEPTED PER ORDER...(SORRY ONLY 10% ON SPECIAL SALE MERCHANDISE & R/C EQUIPMENT)....IF IN DOUBT, SEND PAYMENT IN FULL AND WE WILL REFUND THE BALANCE...........

U-CONTROL

FREE OF EXTRA COST WITH EVERY **GAS PLANE** SELLING AT $1.95 OR OVER
BONUS ITEMS INCLUDE: OWNERSHIP DECAL, MODEL CONSTRUCTION BOOK CORRECT SIZE WHEELS, INSIGNIAS NUMERAL & ALPHABET DECALS, ETC

FLYING CLOWN P.D.Q. **1.95**
28"WINGSPAN, FOR .19 TO .35 ENGINE PROFILE FUSELAGE, BUILT UP WING, A VERY POPULAR STUNT MODEL....
BABY CLOWN 22"SPAN .049 ENG 1.50
SUPER CLOWN 36"SPAN .35 2.95

LIL JUMPIN' BEAN CG **1.49**
21"SPAN, FLYING SENSATION..IDEAL FOR .049 ENGINES...SIMPLE RUGGED CONSTRUCTION. POPULAR STUNT KIT.

LITTLE OUTLAW J. CASBURN **7.95**
40"WINGSPAN, FOR .19 TO .35 ENGINE SHAPED FUSELAGE...PRE CUT BALSA PARTS...DURAL LANDING GEAR. TOPS FOR COMBAT OR STUNT FLYING. HOT!

CUSTOMIZED RINGMASTER Sterling **5.95**
50"WINGSPAN, FOR .19 TO .35 ENGINE DIE CUT PARTS. PLANS SHOW A HOST OF DIFFERENT DESIGNS. CANOPY AND CUSTOMIZING DECALS GIVEN..STUNT

COSMIC WIND CG **3.95**
43"WINGSPAN, FOR .19 TO .35 ENGINE SHAPED FUSELAGE, DIE CUT PLYWOOD AND BALSA PARTS. SHOCK ABSORBING LANDING GEAR. SEMI SCALE STUNTER

CIRCLE MASTER SCIENTIFIC **2.49**
20"WINGSPAN, FOR .020-.074 ENG.. DIE CUT BALSA PARTS...BUILT UP WING & PROFILE FUSELAGE, STUNT

BIG TEX PROFILE TRAINER 5.95

TRAINERS	ENGINE	SPAN	PRICE
TRAINER I	.049-.09	24"	$3.25
TRAINER II	.14 -.19	30"	4.50
TRAINER III	.19 -.36	36"	5.95
MATADOR	.15 -.35	26"	3.50
FLT. TRAINER	.09 -.15	24"	4.95
TUFFY JR.	.049-.07	24"	2.50
TUFFY TRNR.	.19 -.35	36"	4.50
PROFESSOR	.19 -.36	36"	5.95
BIG TEX	.19 -.35	36"	5.95

COUGAR MIDWEST **8.95**
54"WINGSPAN, FOR .29 TO .45 ENGINE DIE CUT SHEET & STRIP BALSA CONSTRUCTION..WITH NEW AERODYNAMIC DESIGN....FOR ADVANCED BUILDERS

STUKA CONSOLIDATED **7.50**
34"WINGSPAN, FOR .19 TO .35 ENGINE CARVED FUSELAGE & BUILT UP CONSTRUCTION..FINE COCKPIT DETAIL.
STUKA ½A .049-.099 23"SPAN 3.95

TRIDENT CONS. **12.95**
54"WINGSPAN, FOR .35 ENGINES. DIE-CUT BALSA & PLYWOOD PARTS...DETAILED PLANS..COMPLETE STRIPING DECALS. A SUPER DUPER STUNTER...

SHOESTRING STUNTER CG **3.95**
42"WINGSPAN, FOR .19 TO .35 ENGINE MAY BE FLOWN IN THE AIR YOUTH STATE CHAMPIONSHIP EVENT..STUNT

BIG IRON VECO products **2.95**
38"WINGSPAN, FOR .29 TO .35 ENGINE DIE CUT BALSA AND PLYWOOD PARTS STABILATOR FOR TIGHTEST TURNS & MANEUVERING SPEEDS OF 110 MPH..

ARES AMBROID **11.95**
50"WINGSPAN, FOR .29 TO .35 ENGINE SHAPED AND NOTCHED LEADING EDGE FORMED LANDING GEAR & LAMINATED WHEEL PANTS. A REAL STUNT WINNER

LITTLE TOM TOM VECO **2.75**
26¼"WINGSPAN, FOR .049-.060 ENG. SPORT OR STUNT PROFILE MODEL IS IDEAL FOR THE BEGINNER..PRE FAB
TOM TOM 40"SPAN .35 ENG $4.50

BUSTER CG **3.95**
40"WINGSPAN, FOR .19 TO .35 ENGINE PROFILE FUSELAGE...SHAPED LEADING & TRAILING EDGES WITH DIE-CUT BALSA PARTS. FOR AYSC EVENTS

FLITE STREAK TOP FLITE **3.95**
42"WINGSPAN, STUNT SENSATION..NO EXTRA PARTS TO BUY! FOR NOVICE AND ADVANCED FLYERS. 19-.45 ENG.
BABY FLITE STREAK 24½".. 1.98
FLITE STREAK JR. 31".. 2.95
SUPER COMBAT STREAK 43".. 4.50

LITTLE TOMAHAWK VECO products
26¼"WINGSPAN, FOR .049-.050 ENG. BEGINNERS SPORT & STUNT MODEL.. SHAPED & DIE CUT BALSA PARTS...
TOMAHAWK 40" SPAN .35 ENG $3.50

RINGMASTER Sterling **3.95**
42"WINGSPAN...FOR TOP SPORT AND STUNT FLYING. PRE FAB KIT, FOR .19 TO .35 ENGINE. EASILY CONSTRUCTED
BABY RINGMASTER 21".. 1.95
RINGMASTER JR. 30".. 2.95
RINGMASTER SPORTSTER 38".. 7.95
SUPER RINGMASTER 42".. 5.95
IMPERIAL RINGMASTER 52½".. 7.85

WE MATCH ANY OFFER

FREE ORDER NOW!

AHC matches any offer made by any other advertiser. Attach ANY ad in this issue to your order — and take advantage of the AHC "extras."

Get all these AHC "EXTRAS"

FREE SUBSCRIPTION! TO YOUR FAVORITE MODEL MAGAZINE OR THEIR EQUAL VALUE TO OUR REGULAR CUSTOMERS..........
MONEY BACK GUARANTEE ON ITEMS RETURNED TO US POST PAID, IN THEIR ORIGINAL CONDITION WITHIN 14 DAYS..............
BONUS ITEMS WITH ENGINES ($3.95 OR OVER) INCLUDE: GLO ENGINE HANDBOOK, PROPELLER, REV EM ETC
BONUS ITEMS WITH MOTOR PLANE KITS ($1.95 OR OVER) INCLUDES: DECAL LETTERS AND NUMBERS, 64 PAGE CONSTRUCTION MANUAL RUBBER WHEELS, ETC. ETC....
FREE MEMBERSHIP: IN 'MODEL CRAFTERS OF AMERICA' THE CLUB THAT KEEPS YOU UP-TO-DATE ON MODELING, AND SAVES YOU MONEY ON PURCHASES, OVER 1,000,000 MEMBERS! ASK FOR YOUR FREE CLUB CARD WITH ORDER..
ORDERS FROM U.S.A. (APO & FPO) WE PAY POSTAGE ON ORDERS OVER $3.00, ON ORDERS UNDER $3.00 PLEASE ENCLOSE 25¢...OUTSIDE U.S.A. ADD 50¢..(FOR SPECIAL PACKING) PLUS 10% OF TOTAL ORDER FOR POSTAGE...........
NO MINIMUM: AHC WELCOMES AND SERVICES ANY SIZE ORDER.....
FASTEST SERVICE IN THE WORLD! WE PROCESS ALL ORDERS WITHIN 24 HOURS....CATALOGS SHIPPED IN 8 HOURS...............
WORLDS LARGEST INVENTORY! OVER 40,000 MODEL ITEMS IN STOCK THE YEAR ROUND. IF IT'S BEING MADE, 99 OUT OF 100 CHANCES ARE AHC HAS IT NOW! ....
FREE BULLETIN! TIPS, HINTS, AND RED HOT BUYS... ALL FROM OUR SPECIAL SERVICE DEPARTMENT..
FREE CATALOG! ON REQUEST WITH ANY SIZE ORDER..........

FREE FLIGHT RUBBER AND GLIDERS

Sterling
FOKKER D7 KIT A-1 24"SPAN $2.98
STUKA KIT A-6 20"SPAN $1.98
THUNDERBOLT KIT A-4 22"SPAN $2.98
*DROPS BOMBS *DUSTS CROPS
*OPERATES GEAR *FIRES ROCKETS
A-2 STEARMAN PT-17 CROP DUSTER 20"WINGSPAN........ $2.49
A-3 BEECHCRAFT BONANZA 22"WINGSPAN........ $2.49
A-5 NIEUPORT 17 20"SPAN $2.98

GUILLOW WW1 KITS SOPWITH SNIPE Guillow's **1.29**
WW-10 SOPWITH 7F1 SNIPE.. $1.29
WW-11 PFALTZ D-3 SCOUT... 1.29
WW-12 HALBERSTADT CL-2... 1.29

SNIFFER MIDWEST **2.50**
29"WINGSPAN, FOR .020 TO .049 END POPULAR SPORT MODEL WITH SHEET BALSA FUSELAGE. BEAUTIFUL FLYER

CONDOR GLIDER CLEVELAND **2.50**
6 FOOT SOARING GLIDER..MADE BY CLEVELAND....THIS CONSTRUCTION KIT GIVES TERRIFIC PERFORMANCE

FAI VIKING CG **6.95**
55"WINGSPAN, FOR .15 ENGINES. FAI EVENTS...SPRUCE WING SPARS AND LONGERONS, PLUS DIE CUT PARTS.. UP THRUST FOR FASTEST CLIMB. NO LOOPING TENDENCY. CONTEST MODEL
½A VIKING 48"SPAN .049 $3.50

DRIFT-A-LONG PACTRA **3.95**
48"WINGSPAN A-1 NORDIC GLIDER. WITH AUTO RUDDER CONTROL. ALUMINUM TONGUE, PLYWOOD AND BALSA RIBS. A SLEEK CONTEST MODEL...

GOLLYWOCK 1.95 MIDWEST CONTEST RUBBER MODEL
31¼"WINGSPAN, 30"FUSELAGE. SIMPLE BUILTUP BOX CONSTRUCTION, FAMOUS TRIED & TRUE DESIGN...FOR SPORT OR CONTEST TYPE RUBBER FLYING..
DYNAMOE 31¼"SPAN, 30"FUSELAGE
JABBERWOCK 31¼"SPAN, 30"FUSELAGE

TF1 RASCAL 18 TOP FLITE JIGTIME MODELS **98¢ EA.**
17½"WINGSPAN, ALL BALSA MODELS. RUBBER POWERED, PARTS ARE COMPLETELY FINISHED AND READY TO ASSEMBLE....NO TOOLS REQUIRED. JUST CEMENT, GUARANTEED TO FLY!
TF2 STINSON SENTINEL 17½"SPAN
TF3 PIPER VAGABOND 17½"SPAN

WE ALSO SELL TO DEALERS

BENEFIT FROM OUR HUGE INVENTORY-IN-DEPTH..DO MORE PROFITABLE BUSINESS BY USING OUR 9 POINT SERVICE PROGRAM..WE DELIVER ANYWHERE IN THE WORLD.. SEND US 50¢ FOR COMPLETE SET OF DEALERS 128 PAGE CATALOGS. YOUR PROFITS ARE OUR BUSINESS

MOD-AD AGENCY, INC.
146 W. 22nd St.
New York 11, N. Y.

PRO FINISHING PRODUCTS
WORLDS FINEST FINISHING MATERIALS AT A FRACTION OF WHAT YOU'D EXPECT TO PAY!!.... EXCELLENT RESULTS EVERYTIME, GET PROFESSIONAL FINISHES QUICKLY AND EASILY WITH PRO PRODUCTS.

	4oz.	PINT		4oz.	PINT
PROOFER..........	49¢	98¢	NITRATE THINNER	39¢	98¢
DECAL PROTECTOR..	49¢	98¢	NITRATE CEMENT		98¢
NITRATE SEALER...	49¢	98¢	PLANE CLEANER..	49¢	49¢
NITRATE CLEAR	39¢	98¢	PUTTY FILLER...	49¢	1.29
PRO COMPOUND 2oz.		39¢	PRO WAX 2oz.		39¢

JOURNEYMAN AHC LIST $4.50 **3.89**
TRAINER 30"SPAN, FOR .14 TO .19 ENGINES..PROFILE FUSELAGE AND SOLID WING & TAIL ASSEMBLY..A

APPRENTICE **2.79** AHC LIST $3.25
BASIC TRAINER 24"SPAN, FOR .074 TO .099 ENGINES...SOLID BALSA WING TAIL & FUSELAGE. RUGGED..

FREE SLOT RACERS
SEND 5¢ STAMP FOR SPECIAL BULLETIN SHOWING EVERYTHING AVAILABLE. HO, 1/32, 1/25, SCALE

HO RAILROADERS
128 PAGE CATALOG. ASK FOR 25¢ CAT. R 63 R.R. BULLETIN FREE FOR 5¢ STAMP ASK FOR R63.

IT PAYS TO BUY AT "AHC"

Use Our Handy Order Blank Next Page

HOW TO ORDER

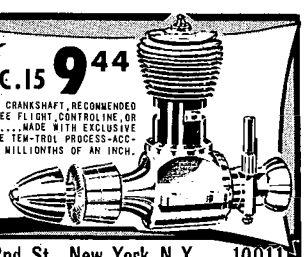
Send payment in full (sorry, no C.O.D.) to
AMERICA'S HOBBY CENTER,
146M West 22nd St.,
New York 11,
N.Y.

SAVE 30-50% PLANE & ENGINE OUTFITS

FREE BONUS
INCLUDES: PROP, WHEELS, GLO ENGINE HANDBOOK, CONSTRUCTION BOOK, AMA LETTERS & NUMBER DECALS, SANDPAPER AND NAME PLATE DECAL.....

FAMOUS AHC BEST BUYS

AHC MONTHLY SPECIAL
+COX OLYMPIC .15 9.44
BALL BEARING CRANKSHAFT, RECOMMENDED FOR F.A.I., FREE FLIGHT, CONTROLINE, OR SPEED FLYING....MADE WITH EXCLUSIVE THIMBLE-DRONE TEM-TROL PROCESS-ACCURACY WITHIN MILLIONTHS OF AN INCH.
AHC LIST PRICE $12.95



Order-By-Mail from AMERICA'S HOBBY CENTER, 146 W. 22nd St., New York, N.Y. 10011

U-C TRAINER STUNT

LIL JUMPIN' BEAN $1.49
VALUE $5.44
349 ORDER COMBO BV42
U-CONTROL STUNT.... 21" WINGSPAN SIMPLE RUGGED CONSTRUCTION; PROFILE FUSELAGE AND BUILT UP WING
WEN MAC .049 $3.95
RPM: 12,000 RHP 1/10 WT. 1¼ OZ. BEAM MT.

AYSC U-C SPORT STUNT

SHOESTRING STUNTER $3.95
ORDER COMBO BV43
899
VALUE $10.90
U-CONTROL MODEL 42" WINGSPAN... PROFILE FUSELAGE, BUILT UP WING...
MC COY .35 $6.95
RPM 15000 RHP ½ WT. 6½ OZ. BEAM MT.

U-C SPORT STUNT

RINGMASTER $3.95
Sterling
895
VALUE $10.90 ORDER COMBO BV44
U-CONTROL STUNT.... 42" WINGSPAN PRE FAB KIT, VERY POPULAR MODEL ON THE FLYING FIELD, BUILDS EASY
MC COY .35 $6.95
RPM: 15,000 RHP 1/2 WT. 6½ OZ. BEAM MT.

AYSC U-C PROFILE SPORT

SABRE SONIC $3.98
749 ORDER COMBO BV45
$8.93 VALUE
Jetco
FREE FLIGHT 48" WINGSPAN.. CHOICE WOOD, HI-THRUST DESIGN GIVES SKY ROCKET CLIMB. CONTEST TYPE MODEL
MC COY .19 $4.95
RPM: 13,000 RHP .48 WT. 6 OZ. BEAM MT.

U-C CONTEST COMBAT

BIG IRON $2.95
VECO products
VALUE $21.90
1299 ORDER COMBO BV46
U-CONTROL COMBAT.... 38" WINGSPAN DIE CUT WOOD PARTS... STABILATOR FOR MANEUVERING, SPEEDS 110 MHP.
VECO .35 COMBAT $18.95
RPM: 14,000 RHP .65 WT. 7½ OZ. BEAM MT.

U-C STUNT TRAINER

SCOUT VALUE $8.98 $2.95
VECO products
849 ORDER COMBO BV47
U-CONTROL TRAINER... 25" WINGSPAN PRE FAB KIT, BUILT UP WING, SHEET BALSA FUSELAGE, IDEAL TRAINER..
HOLLAND HORNET .049 $6.95
RPM: 17,000 RHP 1/10 WT. 1¾ OZ. RAD. MT.

U-C COMPETITION RAT RACER

RAT RACER $3.95
1749 VALUE $21.90 ORDER COMBO BV48
U-CONTROL RAT RACER 24" WINGSPAN STREAMLINE SPEED PERFORMANCE... PROVED RUGGED & FAST IN CONTEST
JOHNSON $17.95
RPM: 18,000 RHP .60 WT. 7.6 OZ. BEAM MT.

U-C SPORT SCALE

Jetco
P-51 MUSTANG $11.95
1599 ORDER COMBO BV49 VALUE $21.90
U-CONTROL SCALE.... 30½" WINGSPAN DIE CUT PRECISION BALSA.. PLENTY OF DETAIL ILLUSTRATED ON PLANS.
K&B MFG CORP
STALLION .35 $9.95

CONTENDER $1.95
499 ORDER COMBO BV50
RPM: 14,000 RHP 1/12 WT. 4 OZ. RADIAL MT.
PEE WEE .020 $3.95
FREE FLIGHT 27" WINGSPAN, DIE CUT RIBS AND TAPERED TRAILING EDGES FLYS RUBBER OR GAS POWERED.....

AMERICA'S HOBBY CENTER 146 W. 22nd St., New York N.Y. 10011

15 PLASTIC Propellers

SALE
15 For 1.00
6" DIAMETER
5 1/2" DIAMETER
15 ASSORTED PROPELLERS. DON'T MISS THIS SPECIAL VALUE BUY!!!

AMTRON PRESSURE FITTINGS

29¢
THIS FITTING CAN BE USED WITH MOST ANY CLASS 'B' OR 'C' ENGINES. 8/32 THREADED SECTION... WITH A .040 INSIDE OPENING.....
ALSO AVAILABLE FOX (4/40) 50¢ K&B (8/32) 50¢ K&B (10/32) 50¢ JOHNSON 50¢ McCOY 6/32 1.00

SPARK IGNITION SPECIAL

REG. $2.70
SALE! 1.49
INCLUDES: A 3 VOLT SPARK COIL, WITH HIGH TENSION WIRE AND END CLIPS, METAL CONDENSER & MULTI STRAND HOOK UP WIRE.....

CHEMICAL DUST-CHASER CLOTH

35¢
SIZE 18" x 18"
CHEMICALLY TREATED 'TACK-RAG WIPES YOUR MODEL CLEAN OF ALL DUST, LINT ETC. USED BY ALL PRO-MODEL FINISHERS BEFORE AND BETWEEN COATS OF PAINT.

FIGHTING CORSAIR READY-TO-FLY

SALE
4.99
WEN MAC REG. $6.95
SCALE U-CONTROL MODEL, 14" WING-SPAN WITH A WEN MAC .049 ENGINE INCLUDES PLASTIC HANDLE, FLYING LINES AND FLYING INSTRUCTION..

MODEL BOAT KITS

PRE CUT AND NOTCHED MAHOGANY, WHITE PINE AND PLYWOOD PARTS. KIT ALSO INCLUDES WATER PROOF CEMENT AND COPPER NAILS. EASY-TO ASSEMBLE. STAND INCLUDED...

SIZE 10¾"	SIZE 15½"
AHC LIST $2.95	AHC LIST $3.95
89¢	1.49

CO_2 JET UNIT

SALE 59¢
CO_2 JET GUN and 2 CO_2 CARTRIDGES

NIGHT FLYERS

FLY BY NIGHT OUTFIT 98¢
FOR YOU NIGHT FLYERS.. INCLUDES RED, GREEN, AND CLEAR 3 VOLT PEA LAMPS, BATTERY BOX, HOOK UP WIRE & SLIDE SWITCH (LESS BATTERIES)

O & R WOOD PROPS

SALE 10¢ EACH
REG. 35¢-45¢
HIGHLY FINISHED AND LACQUERED. FIRST QUALITY..

8/7	10/4
8/9	12/9
9/5	13/8

WET CELL BATTERY

WILLARD 8854A 2 VOLT AT 28 AMPERES, MEASURES 3"x 3¼"x 5½" IDEAL FOR STARTING YOUR GLO PLUG ENGINES.
4.95
WET CELL STORAGE BATTERY RECHARGEABLE 2 VOLT 6 AMP. 1"x 3 3/4"x 5 3/8"
1.79 REG. $2.75

WEN MAC .049

SALE 2.49
REG. $3.95
RPM: 12,000 R.H.P. 1/10
WT. 1¼ OUNCES RAD & BEAM MT.
WITH ROTOMATIC STARTER... 3.33
LESS STARTER..... 2.49

VECO .19

SALE! 8.88
REG. 12.95
A QUICK STARTING ENGINE.. WITH RAPID ACCELERATION & CONSTANT POWER OUTPUT! ADVANCED CARBURATION..A VERY POPULAR MOTOR....

JIM WALKER .065 ENGINE

4.44
REG. 7.95
THIS ENGINE CAN BE USED FOR RADIO CONTROL OR U/CONTROL AIR PLANES. A REALLY FINE ENGINE...

JOHNSON 29R

SALE 14.95
REG. $17.95
IDEAL FOR RAT RACING & COMBAT FLYING... ENGINE HAS GOOD FUEL ECONOMY.... RPM: 9,000-RHP: .60 WT. 7.8 OZ. BEAM TYPE MOUNTING.

SOPWITH CAMEL

98¢ AHC LIST $1.95
16" WINGSPAN FOR .049 ENG. BUILT UP AND SHEET BALSA FUSELAGE.... SHAPED BALSA AIRFOIL WING. SCALE MODEL

DACRON U/C LINES

15¢
REG. 25¢
52½ FOOT SPOOL OF DACRON LINES IDEAL FOR USE ON 1/2A CONTROL MODELS. KEEP A SPOOL IN TOOL BOX

ENGINE COLLECTORS

1.00
A FANTASTIC BUY FOR YOU ENGINE COLLECTORS! CONTAINS CONNECTING ROD, CRANKSHAFT, TANK, FRONT PLATE & MANY OTHER WORTH WHILE PARTS AT LEAST $10.00 WORTH OF PARTS

Berkeley's DUCTED FAN IMPELLER

SIZE 5 1/2"
FOR .049 ENGINES 39¢
FOR .020 ENGINES 29¢
ALUMINUM DUCTED FAN IMPELLERS. FOR THOSE MODELLERS WHO WISH TO EXPERIMENT AND DESIGN THEIR OWN MODELS, 2 SIZES AVAILABLE.

12 ASSORTED WOOD PROPS

High Grade $1 12 FOR
ASSORTED SIZE WOOD PROPS 8"DIA AND LARGER POPULAR MAKES SUCH AS FLO TORQUE, RITE PITCH, SUPER SPECIAL, TESTORS, RED TIPS, ETC..

PER-MAG MOTOR

SALE 49¢
REG. $1.00
DOUBLE PER-MAG MOTOR-HIGH SPEED BATTERY OPERATED-DELIVERS AMAZING POWER-WITH LONG LASTING PHOSPUR BRONZE BRUSHES.

SOLID COLOR Trim Film DECAL

SALE 10 Sheets For Only 98¢
4" X 10" SOLID COLOR DECAL SHEETS, ASSORTED COLORS. REGULAR $2.50 VALUE!!!!

Sterling 21" Chris-Craft Cobra Speedboat

1.39 KIT
REG. 2.98
SALE
OPERATING PLASTIC SPEED BOAT.. KIT IS 16" LENGTH, 5½" BEAM & CAN BE POWERED WITH ELECTRIC MOTOR

15 DECAL PICTURES

SALE 15 COMPLETE SHEETS 98¢
$1.50 VALUE
15 ASSORTED PICTURE DECALS. APPROXIMATE SIZE 2¼ x 2½ PERFECT FOR DRESSING UP YOUR MODELS

FOUR BULLETS

MADE BY DCCO
1.25 KIT
REG. $2.50
4 OUTSTANDING DESIGNS IN ONE KIT. FOR .020 TO .049 ENGINES, 15" SPAN. SHAPED FUSELAGE AND WING.

PLASTIC PROPS

WEN MAC OR COMET 1/2 A PROPS
4 BLADED
YOUR CHOICE 25
3 BLADED
REG. 50¢

FINISHING DEAL

1.00 SALE
FOR THE MODEL BUILDERS WANTING A PROFESSIONAL FINISH, INCLUDES AN ASSORTMENT OF SANDPAPER IN VARIOUS GRITS, HARD GLOSS WAX & RUBBING COMPOUND. TERRIFIC BUY!

BALSA GRAB BAG

1.00
YOUR CHOICE OF:
STRIPS & SHEETS. $1.00
PLANKS & BLOCKS. $1.00
ASSORTED SIZES OF BALSA WOOD.. IN 18" LENGTHS, QUALITY WOOD FOR ALL TYPES OF MODEL BUILDING...

DOPE BRUSHES

$3.00 VALUE
$1.00 Asstd. 24 for
100% PURE BRISTLES: SIZES FROM #1 THROUGH #5. POLISHED HANDLES FOR TOUCH UP & GENERAL WORK...

CARVING KNIVES

SALE! 1.00
12 ASSORTED SHAPES AND EDGES.. SUITABLE FOR ALL TYPES OF CARVING, ON WOOD, LINOLEUM, ETC. WITH HAND GROUND SURGICAL STEEL. EACH KNIFE IS COMPLETE WITH 6" HANDLE

1.29 REG. $2.25 STRAIGHT TYPE

R/C SOLDERING IRONS | ROSIN CORE SOLDER 15¢

1.69 REG. $2.50 GUN TYPE

NEW! 64 PAGE MINI-BOOKS

MODEL BUILDERS HOW-TO-DO IT GUIDE BOOKS
ORDER BY NUMBERS
A1- CONTROLINE MODEL PLANS BOOK
A2- ABC'S OF MODEL BUILDING & FLYING
A3- FREE FLIGHT PLANS BOOK
A4- GUIDE TO RADIO CONTROL
A5- GAS MODEL CONSTRUCTION
A6- GLO ENGINE HANDBOOK
A7- CONTROL LINERS BOOK
A8- GATA HANDBOOK
A9- CONTROL BY RADIO
A10- JETS AND ROCKETS

25¢ EACH

DO YOU HAVE OUR FABULOUS NEW! GIANT MODEL BUILDERS CATALOG 25¢

OUR GREATEST IN OVER 32 YEARS ORDER YOURS NOW
ORDER CATALOG A63
128 PAGES WITH...
PICTURES & DESCRIBES OVER 50,000 MODEL SUPPLIES...
JUST ABOUT EVERY THING AVAILABLE ANYWHERE IN THE ENTIRE WORLD

FREE AHC BARGAIN BOOK
FABULOUS BUYS IN EVERY TYPE OF MODEL AND SUPPLIES. SEND 5¢ UNSED STAMP FOR "AB" SALE LIST..

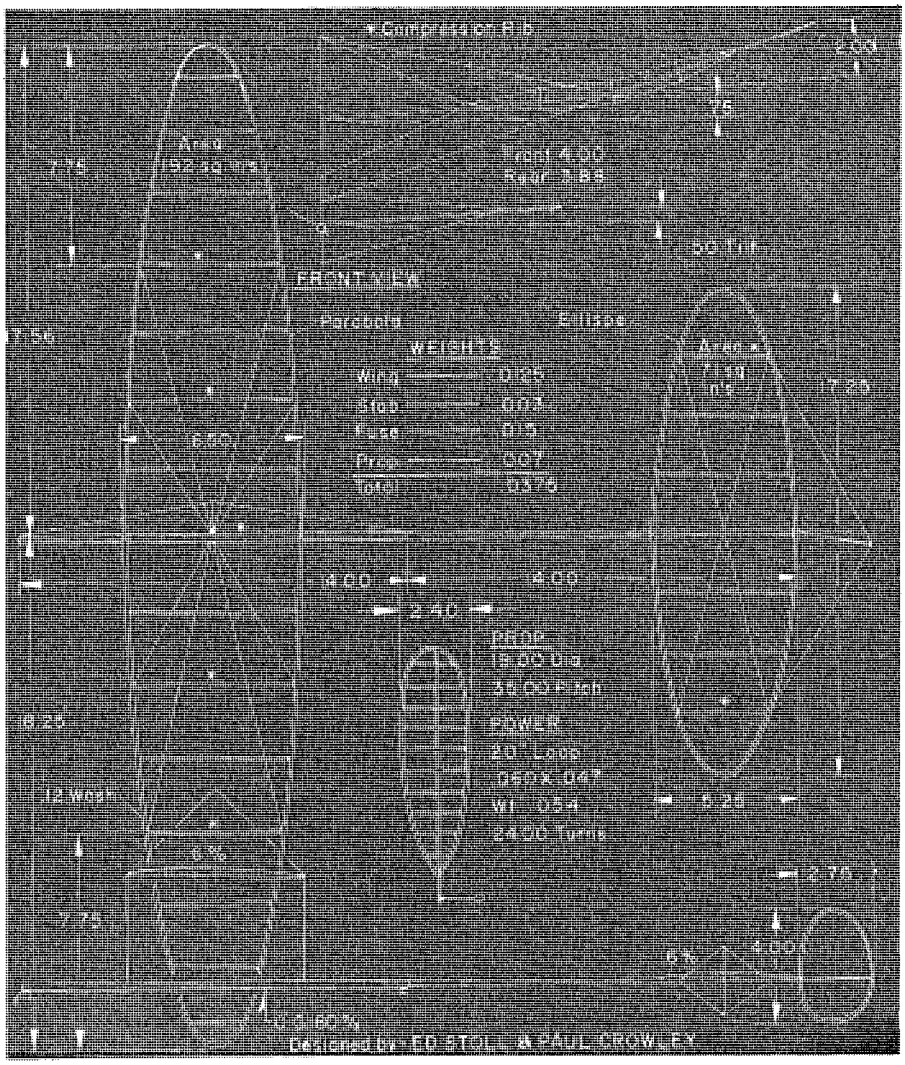
MAIL THIS ORDER BLANK NOW

AMERICA'S HOBBY CENTER 146M West 22nd St., New York, N.Y. 10011
PLEASE PRINT NAME & ADDRESS PLAINLY
RUSH ORDER TO
NAME
ADDRESS
CITY ZONE & STATE

HOW TO ORDER

SEND PAYMENT IN FULL. NO C.O.D.'s. WE ACCEPT CASH, CHECK, MONEY ORDER, STAMPS OR FOREIGN EXCHANGE..... OUTSIDE U.S.A. ADD 10% OF TOTAL ORDER PLUS 50¢ SPECIAL WRAPPING. WE PAY POSTAGE ON ALL ORDERS OVER $3.00. IF ORDER IS UNDER $3.00 ENCLOSE 25¢ FOR POSTAGE AND PACKING.....

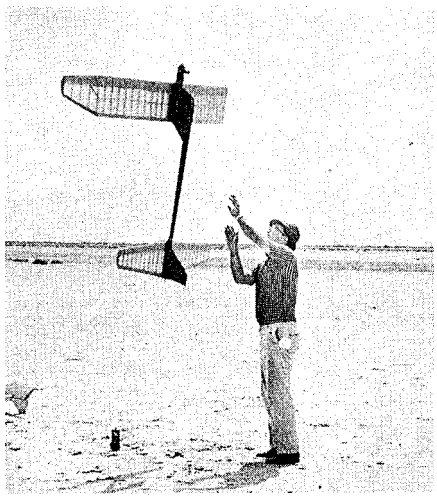
QUANT	PRICE EACH	NAME & DESCRIPTION OF ITEMS (MODEL = IF KNOWN)	TOTAL
	25¢	MODEL AIRPLANE, RADIO CONTROL, BOAT, CAR, PLASTIC CATALOG.	
	25¢	64 PAGE MINI-HANDBOOKS (LIST NUMBERS) →	
	25¢	IF ORDER IS UNDER $3.00 ENCLOSE 25¢ FOR POSTAGE & PACKING. M264	TOTAL



- Rubber
- Power
- Indoor
- Glider
- Flying Scale

VTO

by DICK BLACK

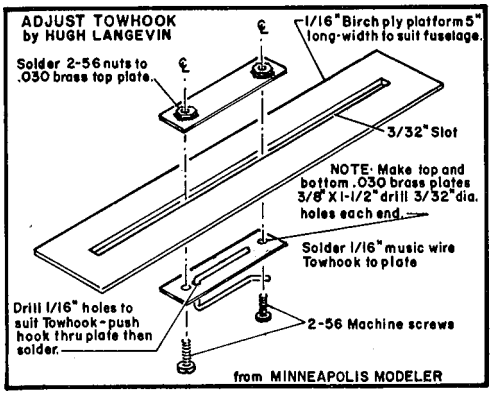


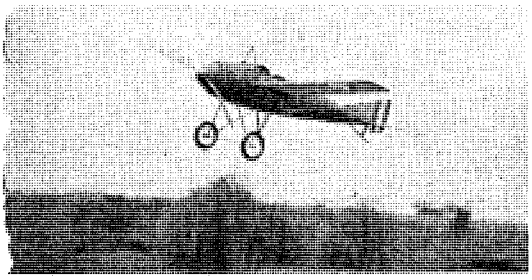
2nd place winner, Utah State Aeromodellers contest Jay Jackson's S/T .40-powered 'Jay-Bird.'

READ HOW THE GRUDGE MATCH AT THE GRAVEYARD' DID NOT TAKE PLACE AND THE FACTS BEHIND IT.

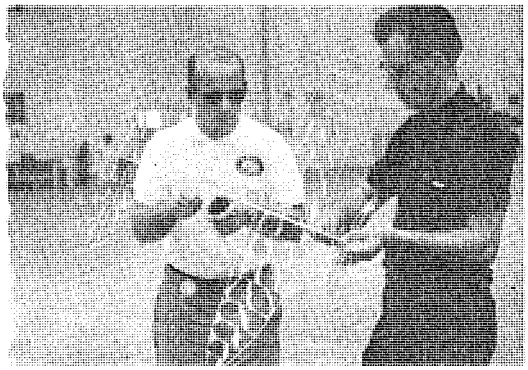
► The black sedan slowed to a stop opposite the cemetery. The driver scanned the somber countryside, then settled back to wait. Not another living soul was in sight. Maybe the others wouldn't show.

Dark clouds hung ominously low in the sky and only an occasional streak of lightning broke the premature gloom. Rain began spattering fitfully against the windshield. The driver checked his watch, then pulled a dog-eared postcard from his pocket and read it over again. The card bore (*Continued on page* 58)

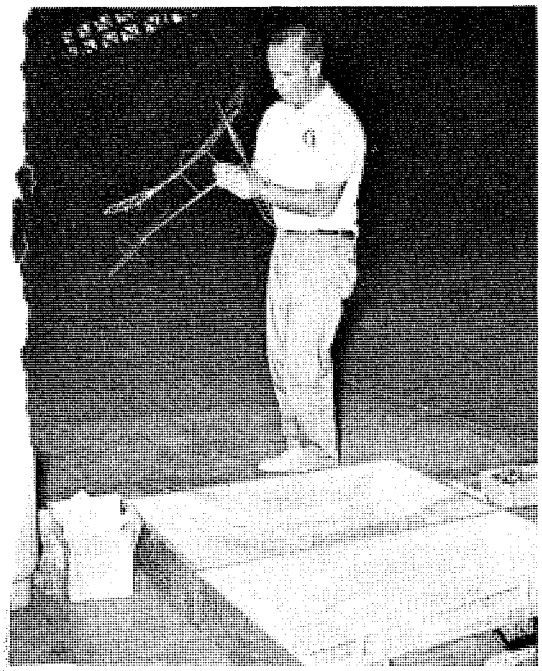




Paul McIlroth's semi-scale rubber-powered Morane Scout in flight looks like real thing.

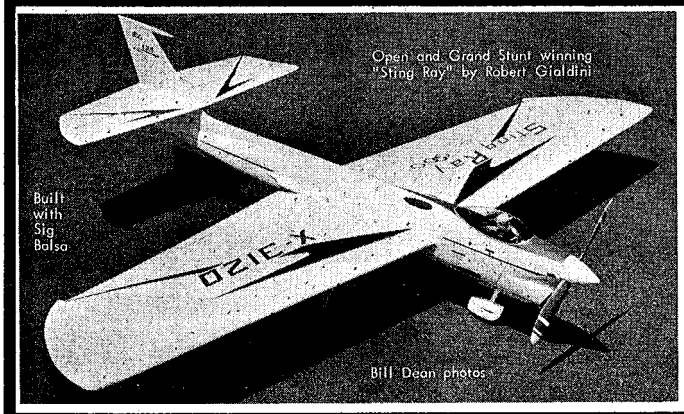


Ed Stoll winds Dick Kowalski's taut film FAI Indoor model. Dick was a member 1962 FAI team.
Photo by Jody Tenny



Detroit's Ed Stoll preparing for o flight at the '63 Nats FAI flyoff at Santa Ana Air Dock.
Photo by Joe Bilgri

SIG FIRST IN BALSA AND MODEL SUPPLIES



All the top Nats stunt fliers used SIG Balsa!!

It's a fact! First, Second and Third places in Junior, Senior and Open Stunt events at the '63 Nats ALL went to modelers who used Sig Balso. Like most Nats contestants every year (86% in '63!), the stunt boys have long gone for Sig in a big way — as in '61 and '62, when ALL the Nots Stunt Winners (which included Cipra, McFarland, Vornholt & Werwage) flew Sig Bolsa built entries.

FREE copy of the British magazine MODEL AIRCRAFT (in addition to "Free Dope and Decals Coupon Offer") to the FIRST 2000 modelers who send in orders ($3.00 minimum) for any of the model supplies featured below.

Gerry Cipra's Junior Stunt event winning "Nobler"

Gerry and his latest model designed by John Havel

SIG GRADE 'AAA' BALSA

SHEETS

36" LENGTHS

1/32 x 2	10¢
1/16 x 2	12¢
3/32 x 2	14¢
1/8 x 2	17¢
3/16 x 2	21¢
1/4 x 2	26¢
3/8 x 2	32¢
1/32 x 3	18¢
1/16 x 3	18¢
3/32 x 3	21¢
1/8 x 3	25¢
3/16 x 3	31¢
1/4 x 3	38¢
3/8 x 3	50¢
1/32 x 4	28¢
1/16 x 4	28¢
3/32 x 4	30¢
1/8 x 4	35¢
3/16 x 4	40¢
1/4 x 4	47¢
3/8 x 4	62¢
1/32 x 8	55¢
1/16 x 6	55¢
3/32 x 6	60¢
1/8 x 6	65¢
3/16 x 6	70¢
1/4 x 6	78¢
3/8 x 6	98¢
1/32 x 8	80¢
1/16 x 8	80¢
3/32 x 8	90¢
1/8 x 8	98¢
3/16 x 8	1.12
1/4 x 8	1.25
3/8 x 8	1.40

48" LENGTHS

1/32 x 3	27¢
1/16 x 3	27¢
3/32 x 3	32¢
1/8 x 3	37¢
3/16 x 3	45¢
1/4 x 3	55¢
3/8 x 3	70¢
1/16 x 4	39¢
3/32 x 4	40¢
1/8 x 4	47¢
3/16 x 4	55¢
1/4 x 4	62¢
3/8 x 4	77¢
1/16 x 6	67¢
3/32 x 6	74¢
1/8 x 6	80¢
3/16 x 6	90¢
1/4 x 6	95¢
3/8 x 6	1.20

36" LENGTHS

CONTEST 4-6 LB. STOCK

1/32 x 3	24¢
1/16 x 3	24¢
3/32 x 3	27¢
1/8 x 3	32¢
3/16 x 3	37¢
1/4 x 3	44¢
3/8 x 3	56¢

C-GRAIN 8-12 LB. STOCK

1/32 x 2	14¢
1/16 x 2	16¢
3/32 x 2	18¢
1/8 x 2	21¢
3/16 x 2	25¢
1/4 x 2	30¢
3/8 x 2	36¢
1/32 x 3	22¢
1/16 x 3	22¢
3/32 x 3	25¢
1/8 x 3	29¢
3/16 x 3	35¢
1/4 x 3	42¢
3/8 x 3	54¢

R/C STOCK 12 LB. OR MORE

1/16 x 3	22¢
3/32 x 3	25¢
1/8 x 3	29¢
3/16 x 3	35¢
1/4 x 3	42¢
3/8 x 3	54¢

STRIPS

36" LENGTHS

■ 1/16 SQ.	1¢
1/16 x 1/8	4/5¢
1/16 x 3/16	3/5¢
1/16 x 1/4	2/5¢
1/16 x 3/8	3¢
1/16 x 1/2	4¢
1/16 x 3/4	6¢
1/16 x 1	7¢
■ 3/32 SQ.	4/5¢
3/32 x 3/16	2/5¢
3/32 x 1/4	3¢
3/32 x 3/8	4¢
3/32 x 1/2	5¢
3/32 x 3/4	7¢
3/32 x 1	9¢
■ 1/8 SQ.	3/5¢
1/8 x 3/16	2/5¢
1/8 x 1/4	3¢
1/8 x 3/8	5¢
1/8 x 1/2	6¢
1/8 x 3/4	8¢
1/8 x 1	11¢
■ 3/16 SQ.	4¢
3/16 x 1/4	4¢
3/16 x 3/8	6¢
3/16 x 1/2	8¢
3/16 x 3/4	10¢
3/16 x 1	14¢
■ 1/4 SQ.	6¢
1/4 x 3/8	8¢
1/4 x 1/2	10¢
1/4 x 3/4	14¢
1/4 x 1	17¢
■ 5/16 SQ.	8¢
5/16 x 3/8	10¢
5/16 x 1/2	12¢
5/16 x 5/8	15¢
5/16 x 1	19¢
■ 3/8 SQ.	11¢
3/8 x 1/2	14¢
3/8 x 3/4	18¢
3/8 x 1	23¢
■ 1/2 SQ.	17¢
1/2 x 3/4	23¢
1/2 x 1	28¢
■ 5/8 SQ.	20¢
5/8 x 1	33¢
■ 3/4 SQ.	30¢
3/4 x 1	37¢

48" LENGTHS

■ 1/8 SQ.	2¢
1/8 x 1/4	5¢
1/8 x 1/2	8¢
■ 3/16 SQ.	6¢
3/16 x 1/2	11¢
3/16 x 3/4	14¢
■ 1/4 SQ.	8¢
1/4 x 1/2	14¢
1/4 x 3/4	18¢
■ 5/16 SQ.	11¢
■ 3/8 SQ.	15¢
3/8 x 1/2	19¢
3/8 x 3/4	25¢
■ 1/2 SQ.	25¢
1/2 x 3/4	34¢

36" LENGTHS

SHAPED L.E.

1/2 x 1/2	20¢
3/4 x 3/4	33¢
1 x 1	45¢

SHAPED T.E.

1/8 x 1/2	8¢
3/16 x 3/4	11¢
1/4 x 1	14¢
5/16 x 1-1/4	17¢

TRIANGULAR STOCK

1/2 SIDES	15¢
3/4 SIDES	23¢
1 SIDES	30¢

BLOCKS

3" LENGTHS

■ 1 SQ.	4¢
1 x 2	7¢
2 x 2	11¢
1 x 3	11¢
2 x 3	15¢
3 x 3	23¢

6" LENGTHS

■ 1 SQ.	8¢
1/2 x 2	8¢
3/4 x 2	10¢
1 x 2	13¢
1-1/2 x 2	17¢
2 x 2	21¢
1/2 x 3	12¢
3/4 x 3	16¢
1 x 3	20¢
1-1/2 x 3	25¢
2 x 3	30¢
3 x 3	45¢
1/2 x 4	15¢
3/4 x 4	21¢
1 x 4	26¢
1-1/2 x 4	33¢
2 x 4	40¢
3 x 4	58¢
1/2 x 6	24¢
3/4 x 6	31¢
1 x 6	38¢
1-1/2 x 6	47¢
2 x 6	58¢
3 x 6	86¢

12" LENGTHS

■ 1 SQ.	15¢
1/2 x 2	15¢
3/4 x 2	20¢
1 x 2	25¢
1-1/2 x 2	33¢
2 x 2	42¢
1/2 x 3	24¢
3/4 x 3	31¢
1 x 3	40¢
1-1/2 x 3	49¢
2 x 3	60¢
3 x 3	90¢
1/2 x 4	30¢
3/4 x 4	40¢
1 x 4	50¢
1-1/2 x 4	65¢
2 x 4	80¢
3 x 4	1.15
1/2 x 6	47¢
3/4 x 6	60¢
1 x 6	74¢
1-1/2 x 6	95¢
2 x 6	1.15
3 x 6	1.72
1/2 x 8	62¢
3/4 x 8	82¢
1 x 8	1.00
1-1/2 x 8	1.26
2 x 8	1.56
3 x 8	2.29

18" LENGTHS

■ 1 SQ.	20¢
1 x 2	38¢
2 x 2	64¢
1 x 3	59¢
2 x 3	89¢
3 x 3	1.34
1 x 4	75¢
2 x 4	1.19
3 x 4	1.74
1 x 8	1.12
2 x 6	1.74
3 x 6	2.58
1 x 8	1.49
2 x 8	2.30
3 x 8	3.42

24" LENGTHS

■ 1 SQ.	30¢
1 x 2	50¢
2 x 2	84¢
1 x 3	80¢
2 x 3	1.25
3 x 3	1.80
1 x 4	1.00
2 x 4	1.60
3 x 4	2.30
1 x 6	1.48
2 x 6	2.30
3 x 6	3.44
1 x 8	2.00
2 x 8	3.12
3 x 8	4.58

★ SECOND GRADE SHEETS

36" LENGTHS

1/32 x 3	14¢
1/16 x 3	14¢
3/32 x 3	17¢
1/8 x 3	19¢
3/16 x 3	24¢
1/4 x 3	30¢
3/8 x 3	39¢

PLANKS

36" LENGTHS

■ 1 SQ.	40¢
1/2 x 2	42¢
3/4 x 2	54¢
1 x 2	72¢
1-1/2 x 2	99¢
2 x 2	1.25
1/2 x 3	68¢
3/4 x 3	90¢
1 x 3	1.15
1-1/2 x 3	1.45
2 x 3	1.75
3 x 3	2.65
1/2 x 4	88¢
3/4 x 4	1.19
1 x 4	1.49
1-1/2 x 4	1.93
2 x 4	2.36
3 x 4	3.42
1/2 x 6	1.37
3/4 x 6	1.80
1 x 6	2.20
1-1/2 x 6	2.82
2 x 6	3.44
3 x 6	5.12
1/2 x 8	1.83
3/4 x 8	2.40
1 x 8	2.97
1-1/2 x 8	3.77
2 x 8	4.58
3 x 8	6.83

SIG BAG OF BALSA

#1 BAG — ALL BLOCKS 79¢
#2 BAG — BLOCK, STRIP, SHEET 79¢

CELLOPHANE-WRAPPED PACKET OF "OFF-SIZE" OR BLEMISHED BALSA STRIPS AND SHEETS. 50¢

SIG SPRUCE

36" LENGTHS		48" LENGTHS	
1/16 x 1/8	3¢	3/32 x 3/32	4¢
1/16 x 3/16	3-1/2¢	3/32 x 1/8	4¢
1/16 x 1/4	4¢	3/32 x 3/16	5¢
		3/32 x 1/4	6-1/2¢
3/32 x 3/32	3¢		
3/32 x 1/8	3¢	1/8 x 1/8	4-1/2¢
3/32 x 3/16	4¢	1/8 x 3/16	6¢
3/32 x 1/4	5¢	1/8 x 1/4	8¢
		1/8 x 3/8	11¢
1/8 x 1/8	3-1/2¢	1/8 x 1/2	15¢
1/8 x 3/16	4-1/2¢	1/8 x 3/4	20¢
1/8 x 1/4	6¢		
1/8 x 3/8	8-1/2¢	3/16 x 3/16	8¢
1/8 x 1/2	12¢	3/16 x 3/8	16¢
1/8 x 3/4	16¢	3/16 x 1/2	20¢
3/16 x 3/16	6¢	1/4 x 1/4	14¢
3/16 x 3/8	12¢	1/4 x 3/8	20¢
3/16 x 1/2	16¢	1/4 x 1/2	28¢
1/4 x 1/4	11¢	3/8 x 3/8	29¢
1/4 x 3/8	16¢		
1/4 x 1/2	21¢	24" LENGTH	
3/8 x 3/8	22¢	3/16 x 3/4	15¢

LARGE BUNDLE OF ASSORTED STRIPS — "SHORTS" AND "SECONDS". 79¢

BIRCH PLYWOOD

FINEST GRADE — FLAT SHEETS		24" LENGTHS	
12" LENGTHS		1/32 x 12	1.00
1/32 x 6	25¢	1/16 x 12	1.20
1/16 x 6	30¢	3/32 x 12	1.20
3/32 x 6	30¢	1/8 x 12	1.40
1/8 x 6	35¢	3/16 x 12	1.40
3/16 x 6	35¢	1/4 x 12	1.60
1/4 x 6	40¢		
		48" LENGTHS	
1/32 x 12	50¢	1/32 x 12	2.00
1/16 x 12	60¢	1/16 x 12	2.40
3/32 x 12	60¢	3/32 x 12	2.40
1/8 x 12	70¢	1/8 x 12	2.80
3/16 x 12	70¢	3/16 x 12	2.80
1/4 x 12	80¢	1/4 x 12	3.20

SIG BASS WOOD

18" LENGTH SHEETS

1/16 x 2-1/2	15¢	3/16 x 2-1/2	23¢
3/32 x 2-1/2	17¢	1/4 x 2-1/2	28¢
1/8 x 2-1/2	19¢	3/8 x 2-1/2	35¢

BLOCKS

1/2 x 3/4 x 6	6¢	3/4 x 2 x 6	14¢
1/2 x 3/4 x 12	11¢	3/4 x 2 x 12	27¢
1/2 x 3/4 x 18	16¢	3/4 x 2 x 18	40¢
3/4 x 3/4 x 6	7¢	3/4 x 3 x 6	19¢
3/4 x 3/4 x 12	14¢	3/4 x 3 x 12	37¢
3/4 x 3/4 x 18	20¢	3/4 x 3 x 18	55¢
3/4 x 1	6¢	3/4 x 4 x 6	24¢
3/4 x 1	12¢	3/4 x 4 x 12	47¢
3/4 x 1	18¢	3/4 x 4 x 18	70¢

SIG BIRCH DOWELS

12" LENGTHS		36" LENGTHS	
1/8 dia. 3 for	5¢	1/8 dia.	4¢
3/16 dia. each	2¢	3/16 dia.	5¢
1/4 dia. 2 for	5¢	1/4 dia.	6¢
5/16 dia. each	3¢	5/16 dia.	9¢
3/8 dia.	3¢	3/8 dia.	10¢
1/2 dia.	4¢	1/2 dia.	12¢

SIG BAMBOO STRIP

1/16x15 4¢ 1/8x15 5¢ 1/4x15 6¢

MOTOR MOUNTS

H/WOOD, 12" long 3/8 x 1/2 12¢
3/8 x 3/8 10¢ 3/8 x 3/4 15¢

SIG MAHOGANY VENEER

1/28" THICK, 6" x 12" SHEET 20¢

SIG MODEL PINS

#8	1/2 Long	#20	1-1/4 Long
#14	7/8 Long	#24	1-3/8 Long
#16	1 Long	#28	1-5/8 Long
#17	1-1/8 Long	#32	2 Long

Pkt. 15¢ 1/4 lb. $1.00 1 lb. $3.50

MODEL MAKER'S "T" PINS
Pkt. 15¢ 1/2 lb. box (1000) $3.95

SIG RUBBER BANDS

#8	1/16 x 7/8	#62	1/4 x 2-1/2
#10	1/16 x 1-1/4	#64	1/4 x 3-1/2
#14	1/16 x 2	#84	1/2 x 3-1/2
#16	1/16 x 2-1/2	#105	5/8 x 5
#30	1/8 x 2	#107	5/8 x 7
#32	1/8 x 3	PACKETS 15¢	

#6 or #8: 1/4 lb. $1.10 1 lb. $3.95
All others: 1/4 lb. 89¢ 1 lb. $3.25

CARVING KNIVES

TWELVE-PIECE ASSORTED SHAPES & EDGES (SURGICAL STEEL) $1.50

SURGICAL KNIVES

WITH PLASTIC HANDLES. IDEAL FOR CUTTING LIGHTWEIGHT BALSA AND TRIMMING PLASTIC MODELS ETC. No. 10 STRAIGHT BLADE; No. 11 ROUND BLADE. 35¢ each

RAZOR PLANE

USES DOUBLE-EDGED BLADES $1.50

SOLDERING IRON

LIGHT-DUTY, 115-120 VOLT $1.50

PEE-WEE OILER

FILLED WITH HIGH GRADE LIGHT OIL. "HYPODERMIC" NEEDLE; LEAK PROOF; REFILLABLE. (Was 98¢) 79¢

SIG STEEL WIRE

1/32 dia.	5¢	3/32 dia.	15¢
3/64 dia.	7¢	1/8 dia.	20¢
1/16 dia.	8¢	5/32 dia.	30¢
36" LENGTHS		3/16 dia.	50¢

COPPER WIRE

FOR BINDING C/LINES, L/GEAR 15¢

SIG L/GEAR BLANKS

ALCLAD — TEMPERED SPRING ALUM.

1/32x3/4x8	20¢	1/16x1-1/2x12	45¢
1/32x1x10	25¢	3/32x1-1/2x12	75¢
1/16x1x10	35¢	3/32x1-1/2x15	1.00
1/16x1x12	40¢	3/32 x 2 x 18	1.50

SIG ALCLAD SHEET

TEMPERED SPRING ALUM., FOR R/C & TEAM RACING LANDING GEARS (4" x 12" SHEETS). 1/32" Thick 65¢ 1/16" Thick $1.25 3/32" Thick $1.85

SHEET ALUMINUM

.012x4 x12	25¢	.020x12x24	1.45
.012x12x12	55¢	.032x4 x12	50¢
.012x12x24	1.00	.032x12x12	1.10
		.032x12x24	2.15
.020x4 x12	35¢		
.020x12x12	75¢	.064x4 x12	75¢

BRASS SHEET

FINEST QUALITY — 6 x 12 SHEETS

.001	60¢	.003	65¢
.002	62¢	.005	70¢
		.010	80¢
		.015	1.10

NEW! HARD BRASS SHEETS (4" x 6") 1/32" Thick $1.00 / 1/16" Thick $1.65

BRASS SHIM

SIX SEPARATE SIZES, 2-1/2 x 8 each, .001 .002 .003 .005 .010 .015 Pkt. 75¢

SIG NYLON SHEET

.010 THICK NYLON, MAKES 16 R/C OR C/L HINGES (3 x 4 SHEET). 25¢

SIG FOAM RUBBER

1/2 x 8 x 12	45¢	1 x 30 x 60	6.90
1 x 8 x 12	69¢	1/2 x 36 x 60	8.95
1/2 x 30 x 36	4.80	1 x 36 x 60	12.50

SIG CELLULOID

.008 x 8 x 10 12¢ .015 x 8 x 10 30¢

SIG WHEELS

HEAVY-DUTY, FOR C/L AND R/C

TREADED AIR WHEELS — ALUM. HUB

7/8	35¢	1-5/8	60¢	2-1/2	1.35
1	40¢	1-3/4	75¢	3	1.70
1-1/4	45¢	2	90¢	(per pair)	

TREADED BALLOON — ALUM. HUB

1/2	15¢	3/4	20¢	7/8	25¢

SPONGE TAILWHEELS — NO HUB

1	25¢	3/8	5¢	1/2	6¢

TREXLER WHEELS

INFLATABLE RUBBER MODEL WHEELS

1-1/4	40¢	1-3/4	50¢	2-1/4	60¢
1-1/2	40¢	2	50¢	2-1/2	60¢

INFLATABLE GAS MODEL WHEELS

#8G	2-3/4	1.00	#10G 3-1/2 1.50
#9G	3	1.25	#11G 4-1/2 1.75

WHEEL PUMP

TREXLER WHEELS HAND PUMP $1.00

R/C WINDER

SPECIAL NEW "SMALL WINDER" FOR R/C ESCAPEMENT RUBBER: $2.00

R/C HOOK-UP WIRE

3-FT TWIN CONDUCTORS, pkt. 20¢
8 3-FT LENGTHS, 8 COLORS, pkt. 55¢

SIG D/T FUSE

CALIBRATED IN MIN., FIVE FT. 25¢

D/T FUSE BANDS

1/4 LB. OF #6 RUBBER BANDS (BEST SIZE FOR MOST MODELS). $1.10

GLIDER TOWLINE

#3 NYLON 20 lb. TEST, 175 ft. 50¢
#4 NYLON 28 lb. TEST, 175 ft. 55¢

GLIDER WINCH

6:1 RATIO LIGHTWEIGHT IMPORTED WINCH. COMPLIES WITH F.A.I. CONTEST RULES. $4.75

SIG POWER STRIP

NEW 1/24" SQ. RUBBER STRIP WITH AMAZING POWER/WEIGHT RATIO.

50 ft.	45¢	100 ft.	85¢
		850 ft.	$4.95

PIRELLI RUBBER

IN 1 POUND CANS ONLY $5.50: (475 FT. OF 5/32") (285 FT. OF 1/4")

SIG FLIGHT RUBBER

PACKED IN LIGHT-PROOF CANS

1/8 x 25 ft.	30¢	3/16 x 50 ft.	85¢
1/8 x 50 ft.	55¢	1/4 x 25 ft.	60¢
3/16 x 25 ft.	45¢	1/4 x 50 ft.	1.15

1 LB. CANS $4.50: (570 FT. OF 1/8") (375 FT. OF 3/16") (285 FT. OF 1/4")

RUBBER LUBRICANT

4 oz. 50¢ 8 oz. 95¢ Pint 1.75

SIG FOLDING PROP

HAND-CARVED, LACQUERED BALSA PROPS, WITH BRASS BEARING PLATES

12 diameter	1.50	20 diameter	2.75
16 diameter	1.75	24 diameter	3.75

THRUST WASHERS

BALL BEARING WASHERS FOR UP TO 1/16" DIA. SHAFTS. each 15¢

RUBBER WINDER

4:1 RATIO RUBBER WINDER, WITH SPRING STEEL HOOK. $3.95

SIG MICROFILM

IN./MODEL COVERING. 4 oz. 55¢

SIG JAP TISSUE

PRE-WAR QUALITY JAPANESE TISSUE IN ORANGE, YELLOW, RED, WHITE, BLUE OR BLACK. 18 x 20 sheet 7¢

BAMBOO PAPER

HEAVIER THAN OUR REGULAR JAP TISSUE — IN YELLOW, RED, WHITE, BLUE OR BLACK. 21 x 31 sheet 15¢

SILKSPAN

00 WHITE: 19-1/2 x 24-1/2 sheet 5¢
GM WHITE: 24 x 36 sheet 10¢
SGM WHITE: 26-1/2 x 33-1/2 sheet 15¢

SIGRAY

NEW SIG COVERING MATERIAL — A BLEND OF RAYON AND SILK, IN WHITE, BLACK, RED, YELLOW AND BLUE (36" WIDTH). Per Yard $1.10

SIG NYLON

WHITE, 36 x 48, IN PACKAGE. $1.00

SIG SILK

FOR R/C MODELS — IN RED, BLUE, WHITE, GOLD OR GREEN (36" x 36") HEAVY $1.35 EXTRA-HEAVY* $1.75 — *EXTRA-HEAVY IN WHITE ONLY

JAP SILK

LIGHT-WEIGHT, FOR SMALL GAS, RUBBER, GLIDER ETC. — IN RED, WHITE, BLUE, GREEN, SILVER OR GOLD. 36" x 36" sheet, $1.15

SIG SUPERCOAT FUEL PROOF DOPE

BRILLIANT WHITE • DIANA CREAM
POLAR GRAY • BROWN • JET BLACK
LEMON YELLOW • TENNESSEE RED
CUB YELLOW • ORANGE • MAROON
LIGHT RED • SILVER • OLIVE DRAB
FOREST GREEN • BRIGHT GREEN
DK. GREEN • DK. BLUE • LIGHT BLUE
MIAMI BLUE • CLEAR • THINNER

PLUS 5 NEW SUPERCOAT COLORS — GOLD, COPPER, METALLIC GREEN, METALLIC BLUE, METALLIC MAROON

COLOR		CLEAR		THINNER	
4 oz.	55¢	4 oz.	45¢	4 oz.	30¢
8 oz.	90¢	8 oz.	79¢	8 oz.	49¢
Pint	1.40	Pint	1.29	Pint	89¢
Qt.	2.65	Qt.	1.98	Qt.	1.50
Gal.	7.50	Gal.	5.95	Gal.	3.75

SIG SUPERCOAT IN NEW SPRAY CANS

ALL 19 SUPERCOAT COLORS, PLUS CLEAR, NOW AVAILABLE IN THESE HANDY, LOW-COST SPRAY CANS

3 oz. 49¢ 6 oz. 79¢ Pint 1.39

SIG DOPE RETARDER

SLOWS DRYING — WHEN ONE PART IS ADDED TO SIX PARTS OF DOPE

4 oz. 35¢ 8 oz. 60¢ Pint 1.10

SIG DOPE BRUSHES

CAMEL HAIR: 5/8" 19¢ 1" 25¢

INSIGNIA DECALS

THE WORLD'S LARGEST LINE OF INSIGNIA DECALS (U.S.A.F. "STARS", CARTOON FIGURES, "FLAMES", AMA REG., NUMERALS, "EAGLE" ETC.)

48 DIFFERENT SHEETS AT 10¢ EACH
12 DIFFERENT GIANT 4 x 10 SHEETS (TWO PER PACKAGE) AT 49¢ EACH

SIG DECAL SHEETS

TWO 4-1/4 x 11 SOLID-COLOR FUEL PROOF DECAL SHEETS IN FOLDER. CHOICE OF: BLACK, RED, WHITE, BLUE, GREEN, YELLOW, ORANGE AND SILVER. 2 sheets 35¢

MASKING TAPE

1/8, 1/4, 3/8 or 1/2 — 12 ft. rolls 15¢

ALSO IN 180 FT. ROLLS: 1/8 85¢
1/4 $1.00 3/8 $1.15 1/2 $1.25

SIG "MYLAR" TRIM

ADD DECORATIVE, FLASHING TRIM TO MODELS, WITH METAL-PLATED SELF-ADHESIVE "MYLAR" (4" x 10" SHEETS). CHROME 35¢ / GOLD 40¢

SIG-MENT

OUR GREAT NEW "ONE-TUBE A & B SUPER-CEMENT" — FOR ALL MODEL BUILDING AND FAST FIELD REPAIRS — HOT FUEL PROOF, STRONG AND QUICK DRYING — FOR BALSA, PLYWOOD, HARDWOOD, WOOD-TO-METAL, METAL-TO-METAL & CLOTH

2 oz. Tube, 15¢ 4 oz. Tube, 39¢

CONTACT CEMENT

ONE COAT INSTANT BONDING FOR ALL WOODS, METAL, CLOTH ETC.

4 oz. 55¢ 8 oz. 95¢ Pint 1.50

SIG WHITE GLUE

FOR HARDWOOD JOINTS. 4 oz. 60¢

SIG SUPERFOAM

AMAZING POLYURETHANE 2-PART CHEMICAL — WHICH EXPANDS 25 TIMES WHEN COMBINED. DRIES IN 10 MINUTES INTO LIGHT, DURABLE FOAM THAT CAN BE SAWN, CAST IN MOLDS, CARVED, SANDED AND DOPED. COMES IN PARTS "A" AND "B", IN TWO 8 oz. CANS. $3.25

SIG GLASS KIT

FOR MOULDING COWLINGS; WHEEL PANTS; FUSELAGES; BOAT HULLS.

CONTAINS 8 OZ. CAN OF RESIN AND HARDENER — 28" x 38" GLASS CLOTH — 1 OZ. CAN OF RELEASE AGENT — MIXING RODS — MIXING CUPS — FULL DIRECTIONS. $2.65

SIG GLASS RESIN

8 oz. CAN $1.35 Pint CAN $2.50

SIG GLASS CLOTH

28" x 38" PIECE $1.00

SIG RELEASE AGENT

STOPS MOULDED PARTS STICKING TO PATTERNS. 1 OZ. CAN 29¢

SIG SUPERFILL

FOR FILLING BALSA WOOD

4 oz. 50¢ 8 oz. 95¢ Pint 1.50

SANDING SEALER

LIGHTWEIGHT; TRANSPARENT; WILL NOT FILL GRAIN LIKE "SUPERFILL"

4 oz. 50¢ 8 oz. 95¢ Pint 1.50

SIG SUPERMOLD

BALSA IN PLASTIC FORM

4 oz. 50¢ 8 oz. 95¢ Pint 1.60

POWDERED BALSA

FOR FILLETS ETC. LARGE CAN 25¢

RUBBING COMPOUND

FAST CUTTING. GIVES A PERFECT FINISH ON ANY DOPED SURFACE

4 oz. 50¢ 8 oz. 95¢ Pint 1.60

GLASSCOAT BRUSH

CLEAR, FUEL-PROOF; HIGH-GLOSS TOP COAT; GIVES MIRROR FINISH

4 oz. 50¢ 8 oz. 90¢ Pint 1.40

GLASSCOAT SPRAY

3 oz. 49¢ 6 oz. 79¢ Pint 1.39

SIG SLICK-SAND

CONTOURED 1/2 x 3 x 3 FOAM-PLASTIC PAD — COATED WITH FAST CUTTING ABRASIVE. 10¢

SANDPAPER

TEN 4-1/2 x 5-1/2 ASS. SHEETS 15¢

GARNET PAPER

FIVE 4-1/2 x 5-1/2 FINE SHEETS 15¢

WE ALSO STOCK:

MODEL PLANE KITS AND MOST OF THE LEADING BRAND ACCESSORIES

1964 SIG CATALOG SEND 25¢ FOR LAVISH 48-PAGE CATALOG OF KITS, ENGINES, BALSA WOOD AND HARD-TO-GET ACCESSORIES

SEE OUR OTHER ADS ON PAGES 44 & 45

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★ CLIP OUT THIS COUPON AND MAIL IN WITH YOUR ORDER ($3.00 MINIMUM) FOR ANY SIG MERCHANDISE — AND WE WILL SEND YOU, AT NO EXTRA CHARGE: AN 8 OZ. CAN OF NEW SIG SUPERCOAT DOPE (STATE "CLEAR" OR "COLOR" CHOICE), PLUS TWO SIG DECALS.

HURRY, THIS OFFER IS LIMITED! February 1964 MAN

ADD 25¢ POSTAGE TO MAIL ORDERS, WHEN USING THIS COUPON

IF YOUR LOCAL DEALER IS UNABLE TO SUPPLY YOUR NEEDS, ORDER DIRECT (WE GIVE PROMPT SERVICE), ADDING 25¢ POSTAGE • MINIMUM ORDER $1.00

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SIG MANUFACTURING COMPANY • 401(M) SOUTH FRONT STREET • MONTEZUMA • IOWA

Details are important if it is to be a contest winner, our Apache has won every contest entered and in addition, has won the Testor Best Finish award, so pay attention to the details.

PIPER APACHE

A CONTEST WINNING SUPER SCALE FOR THE MOST EXACTING SCALE BUILDER, TWIN ENGINE PERFORMANCE THAT CAN FLY WITH THE BEST.

To support our contest winning claims, here we have the designer/author with some of his trophies and he is holding the Testor award. In the background, we have the model's big brother.

By BILL NORMENT

► Selection of the Piper Apache as a ship for a detailed scale model can be contributed to two factors — "Perk" Piorkowski's Piper Comanche, published in Model Airplane News in June 1962, and the excellent flight characteristics which Piper planes lend toward model flying. The Apache also has clean lines and many details available with which to work.

Piorkowski's Comanche was undertaken as a first endeavor into scale building, and results from MAN plans were so gratifying that Piper's Apache appeared next to be added to the fleet.

This ship is scaled in every detail, even including scale airfoil, except for the front landing gear which is L-shaped instead of a U-fork in order to strengthen it for landings.

Since it was first constructed in midsummer of 1963, the plane has placed first in every contest entered, including the regional Southeastern Rebel Rally at Jacksonville, Florida, and the all-scale flying show at Westminster, Maryland. A Testors Award plaque is also among the Apache's winnings.

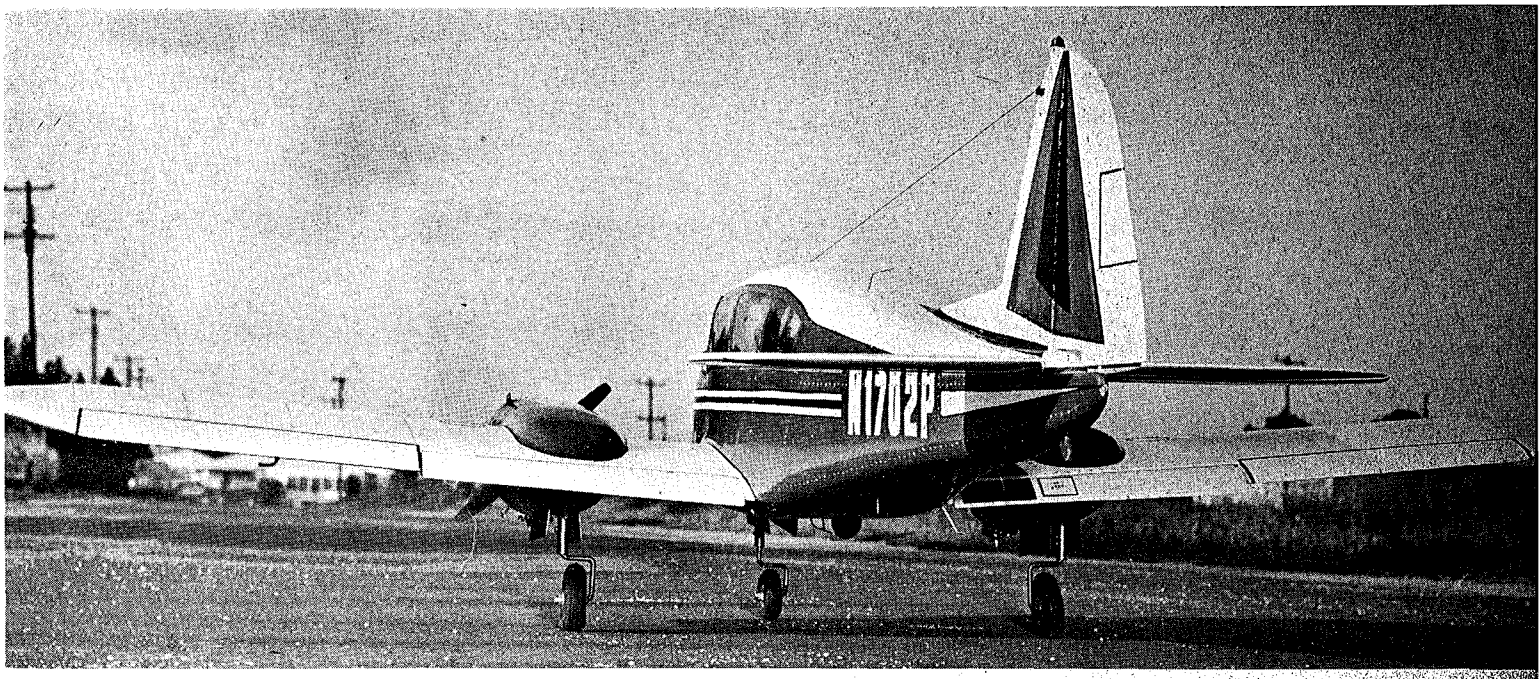
Original ship research shows that the plane is powered by twin Lycoming 250 engines which are most sufficient to give the plane plenty of power and hustle. It is the world's most widely used four/five place twin. Easy to fly, quiet, comfortable, and roomy, it cruises over 170 mph with a 1200-mile range.

Research was done from Piper Aircraft drawings, blue prints, photographs, and from two original ships at the Lumberton, N. C. municipal airport which were viewed on an average of three times weekly during the building. Details were also obtained from the Piper Apache tech manual.

This plane is scaled 1 and ½ inch to the foot, and the weight of the plane, nine pounds, makes it almost necessary to equip it with throttles for power landings. High lift wings and landing flaps also give the ship excellent flying and landing characteristics.

Powered by twin McCoy 35's, reworked inside and fitted with K & B throttles, the plane must have a slight nose heaviness upon completion. A word of warning also at this point. Like the real Apache, the model must have a down thrust engine line because of the high lift wings. A 6 degree down thrust was used to correspond to the original plane, and a 1/16 inch washer under the rear lug holes of each engine prove quite satisfactory.

First step in construction is the laying of the keel from ¼ inch balsa. All formers are cut from ⅛ inch balsa except F-2, F-3, F-5, F-6, and F-7, which are all ⅛" plywood. Notch formers for keel and construct one-half of fuselage over plan. When dry remove and place other (*Continued next page*)



Standing on the runway it is hard to tell if it's a full scale bird or not. Here again, we can see very vividly the value of good scale detail.

PIPER APACHE Continued

halves of formers in position. Wing dihedral is cut into formers F-5 and F-6 and must be lined up correctly.

Second step is attaching wing spars of ¼ by ¾ inch balsa. Spars butt against formers F-5 and F-6, and are spliced on the back side by ⅛ inch plywood. Spars must be kept absolutely in line to prevent warping and misalignment.

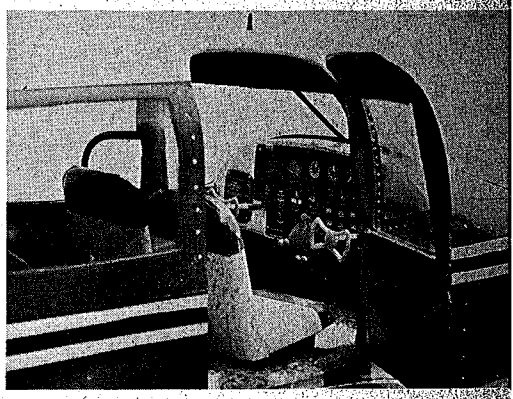
Third step consists of placing motor nacelle formers on the 12-inch length hardwood motor mounts. Do not cement yet. Lay motor mounts across spars and move N-4 and N-3 up until they butt against wing spars — then cement in place, using several layers of cement after first pre-gluing. Also glue N-2 and N-1 in place.

Fourth step, line up wing ribs according to plan, then cement. Lay 1-inch rounded leading edge along front of ribs, making sure it is straight. End of the leading edge is cemented securely to outside motor mounts. Leading edge between nacelle and fuselage is connected to former N-2 and to fuselage former F-4. Trailing edge of ¼ by ½ inch balsa is now attached.

Fifth step is to cement ⅛ inch plywood landing gear mounts in place. The main gear mounts should be placed beneath the rear of the motor mounts, and the nose mount is placed in cut out slots near bottom of formers F-2 and F-3. If throttles are to be used, throttle bellcrank mounts can also be cemented in place at this time. Install #12 Perfect fuel tanks.

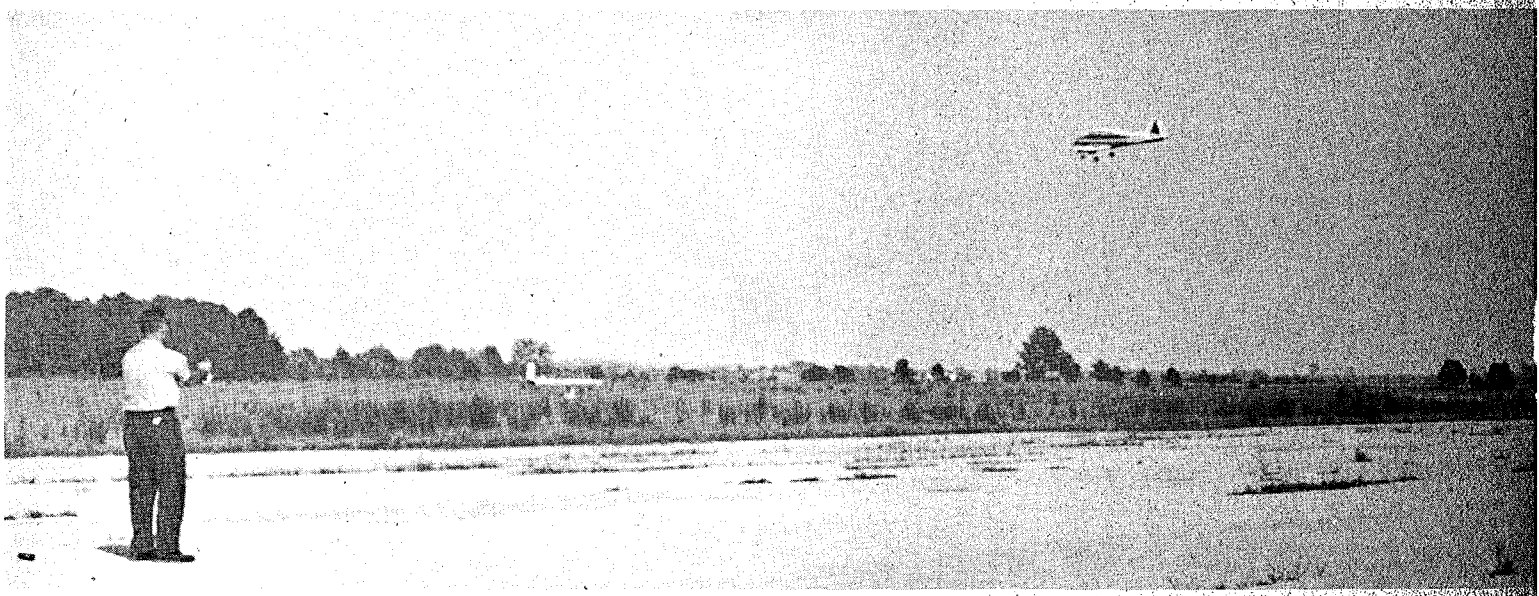
Sixth step cement bellcrank mount to top of wing spars between formers F-5 and F-6. Install J-Roberts bellcrank for throttle control, and use heavy duty braided leadout wire which will stand up under a pull test of at least 60 pounds.

Seventh step cut elevator from ⅜

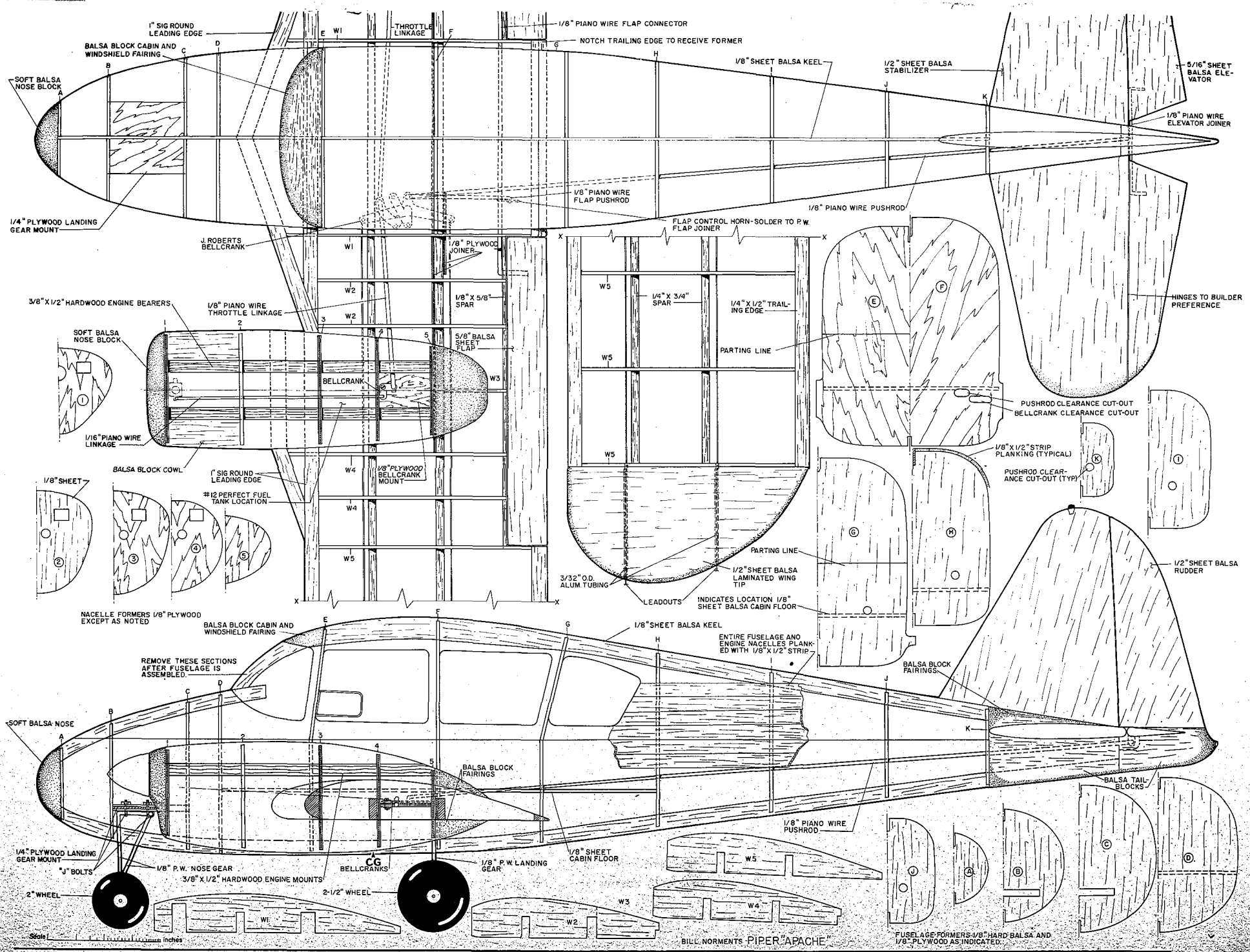


Note the instrument panel, control columns and the upholstered seats, plus rugs on the floor.

inch sheet balsa, 6 inches wide, and carve to shape. Install a large Veco control horn. Before attaching to fuselage, balsa blocks must be cemented to each side of keel at tail, and cement firmly to last former. Space in middle will provide for (*Continued on page* 43)



And here we have the end result flying, don't know what length of line Bill was using for this flight but his Apache sure looks big out there.



FULL SCALE PLANS AVAILABLE — SEE PAGE 71

R/C GLIDER PYLON RACING

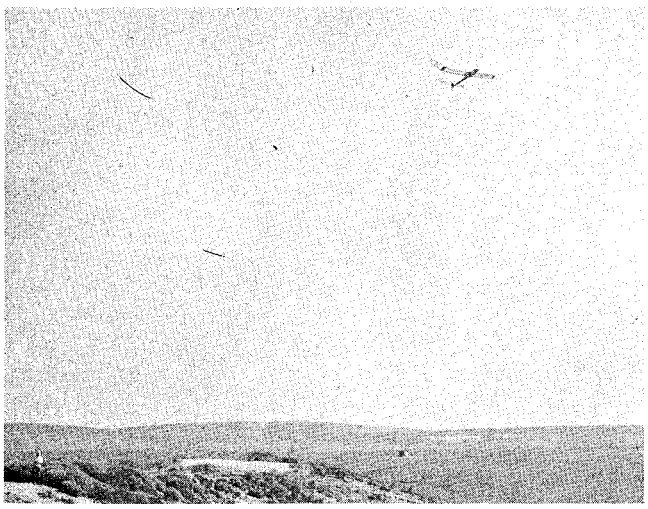
Ted Trevor, an officer in the Harbor Slope Soaring Society, makes a low approach to near pylon during a race. Note flagman and timer at far end.

UNUSUAL THOUGHT, ISN'T IT? SPEED OR PYLON RACING WITH GLIDERS, BUT IT IS BEING DONE ALMOST EVERY WEEKEND ON THE WEST COAST AND IS CATCHING ON VERY FAST.

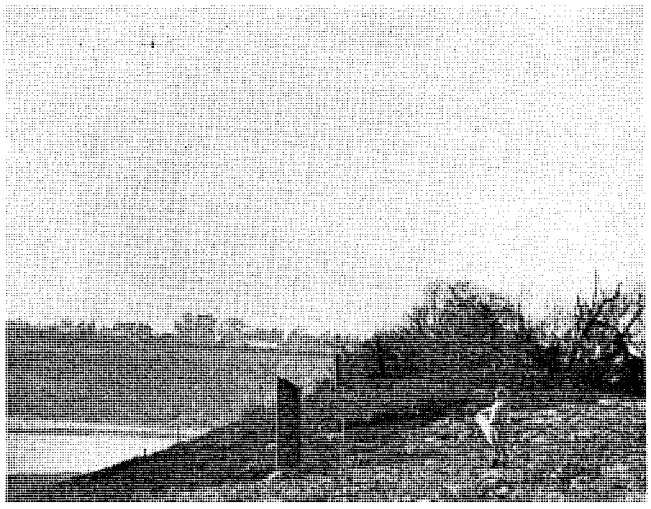
By DALE WILLOUGHBY

► Soon after members of the Harbor Slope Soaring Society had witnessed the R/C Pylon Race event held at the Los Alamitos Nationals, our club decided to stage a Pylon Race with radio-controled gliders. During the September meeting, the following tentative rules were agreed upon:

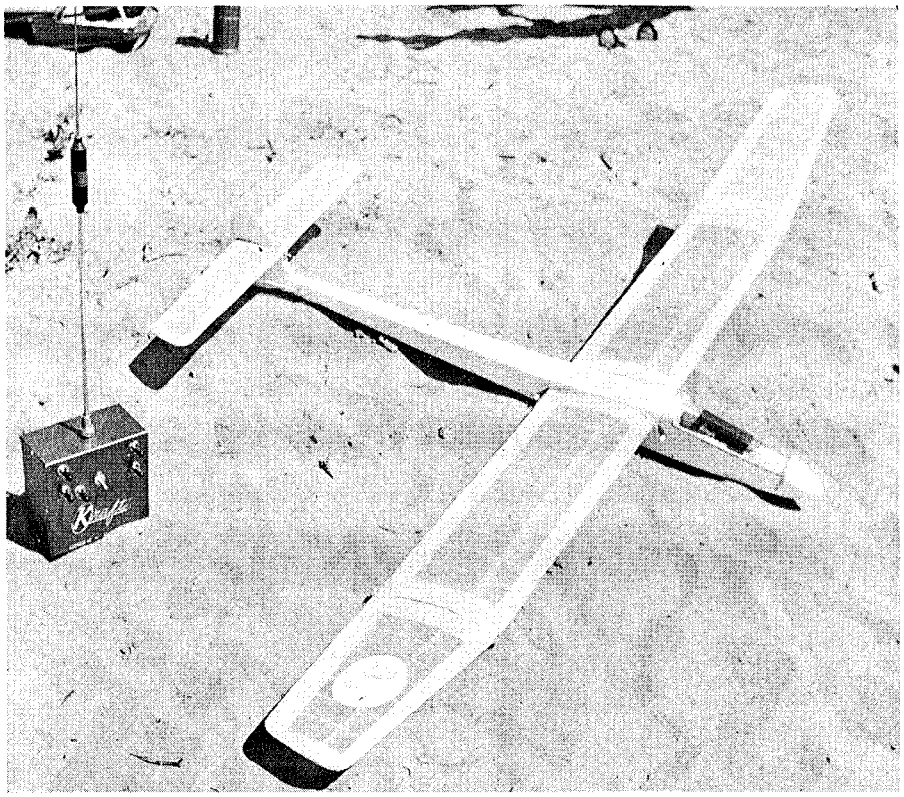
1. Glider or model must have been built by the contestant.
2. Contest is for Rudder only (Class I) ships although Class II and Class III models may compete if the additional servos or compound escapements are disconnected, once trim has been established.
3. Timing will be for 3 laps with only 3 attempts (official flights) possible.
4. The fastest single flight will win the Pylon Race, i.e., the least lapsed time between the time of launch to the crossing in front of the contestant after completion of the 3rd lap.
5. Contestants have 10 seconds from time of launch to declare "official" or "scrub" the flight. In case of "scrub" flights, the contestant must land as soon as practical.
6. It is not necessary to circle the Pylon, only go past the Pylon Judge, who will signal when this has been accomplished. If no signal (white flag), model must return to the Pylon or be disqualified.
7. Pylons will be placed 528 ft. apart so that actual



Author, barely visible in lower left foreground, utilizing the most available lift, heads his glider along the ridge and for far pylon.



Red flag, barely visible in this photo, being held aloft by the Pylon Judge, signalling that the glider has not reached aiming stakes.



First place winner with a speed of 14.1 mph is Aviomodelli's fine slope soarer, The Pelican, built by the author. Glider has had 118 flights by mid-October, averaging ten to fifteen minutes duration.

Pete Jones takes a compass sighting on person holding the other end of 100' tape.

speeds in mph may be calculated.

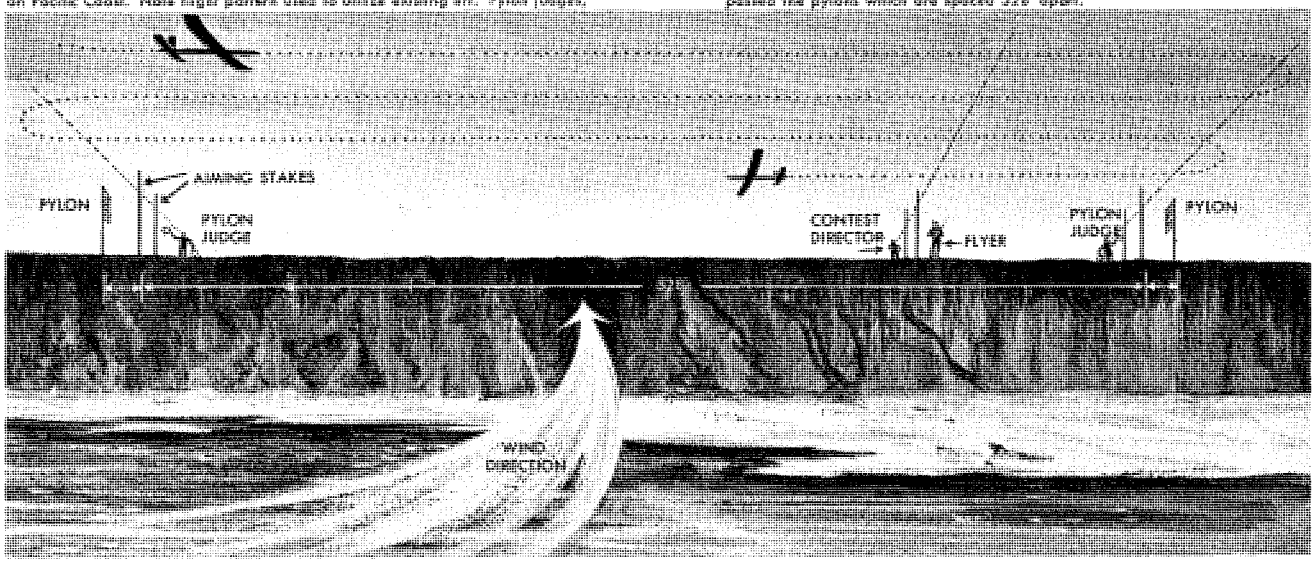
8. Contest begins at 1 pm with flying until 4 p.m.

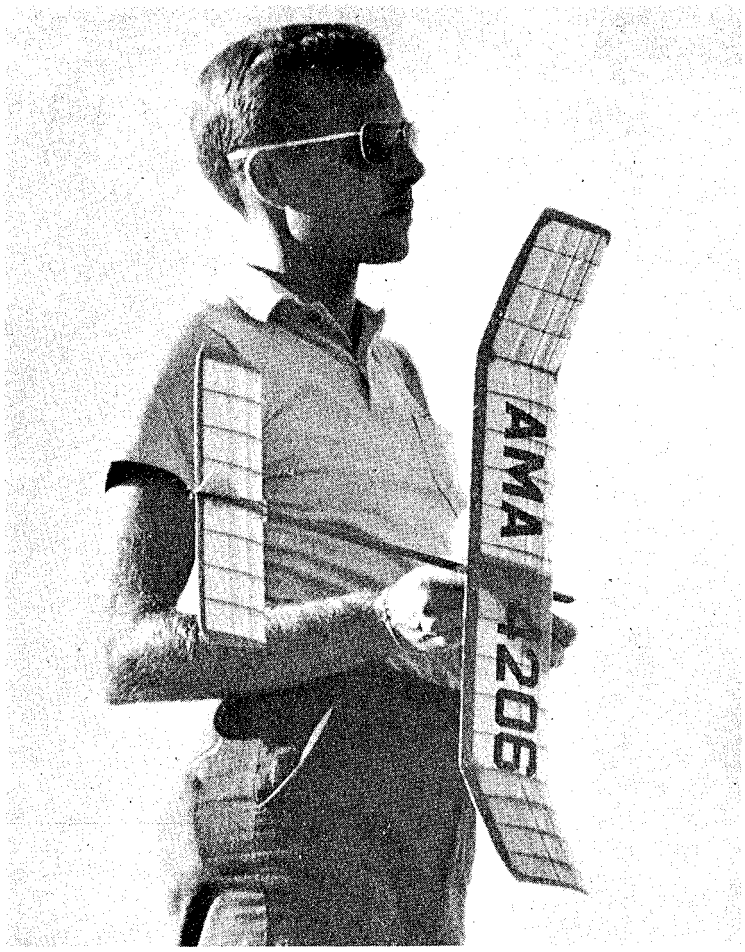
Our Contest Director, in the Harbor Slope Soaring Society called the Flight Officer, was detailed to lay out a course patterned after the one used at the Nats. There was just one hitch . . . pre-contest attempts to fly an exact Pylon Course had proven that distinct down drafts existed most always just past the windward crest of the bluff, thereby making it nearly impossible to make a full 180° turn over the pylon without hitting the ground. With apologies to the F.A.S.T. Club and AMA, our rules were modified to allow the glider to fly past the pylon rather than around it. This necessitated the use of 3 sets of aiming stakes.

Early Sunday morning, Pete Jones, the Flight Officer, Matt Ontko, always one to lend a helping hand, and several helpers laid out the course. Pete established a starting point about 50 ft. behind the crest of the bluff. Using a compass, two 8 ft. high white aiming stakes were placed about ten feet apart and at a 90° angle to the line of flight. Then from the starting point, and again using the compass, a measurement of 528 ft. was established along the line of flight, and marked by aiming stakes. The pylons, which were made from a large section of red bed spread nailed to a piece of 2" x 3" lumber, were placed 540 feet apart so as not to interfere or block the vision of the Pylon Judge. In addition, the third set of aiming stakes were placed at the launching point which served to mark the beginning and end of the Pylon course.

At the beginning of the contest at 1 p.m., with the temperature hovering near 90°, a moderately heavy wind was blowing, which promised ideal conditions for the contest. Forty minutes later the wind diminished to a light breeze, making flying conditions (*Continued on page* 44)

Artist's rendering of the Harbor Slope Soaring Society Pylon course at top ridge on Pacific Coast. Note flight pattern used to utilize existing lift. Pylon judges, at each end, of course, have red and white flags to signal if plane has not passed the pylons which are spaced 528' apart.

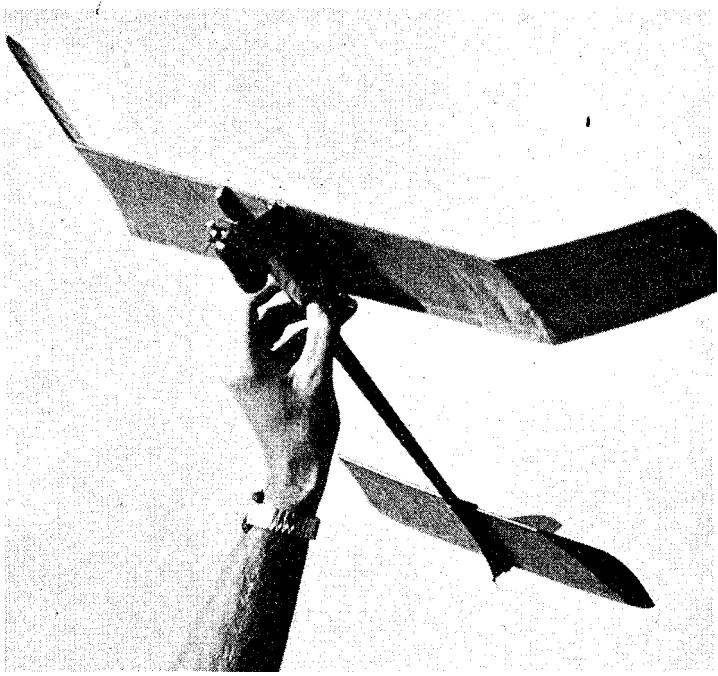




USAF's secret weapon this year were the Simpson twins and here we have Reid, our author, waiting for Roger's signal when to launch the Ja-Tex.

ROCKET FREE FLIGHT DESIGN FOR TOP CONTEST PERFORMANCE. ITS WINNING WAYS HELPED THE USAF TEAM TO WIN THE TEAM CHAMPIONSHIP AT THE '63 NATS.

One of Reid's secret weapons, he didn't give us the statistics but we know, she is his youngest and well-trained by way she holds the model.



Jetex power pod is mounted quite far forward on the fuselage, his performance of this model dictates use of a good D/T'er to bring it down.

JA·TEX

By REID SIMPSON

► The JA-TEX has proven to be a stable, high climbing design and has always been a reliable ship, that once trimmed, remains trimmed, and is a constant threat in any competition.

Its origin dates back to the 1959 Nats, which was my first time on the Air Force team, and also my first Nats. I made it a point to watch the Rocket F/F event, as I had never seen it flown.

I was amazed at the weird and unusual designs. Some had extremely long tail moment arms, and some had stabs almost as big as the wings. Also, I noticed a dozen different locations and ways of mounting the engines.

Some climbed extremely fast, but were unstable in their recoveries and glides. Others, (especially the larger ones) were stable in the climb and glide but were lacking in altitude and even their excellent glide could not make up for this.

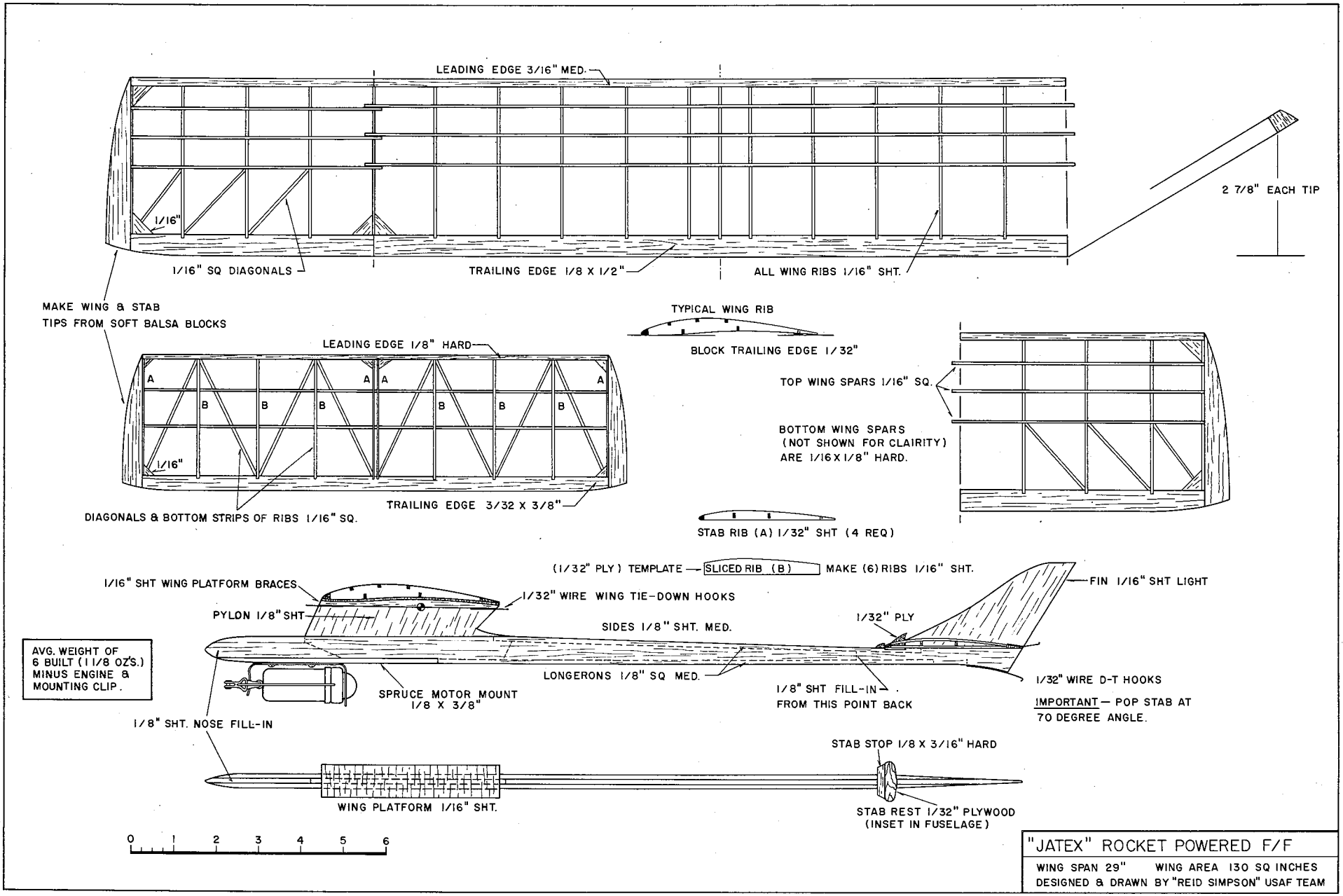
All in all, I did not see a particular design that showed me that any one trend had an advantage.

In the spring of 1960, still bugged by the designs problems, I decided to build one for the forthcoming "Tulsa Glue Dobers Annual."

I felt that stability and simplicity were the two major items to design around. For stability, I used the same basic layout I have used with success in gas F/F, with a short tail moment arm for good recovery. Since I had no torque problems, a large vertical fin was used for stability under power.

For simplicity, the three-piece square tipped wing and a square stab were used. This allowed building time kept to a minimum.

The size was a compromise of what I had seen the year before. Figuring that if we had the stability a small light ship could bomb up where the thermals were, this has proven to be true. The finished ship weighed in at 1⅛ ozs. minus the motor. (*Continued on page* 46)



"JATEX" ROCKET POWERED F/F

WING SPAN 29" WING AREA 130 SQ INCHES
DESIGNED & DRAWN BY "REID SIMPSON" USAF TEAM

FULL SCALE PLANS AVAILABLE — SEE PAGE 71

King-sized yes, conventional also but the Sikorsky biplanes were renowned for their durability and weight and passenger carrying capabilities.

Historical Aircraft

by JAMES E. DUNAVENT

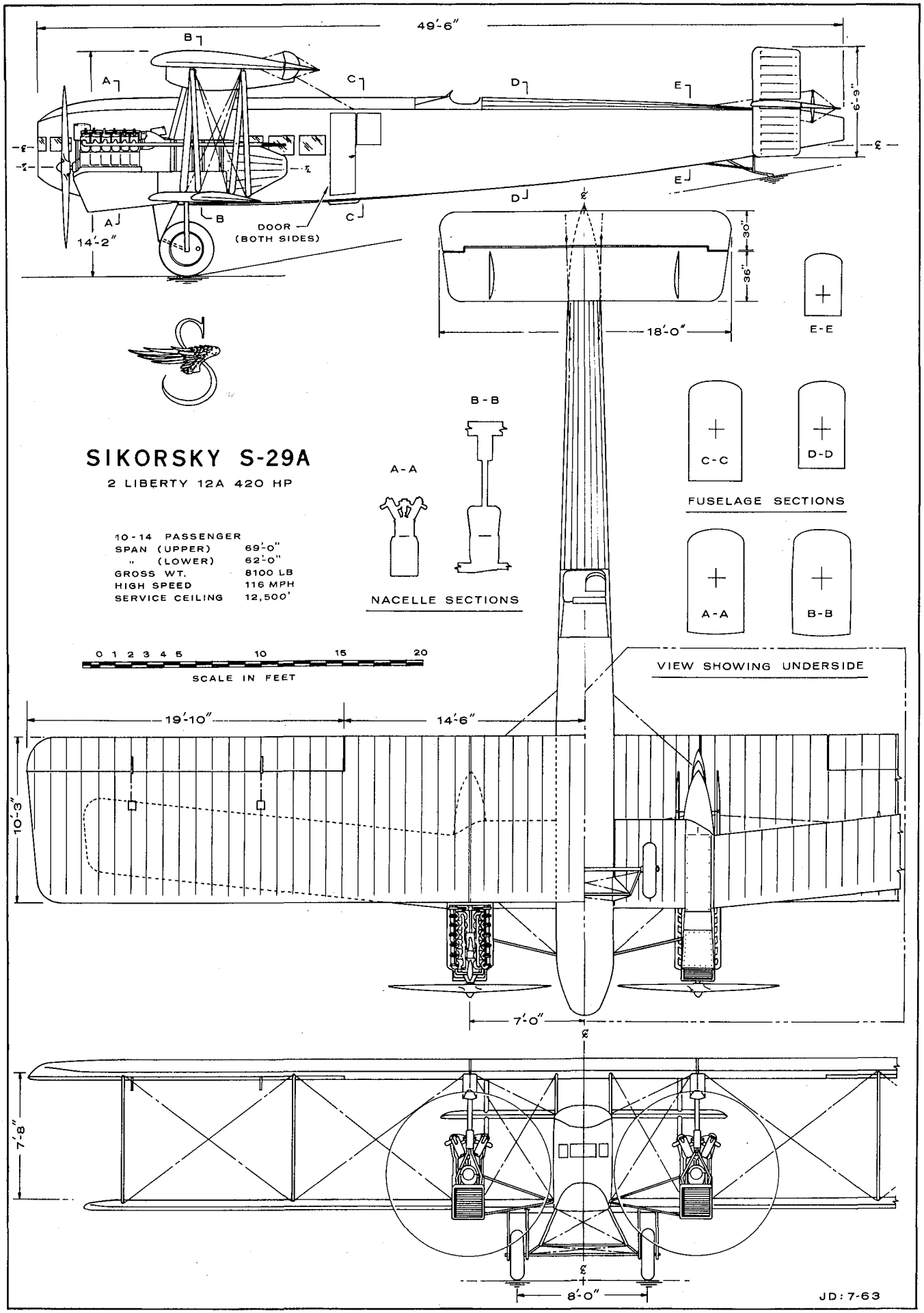
Sikorsky S-29A . . . First American-built Sikorsky, the S-29A carried pianos and elephants, suit salesmen and cigars, as it helped establish commercial aviation in the roaring 20's.

► Although the name Sikorsky immediately recalls twin-boom amphibians dating from the thirties, as well as the more recent rotary-winged "choppers," earlier Sikorsky aircraft were mainly conventional—if somewhat king-sized —biplanes renowned for their durability and weight-carrying capabilities. The S-29A, which could carry eighteen passengers at speeds up to 135 mph and stay in the air on one engine, was a lineal descendant of the world's first really large aircraft — the Sikorsky "Grand," built and flown in St. Petersburg, Russia, during 1913. When World War I flamed through central Europe the following year, four-engined Sikorsky "Ilya Mourometz" bombers struck deep into the eastern German border provinces, flying sortie after sortie in apparent invulnerability. The S-29A also carried on the tradition of size and toughness; at the time it was built only three other civil aircraft of comparable size and carrying capacity had been produced in the United States. After five years of service life, flying from the primitive "commercial" airfields then in use, it went down with false colors flying—masquerading as a "Gotha" bomber for the filming of Howard Hughes's air epic "Hell's Angels."

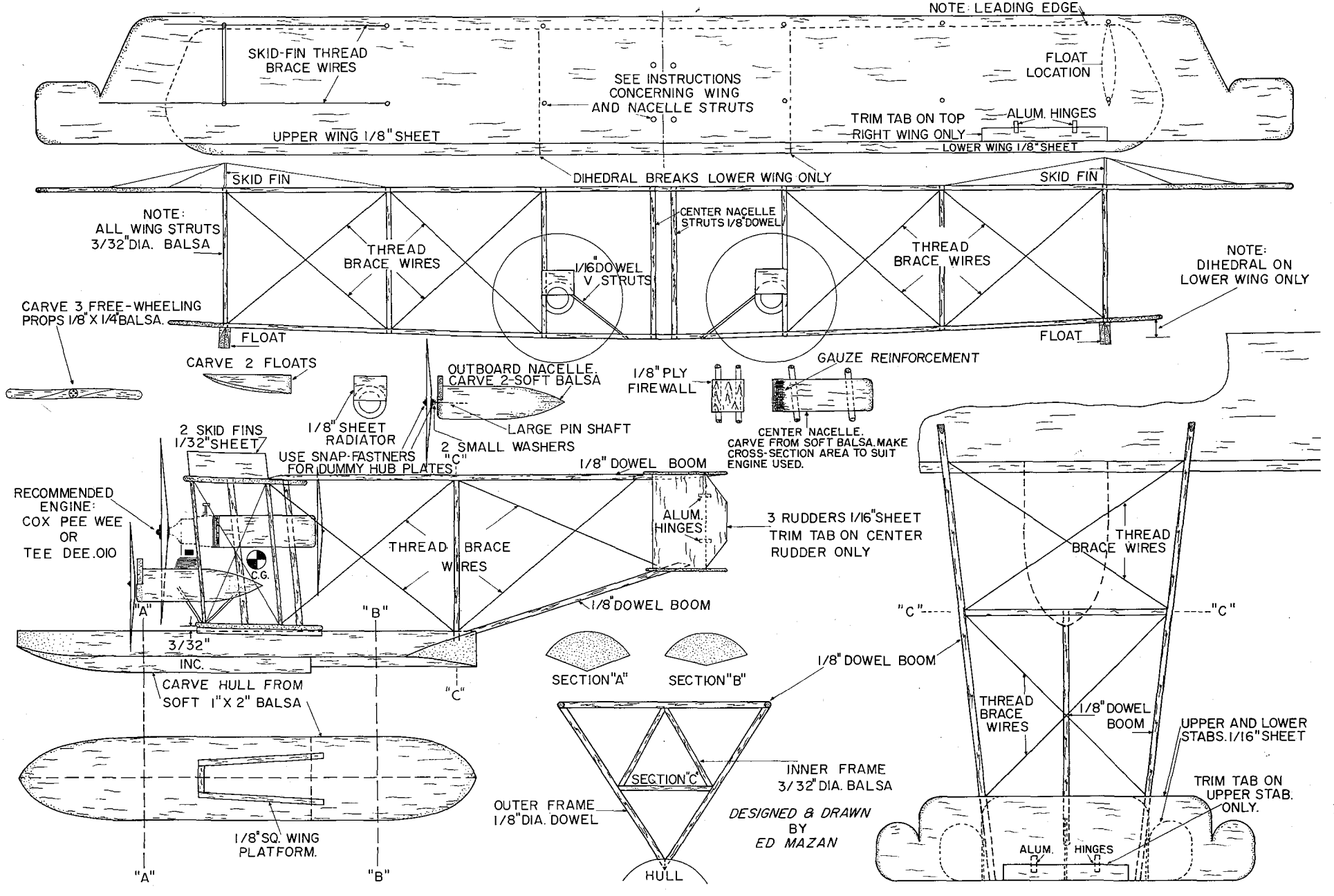
The Sikorsky story, in which the S-29A was to play a vital part, began in 1908 in Kiev, in the Russian Ukraine. Igor Sikorsky, then a young student who had attended the Imperial Naval Academy at St. Petersburg and was then studying at the Kiev Polytechnic Institute, had been experimenting with miniature helicopters, and succeeded in flying a relatively weighty model to a height of nearly two meters. The next logical step was the construction of a full-size machine, with a feeble 25 hp Anzani engine driving twin contra-rotating paddle propellors. Although it developed some lift, the craft would not leave the ground, so Sikorsky contented himself with using it to measure the thrust generated at varying pitch angles, and studying ways to defeat vibration periods set up within the concentric shafts. Meanwhile, he planned a second machine of refined design.

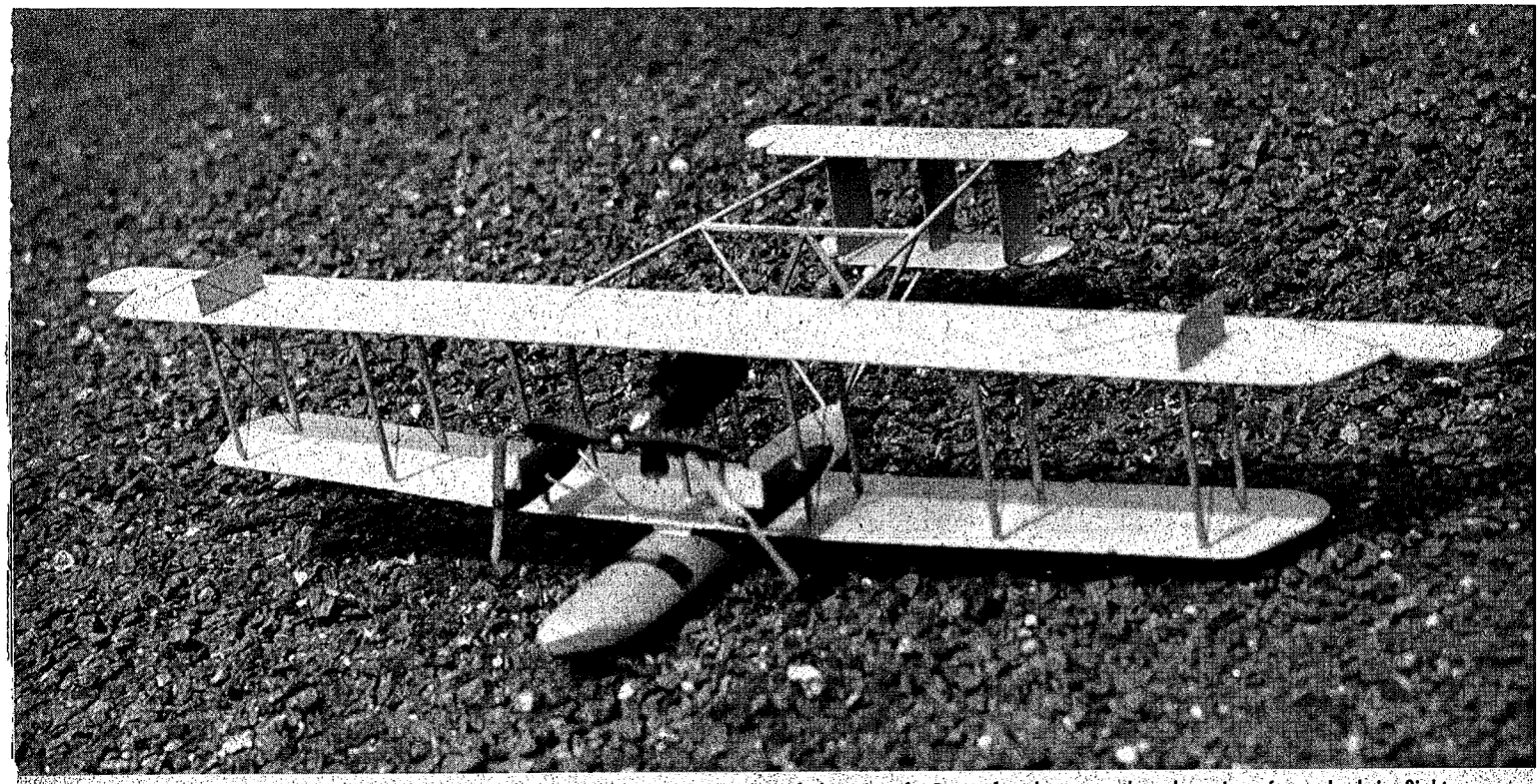
During a trip to Paris Sikorsky became profoundly impressed with the easy, effortless flight of a Wright biplane flown by a French pilot. Back again in Kiev, the second helicopter was finished, but quickly shelved in favor of the first Sikorsky airplane—a small, light pusher biplane indifferently powered by a 15 hp Anzani. It was not capable of sustained flight, only hops of a few yards or so, and it served as a "roleur" penguin trained for the youthful designer. The parts were then used in the S-2, a tractor biplane of new design with the more powerful 25 hp Anzani. Several short flights were made with this machine, although it was barely able to maintain horizontal flight in other than the best air conditions.

During the next three years a series of new machines were built, each of which was an improvement over the preceding craft. In 1912, after it had won the Moscow aircraft exhibition first award, his S-6A was chosen for production by the Russo-Baltic Railroad Car Factory (Russo-Baltiskii Vagonstroitelnyii Zavod) of St. Petersburg, a company that was entering the aircraft field as a complement to its heavy industrial and automobile interests. Sikorsky accepted the post of chief engineer and designer of the aviation branch, and remained with the RBVZ until it ceased aircraft production in mid-1917. The political chaos which followed the fall of (*Continued on page* 38)


49'-6"
A
B
C
D
E
6'-9"
14'-2"
DOOR
(BOTH SIDES)
30"
36"
18'-0"
E-E
C-C
D-D
FUSELAGE SECTIONS
B-B
A-A
NACELLE SECTIONS
SIKORSKY S-29A
2 LIBERTY 12A 420 HP
10-14 PASSENGER
SPAN (UPPER) 69'-0"
" (LOWER) 62'-0"
GROSS WT. 8100 LB
HIGH SPEED 116 MPH
SERVICE CEILING 12,500'
0 1 2 3 4 5 10 15 20
SCALE IN FEET
VIEW SHOWING UNDERSIDE
19'-10"
14'-6"
10'-3"
7'-0"
7'-8"
8'-0"
JD: 7-63

FULL SCALE PLANS AVAILABLE — SEE PAGE 71





All-balsa construction simplifies the making of the many unusual features of this aircraft. Props for dummy outboard engines free wheel in flight.

FREE FLIGHT NC-4

By ED MAZAN

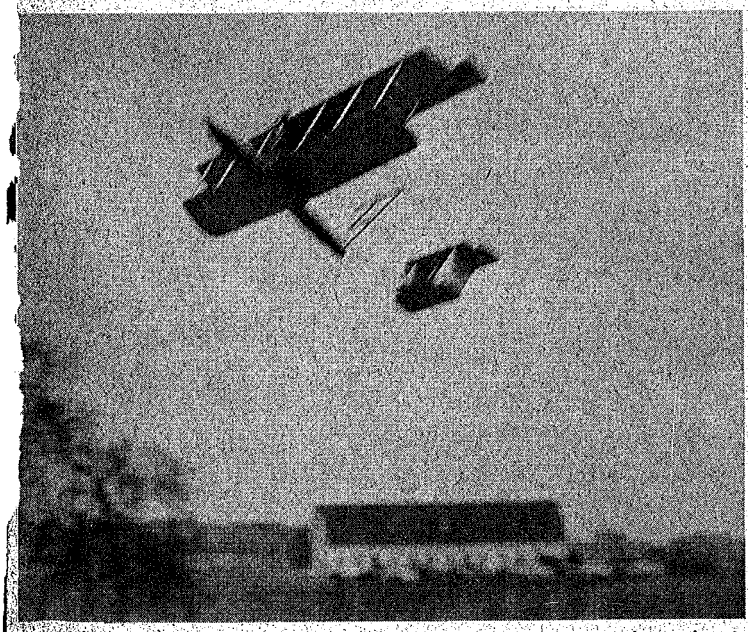
OUR UNORTHODOX SEMI-SCALE FREE FLIGHT 'DUCK' SHOULD PROVIDE MANY HOURS OF FLYING FOR THE SPORT FLYER.

► "They're ducks"! This was Brisish aircraft designer, Hawker's description of United States "NC" flying boats at Newfoundland, as they were being assembled and prepared for the "Great Atlantic Air Race."

Now that World War I was over, many aviation achievements were forecast and flying the Atlantic was definitely the most desired feat by airmen and aircraft designers of all nations. To promote this desire for a transatlantic flight, the "London Daily Mail" offered a $50,000 prize for the first crossing.

Despite Hawker's criticism and to many Americans' surprise, one of the so called "ducks" was the first to cross the Atlantic.

Although pictures and plans of the original "NC4" Flying Boat, do not reveal any outstanding design or performance qualities, it, nevertheless, was America's first truly engineered airplane. The (*Continued on page* 64)



Climbs like a contest free flighter, doesn't it? Designer claims that it climbs laboriously slow but it wouldn't seem so from this picture.

Test glides should be about the same as for any free flight model, but care should be exercised so as not to tangle fingers in booms or rigging.

Early Birds

by DOUGLAS ROLFE

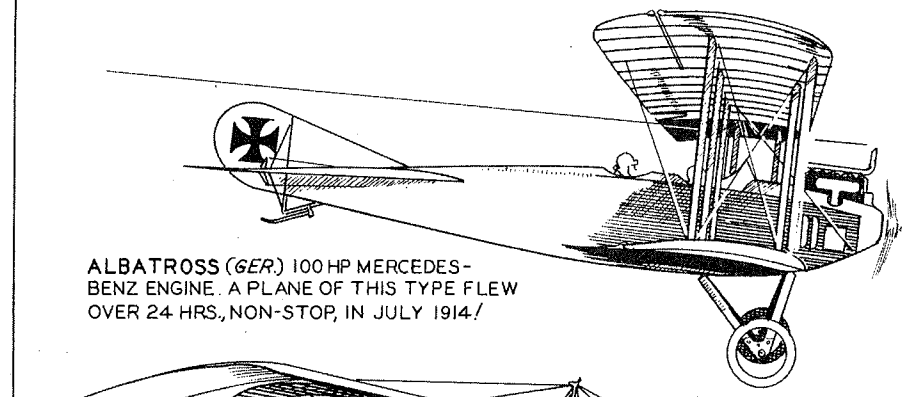
The Airplane Goes To War

1914 Unarmed Reconnaissance

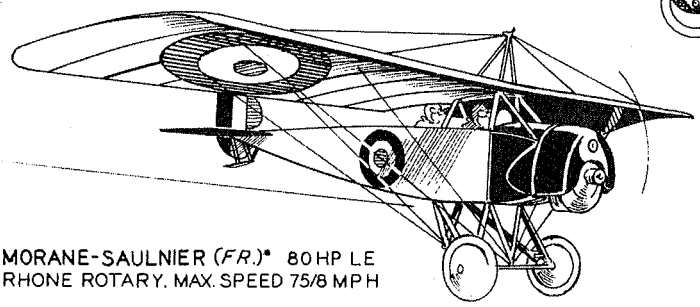
Number One

► Although the airplane had been employed on a minor scale during the Balkan Wars which preceded World War I, it was not until this war broke out that it was used in numbers and then, apart from a few feeble attempts at bombing, purely as an unarmed reconnaissance scout. The three Great powers, France, Britain and Germany all had fairly well developed air forces in 1914 with the French *Armee de l'Aire* and the British Royal Flying Corps probably mounting something over 1,000 aircraft of all types . . mostly obsolete even by the standards of those far-off days. The Koenigliche Flieger Korps had something over 1,000 aircraft too but many of these, such as the "Taubes," were hopelessly obsolete. Allied and hostile military leaders did not regard the airplane very highly at the start of the war and, despite that the airplane was indeed to prove itself as an effective weapon before the termination of hostilities, they still regarded military aircraft as not too valuable addition to the armed forces. This was true everywhere, including the United States where General "Billy" Mitchell fought in vain to have the true value of the airplane recognized as a military weapon.

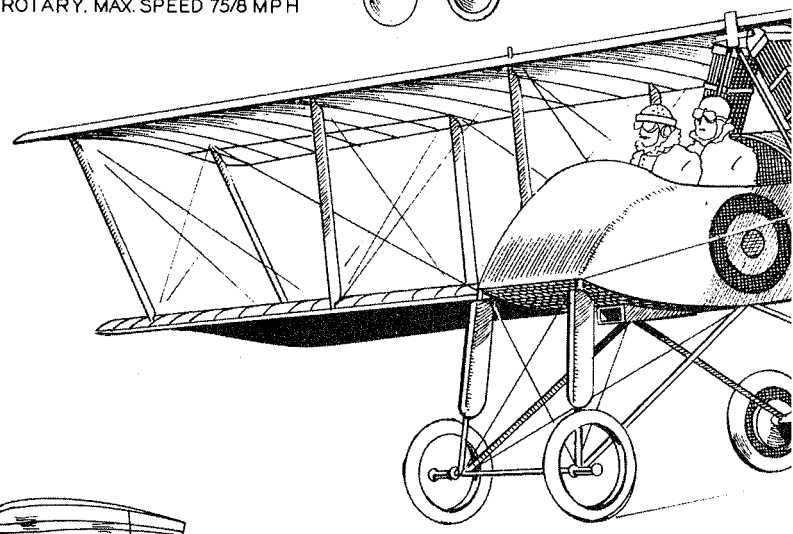
During the first few months of the Great War, the airplane was virtually unarmed and enemy pilots gaily saluted such Allied (*Continued on page* 59)

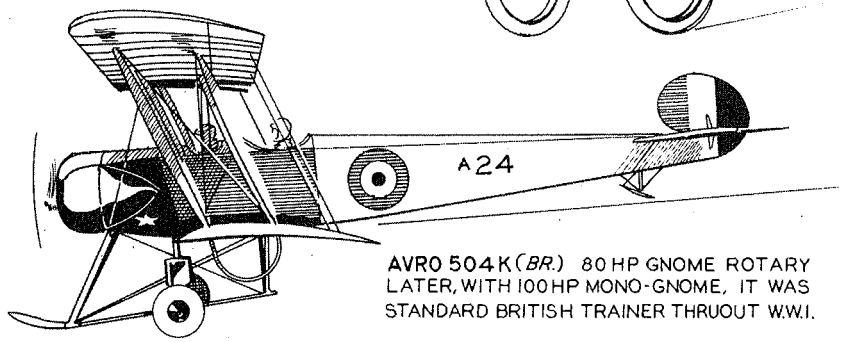


ALBATROSS (*GER.*) 100 HP MERCEDES-BENZ ENGINE. A PLANE OF THIS TYPE FLEW OVER 24 HRS., NON-STOP, IN JULY 1914.



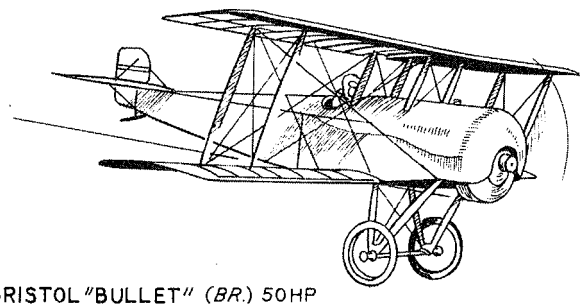
MORANE-SAULNIER (*FR.*)* 80 HP LE RHONE ROTARY. MAX. SPEED 75/8 MPH



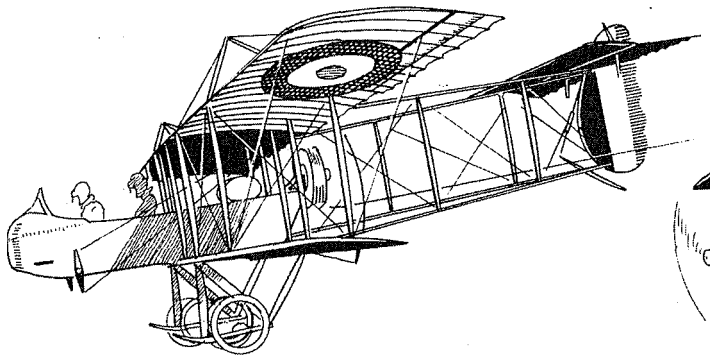


AVRO 504K (*BR.*) 80 HP GNOME ROTARY LATER, WITH 100 HP MONO-GNOME, IT WAS STANDARD BRITISH TRAINER THRUOUT W.W.I.

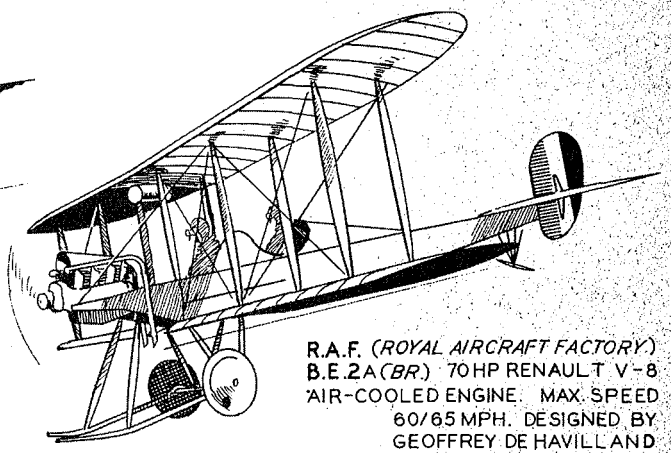
NOTE: SPOT * AFTER COUNTRY OF ORIGIN DENOTES THAT AIRCRAFT NAMED WAS ALSO USED BY THE ALLIED AIR FORCES, BRITAIN AND RUSSIA



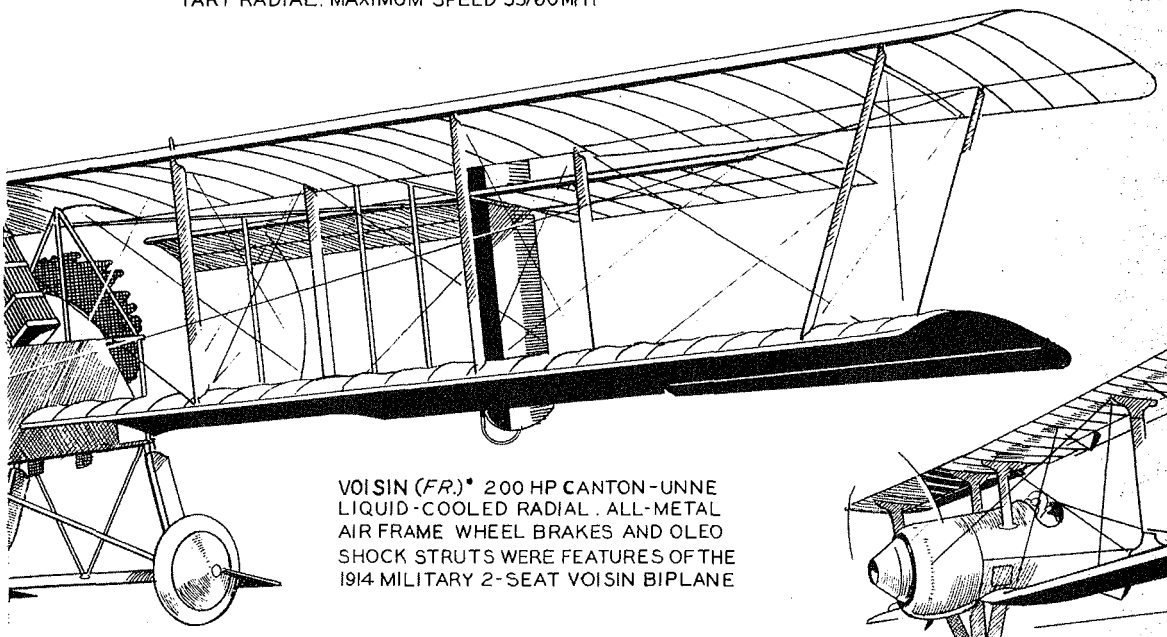
BRISTOL "BULLET" (*BR.*) 50 HP GNOME. MAXIMUM SPEED, 85 MPH



HENRI FARMAN (*FR*)* 80 HP GNOME ROTARY RADIAL. MAXIMUM SPEED 55/60 MPH

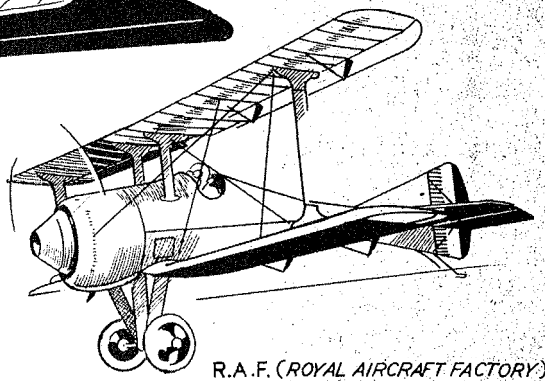


R.A.F. (*ROYAL AIRCRAFT FACTORY*) B.E.2A (*BR.*) 70 HP RENAULT V-8 AIR-COOLED ENGINE. MAX. SPEED 60/65 MPH. DESIGNED BY GEOFFREY DE HAVILLAND

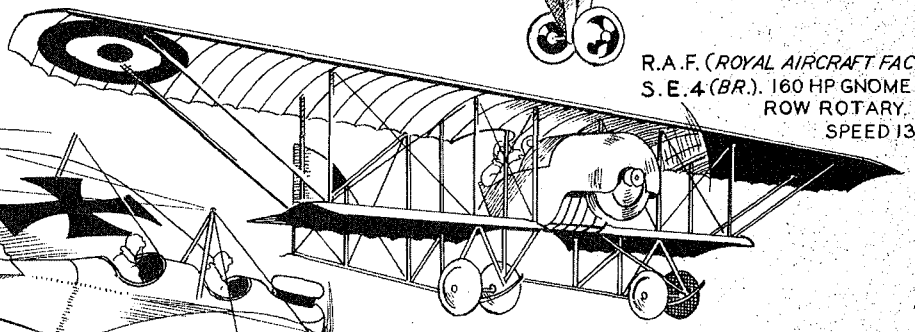


DOUGLAS ROLFE

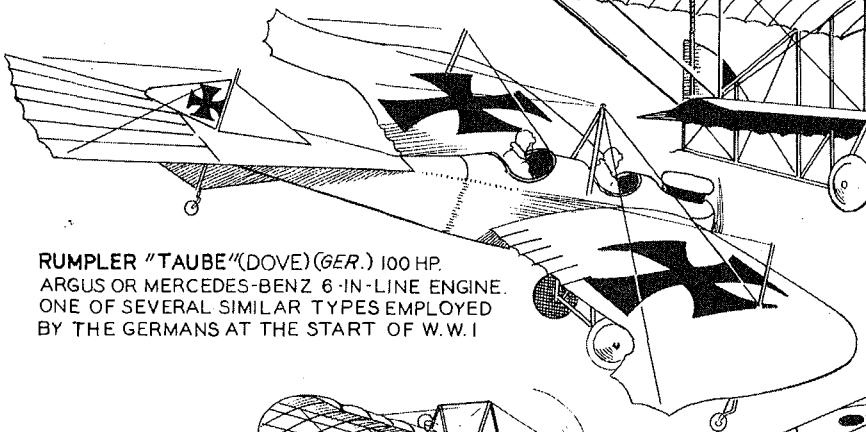
VOISIN (*FR.*)* 200 HP CANTON-UNNE LIQUID-COOLED RADIAL. ALL-METAL AIR FRAME WHEEL BRAKES AND OLEO SHOCK STRUTS WERE FEATURES OF THE 1914 MILITARY 2-SEAT VOISIN BIPLANE



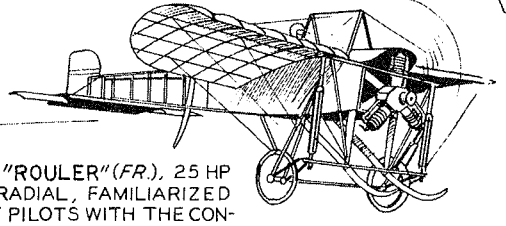
R.A.F. (*ROYAL AIRCRAFT FACTORY*) S.E.4 (*BR.*). 160 HP GNOME TWIN ROW ROTARY. MAX. SPEED 133 MPH



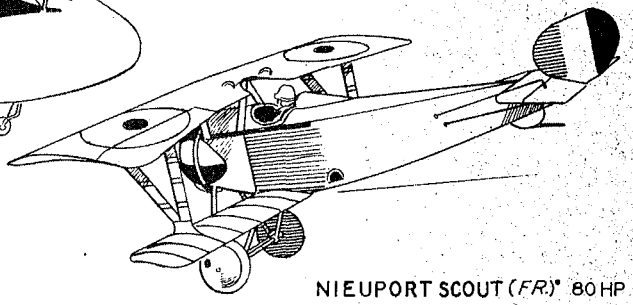
CAUDRON (*FR.*) 80 HP GNOME OR SIMILAR ROTARY. MAX. SPEED. 55



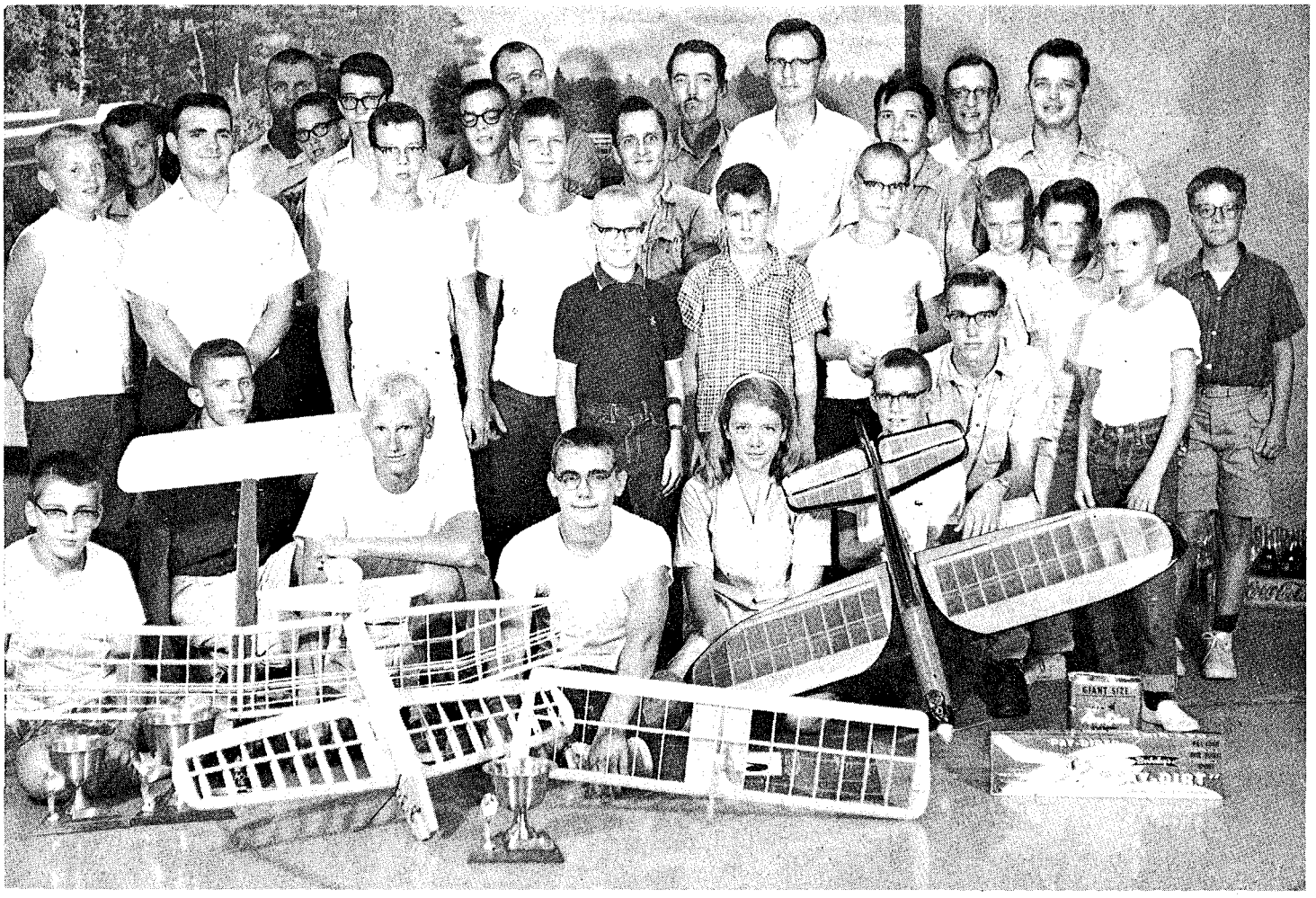
RUMPLER "TAUBE" (DOVE) (*GER.*) 100 HP. ARGUS OR MERCEDES-BENZ 6-IN-LINE ENGINE. ONE OF SEVERAL SIMILAR TYPES EMPLOYED BY THE GERMANS AT THE START OF W.W.I



BLERIOT "ROULER" (*FR.*), 25 HP ANZANI RADIAL, FAMILIARIZED STUDENT PILOTS WITH THE CONTROLS. IT WAS NOT MEANT TO FLY



NIEUPORT SCOUT (*FR.*)* 80 HP LE RHONE ROTARY. MAX. SPEED 85 MPH



Thirty of 50-membership roll of Wichihawks include 22 junior and senior members who turn out an average of four models each per year.

JUNIORS — MANY REASONS WHY THEY ARE NOT PARTICIPATING. IT ALL DEPENDS ON YOUR VIEWPOINT AND VIEWPOINTS ARE COMING IN FROM AROUND THE COUNTRY.

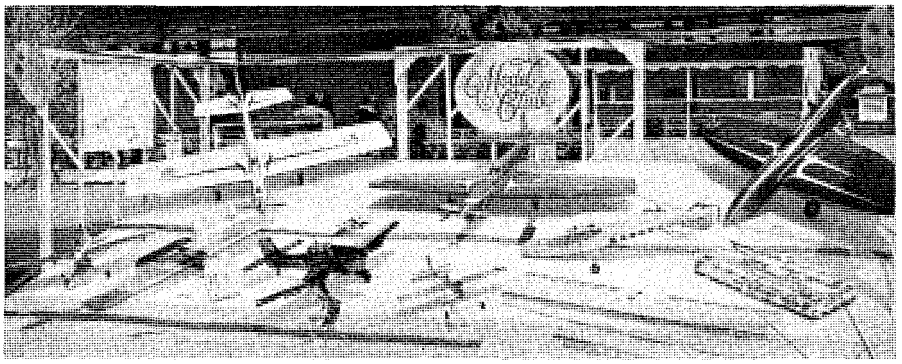
ROUND & ROUND

COMBAT SLOW COMBAT
SPEED STUNT RAT RACING

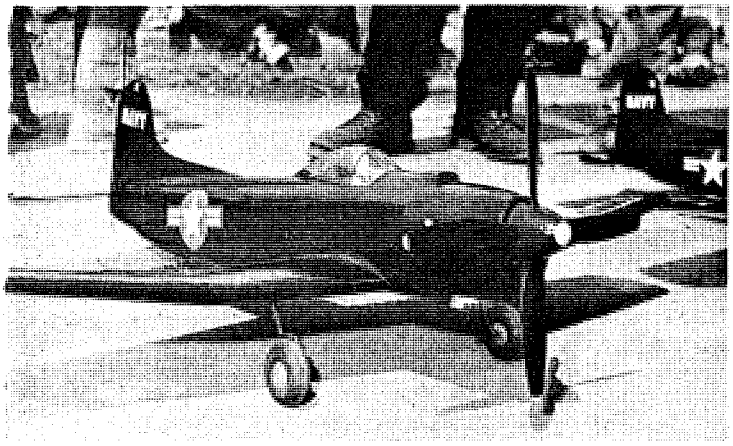
by WILLIAM WINTER

► Contrary to the belief that model builders are odd-balls, we doubt that any gluer of sticks will die a hermit. A hobbyist meets more people than a politician. You know how it is. It takes just two to make a bull-session. Discussions in which everybody talks and no one seems to listen are, we suspect, more fun than flying itself.

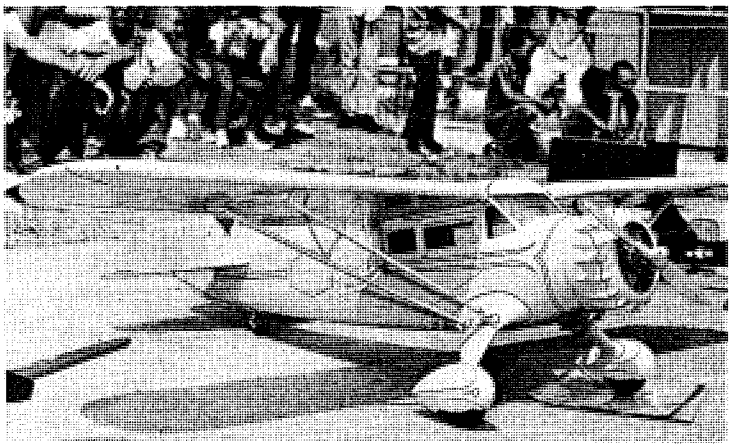
Drifting into John Schneider's to shoot pix of a new ukie model, found the dark room full of noisy extroverts. There was Larry Scarinzi who thinks no combat model should go less than 120 mph, and we ain't kidding; Bill James, Duke Fox's right-hand man—in top form, too—and third place Open Combat winner at the last Nats; and Don McGovern, editor of one of those other magazines who likes his models big, and with plenty of ribs, spars and cross pieces—give 'em enough glue joints and you've wiped out juvenile delinquency (no time to steal hub caps). John himself is an energetic, muscular chap given to motor cycles, Volkswagens, archery—he was a champion long-distance ice skater—noted for his blue helmet at the Nationals which identifies him as "Mother" Schneider, a supreme bit of humor if there ever was one. Repairing to a round table to determine the possibility of Mr. K abandoning the bomb if Fox stopped mixing Blast, we were



Display of models by inmates of the California Institution for Men includes first and second in Annual Arts and Crafts Show. Modeling significantly improves chances of successful parole.



Jim Webber, Salt Lake, won 2nd Carrier, Testor's best finish award at 4th Annual Utah State Aeromodelers contest with McCoy 49-powered Mauler.



Veco .45-powered Stinson SR-6 of Noel Hess didn't fly at Utah State contest because of high winds, it did win the Phoenix Ariz. contest.

Another non-flier because of high winds at Utah State aeromodelers contest was this P-61 Black Widow of Eddy Miltenberger, Salt Lake.

Lots of Ukie scale at 4th Annual Utah State affair. Vought Corsair 3rd place winner for Allen Hess who also won the high place trophy.

surrounded by a jumping high-fi set, a gift parrot which talked an unidentified language and barked wondrously like a dog, a parakeet and two outside mutts who believe they are humans.

Larry runs everything on Blast, a 50 percent nitro fuel he said, mainly, we gather, to see how many laps various engines will stay together when they turn 3000 more revs than they should. Judging by a big homemade trophy, mounting busted rods, shafts, and shattered cylinders, the experiment is not fruitless. James opined that the you-know-what engines can take it, and you other manufacturers will understand his loyalty to the tycoon of Fort Smith. Bill and Larry worked us over on slow combat—results a draw. There was this bunch of slow fuddy duddies, you see, that Bill took to a slow combat meet—everybody turned 100 or better. You call that slow, he asked. Everybody worried about props, wood or nylon, flying apart. Why, asked stupid us, since speed props don't toss blades like this, with or without Blast? Somebody replied they were glad we asked that question. Something to do with blade mass? Obviously, it developed, you don't have to have a Fort Smith one-lunger to toss blades for Don had remarked in print that K&B's were wrecking props—guess they turn up too—and Johnny Brodbeck demanded to know why for he did it, and Don asked John if he was making props these days. Hilarious yarn about a Texas meet where Bill managed to lick a couple of well-known hot-shots only to have some junior walk all over him. Never did see the junior's crate. He'd look for it and then, zip, zip, zip.

An hour later spotted a group of middle-aged types in an open-air bull-session in front of a darkened hobby shop—you've got to have atmosphere for this stuff. RCers, they were, so you won't want to hear more bits of wisdom. Their problem was wives. Now we know how to sneak balsa in the side door during the dead of night, watch the late, late, late show on TV to get in a 4 a.m. covering job, to hide a workshop in the back of a store—oh, I gave that up long ago, you know that, dear. In RC it isn't the lack of flying sites that's hurting.

Well, look at this, a question on a rubber model! James C. Burbank, 1022 S. Greenlawn Ave., Peoria, Ill. wants to know where he can get a Duster plan. That would be Joe Bilgri? Write Joe in care of AMA, 1025 Connecticut Ave., Washington, D.C. and see what happens. . . . Whirlwinds Model Aircraft Chapter, St. Joseph-Benton Harbor, Mich. are running winter-time indoor Pee Wee races. One, in April, will be high and low speeds for same aircraft. . . . Seen by the *Association Newsletter* (Assoc. Model Airplane Clubs, N.Y.; Fred Kupersmith, 105-40 62 Rd., Forest Hills 75, N.Y.) that New York City Dept. of Parks should complete construction of permanent sites at Pelham Bay, Bronx and Marine Park, Brooklyn, by early spring 1964. Offsetting the Association's loss of Willets Point parking lot—the Mets new stadium—the Department issued them a permit to use certain parking lots at Randall's Island, Saturdays and Sundays only, nine to dusk—but there are conditions, and 'tis not permanent. Their Flushing meet last summer ran into 30 mile winds and torrential rains. What this did to Carrier—those low speed landings—and combat—soggy streamers—shouldn't happen to a plastic car. Scale, including multi-engine types, had to get off from six inches of water. . . . Like *F.V.M.A.A. Newsletter* (Fox Valley, etc., 641 Redwood Dr., Aurora, Ill.), an unpretentious sheet that gives dope on winning crate and engines as well as guys. If you go for combat and rat, get your club on their list. Editor is Ed Jordam but what (*Continued on page* 54)

GUN TURRET

THE GUN TURRET IS A SELF-CONTAINED UNIT WHICH IS MOUNTED IN THE DECK POSITION. IT HAS A 24-VOLT D.C. PLUG IN CONNECTION FOR OPERATION. THE GUN CARRIAGE ASSEMBLY CONTAINS 2 BROWNING MODIFIED 50-CAL. AIRCRAFT MACHINE GUNS. THE GUNS ARE LOCATED ON EACH SIDE OF THE CENTERLINE OF THE TURRET, AND ARE SUFFICIENTLY FAR APART TO CLEAR THE AIRGUNNER'S SHOULDERS. THE GUN BARRELS AND COOLING JACKETS EXTEND FROM A TRANSPARENT ONE-PIECE PLEXIGLASS ENCLOSURE, HOUSING THE AIRGUNNER, GUNS, ARMORPLATE, POWER DRIVE MECHANISM, AND RELATED ACCESSORIES.

TURRET COMPONENTS

(1) MAIN CHASSIS.
(2) MOUNTING RING.
(3) GUN CRADLES.
(4) TORQUE DRIVE.
(5) PLEXIGLAS ENCLOSURE.
(6) ARMOR PLATES.
(7) AMMO BOXES.
(8) EJECTION CASE AND LINK BOXES.
(9) TURRET DRIVE CONTROLS.
(10) AZIMUTH DRIVE.
(11) ELEVATION DRIVE.
(12) AMMO BOOSTERS.
(13) AIRGUNNER'S SEAT.
(14) GUN CHARGERS.
(15) GUN SIGHT.
(16) GUN CAMERA.
(17) OXYGEN REBREATHER.
(18) GUNFIRE INTERRUPTER.
(19) PRESSURE ACCUMULATOR.
(20) PRESSURE GAUGES.
(21) SPOTLIGHTS.
(22) INTERPHONE SYSTEM.

1000 ROUNDS OF AMMUNITION ARE PROVIDED FOR EACH GUN. THE AMMO BOXES ARE LOCATED IN THE HULL (PORT AND STARBOARD). THE AMMO MOVES IN TRACKS TO THE GUNS. USED LINKS ARE EJECTED OVERBOARD.

WAIST GUNS

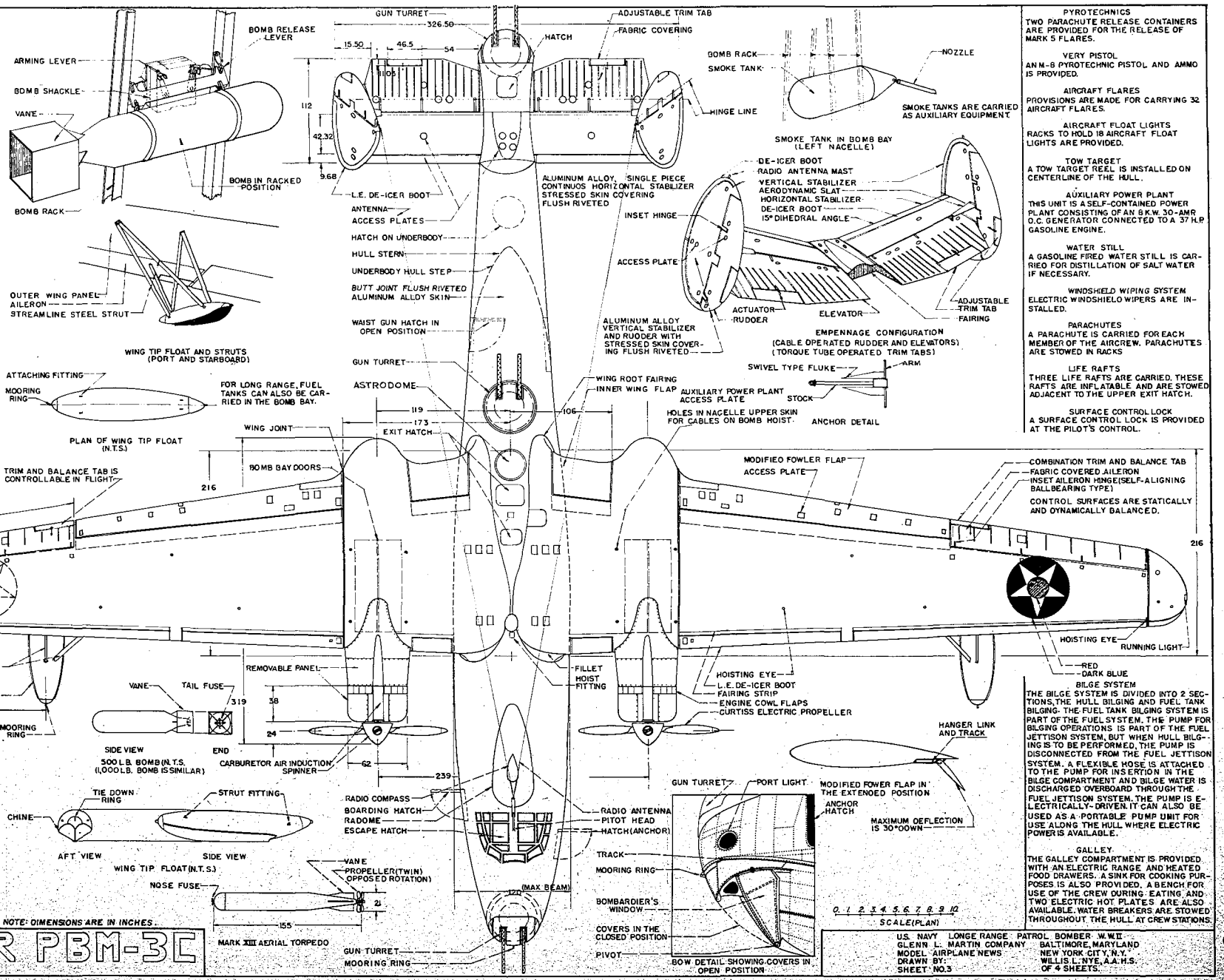
A 50-CAL. MACHINE GUN IS MOUNTED IN THE HULL AMIDSHIPS, PORT AND STARBOARD, ON FLEXIBLE MOUNTS. LARGE HATCHES PROVIDE LARGE ANGULAR ARCS OF FIRE. THE GUNS ARE EQUIPPED WITH AMMO BOOSTERS. AMMO TRAVELS IN ROLLER TRACKS FROM THE AMMO BOXES. HATCH IS ARMORED.

BEACHING GEAR

THE BEACHING GEAR CONSISTS OF 2 MAIN UNITS FOR THE HULL AND A TAIL GEAR. EACH MAIN BEACHING GEAR TIRE WILL SUPPORT 12,500 LBS. THE TAIL GEAR TIRES SUPPORT 6,000 LBS. EACH. THE BEACHING GEAR UNITS EACH HAVE A BUOYANCY TANK FOR FLOTATION. EACH BEACHING GEAR UNIT IS PROVIDED WITH A HYDRAULIC BRAKE SYSTEM AND A CONTROL LEVER. FOR GROUND HANDLING CONTROL, THE MAIN BEACHING GEAR UNIT MAY BE SWIVELED THROUGH A FULL 360° AND MAY BE LOCKED IN ANY ONE OF 8 POSITIONS; 45° APART; 2 OF THESE PROVISIONS PROVIDE FOR FORE AND AFT AND ATHWARTSHIP DIRECTION OF MOVEMENT. THE BEACHING GEAR, WHEN CARRIED ABOARD THE AIRPLANE, IS BOLTED TO THE BOMB RACK RAILS OF THE INNER BOMB BAY. OPERATION OF THE TAIL GEAR IS SIMILAR TO THAT OF THE MAIN BEACHING GEAR. PNEUMATIC TIRES ARE USED.

NOTE: DIMENSIONS ARE IN INCHES.

MARINER PBM-3C



PYROTECHNICS

TWO PARACHUTE RELEASE CONTAINERS ARE PROVIDED FOR THE RELEASE OF MARK 5 FLARES.

VERY PISTOL

AN M-8 PYROTECHNIC PISTOL AND AMMO IS PROVIDED.

AIRCRAFT FLARES

PROVISIONS ARE MADE FOR CARRYING 32 AIRCRAFT FLARES.

AIRCRAFT FLOAT LIGHTS

RACKS TO HOLD 18 AIRCRAFT FLOAT LIGHTS ARE PROVIDED.

TOW TARGET

A TOW TARGET REEL IS INSTALLED ON CENTERLINE OF THE HULL.

AUXILIARY POWER PLANT

THIS UNIT IS A SELF-CONTAINED POWER PLANT CONSISTING OF AN 6 K.W. 30-AMP O.C. GENERATOR CONNECTED TO A 37 H.P. GASOLINE ENGINE.

WATER STILL

A GASOLINE FIRED WATER STILL IS CARRIED FOR DISTILLATION OF SALT WATER IF NECESSARY.

WINDSHIELD WIPING SYSTEM

ELECTRIC WINDSHIELD WIPERS ARE INSTALLED.

PARACHUTES

A PARACHUTE IS CARRIED FOR EACH MEMBER OF THE AIRCREW. PARACHUTES ARE STOWED IN RACKS

LIFE RAFTS

THREE LIFE RAFTS ARE CARRIED. THESE RAFTS ARE INFLATABLE AND ARE STOWED ADJACENT TO THE UPPER EXIT HATCH.

SURFACE CONTROL LOCK

A SURFACE CONTROL LOCK IS PROVIDED AT THE PILOT'S CONTROL.

BILGE SYSTEM

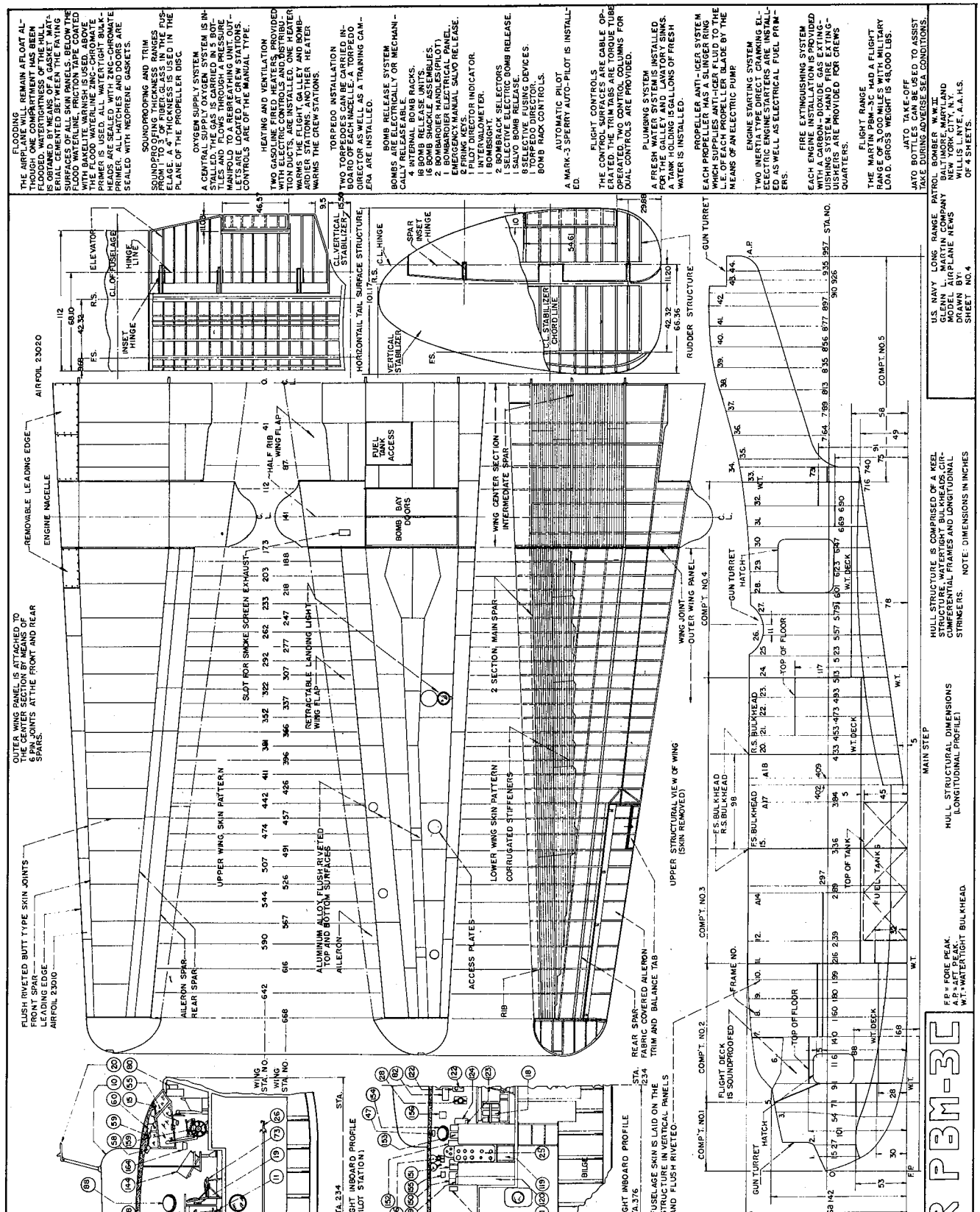
THE BILGE SYSTEM IS DIVIDED INTO 2 SECTIONS, THE HULL BILGING AND FUEL TANK BILGING. THE FUEL TANK BILGING SYSTEM IS PART OF THE FUEL SYSTEM. THE PUMP FOR BILGING OPERATIONS IS PART OF THE FUEL JETTISON SYSTEM, BUT WHEN HULL BILGING IS TO BE PERFORMED, THE PUMP IS DISCONNECTED FROM THE FUEL JETTISON SYSTEM. A FLEXIBLE HOSE IS ATTACHED TO THE PUMP FOR INSERTION IN THE BILGE COMPARTMENT AND BILGE WATER IS DISCHARGED OVERBOARD THROUGH THE FUEL JETTISON SYSTEM. THE PUMP IS ELECTRICALLY-DRIVEN. IT CAN ALSO BE USED AS A PORTABLE PUMP UNIT FOR USE ALONG THE HULL WHERE ELECTRIC POWER IS AVAILABLE.

GALLEY

THE GALLEY COMPARTMENT IS PROVIDED WITH AN ELECTRIC RANGE AND HEATED FOOD DRAWERS. A SINK FOR COOKING PURPOSES IS ALSO PROVIDED. A BENCH FOR USE OF THE CREW DURING EATING AND TWO ELECTRIC HOT PLATES ARE ALSO AVAILABLE. WATER BREAKERS ARE STOWED THROUGHOUT THE HULL AT CREW STATIONS.

U.S. NAVY LONGE RANGE PATROL BOMBER W.W.II.
GLENN L. MARTIN COMPANY BALTIMORE, MARYLAND
MODEL AIRPLANE NEWS NEW YORK CITY, N.Y.
DRAWN BY: WILLIS L. NYE, A.A.H.S.
SHEET NO. 3 OF 4 SHEETS.

dimensions plus cockpit details for Navy Long Range Patrol Bomber.



FLINTSTONE EVENT

Youngest Nats competitor, Michigan's Mike Ritter flew a .19-powered, escapement controlled "Charger".

Ken Willard's "Breathless," without engine cowl, being flown by Paul H. Schaaf, Jr. With a kick-up elevator, long a favorite of Ken, he manages to keep plane under control.

By WILLIAM WINTER . . . IT WOULD APPEAR THAT THE CRAZY MIXED-UP WORLD OF "BEDROCK" IS THE SPAWNING GROUNDS FOR MANY OF OUR WAY-OUT CONTEST WINNING RUDDER-ONLY PLANES OF TODAY—PERFORMANCE AND POWER THE FORMULA.

► In the million-year-old world of noisy Freddy they have every convenience. Vacuum cleaners (a Half-A elephant sucks up the dust), phonographs (a bird sticks his beak on the platter), lawnmowers (a scissor-billed feathered friend) and telephones (voices come out of an animal horn). Every week we look sharply for radio modelers. We know what they will have. Rudder-only models!

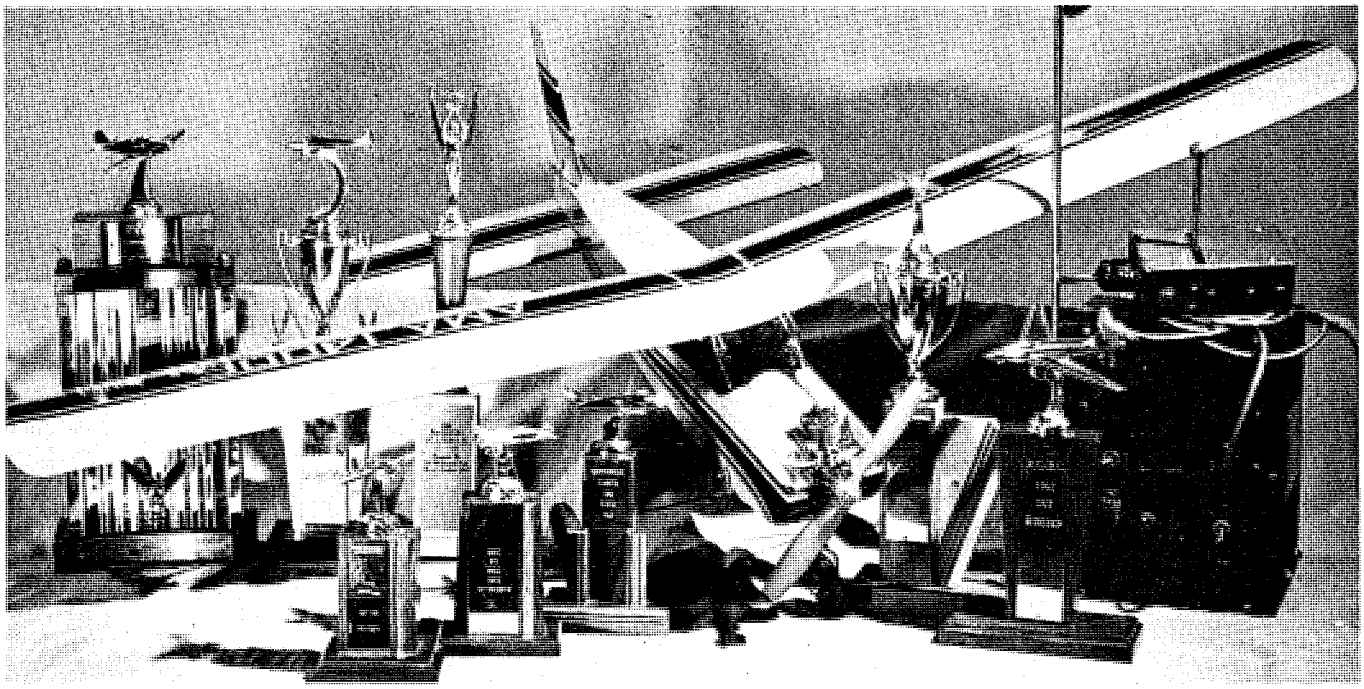
For the mixed-up world of Bedrock, the "modern" rudder-only job is a natural. It wasn't easy but we've evolved an ultra modern-prehistoric device surpassing anything Freddy's script writers will ever think of.

Today's competition RO ships are worse fliers than Walt Good's prewar Guff of more than a quarter century ago. Rules have wrecked Rudder. We have bred freak airplanes, not developed better flying machines. To stand a chance of winning, your RO must be a ballooning fool. It is so finely bred in this respect that it can hardly stagger upwind—did we say wind?—even on low motor. Most R/Cers have nothing but scorn for these contest freaks.

Kits based on freaks handicap the beginner. They build up so much wild speed in normal jockeying in a wind that crack-ups and fly-aways are commonplace. You can't blame the manufacturers; they can't know the difference. It's the rules. Idle prattle about "penetration" is an insult to one's intelligence. We cannot make progress while Rudder or Class 1 is saddled with 20-year old concepts. Prevented by rules from making better, more interesting aircraft, we have progressed all the way back to 1950.

Rudder-only is sick, so sick that the new rules transfusion of as-many-channels-as-you-wish insures that this once great class only lingers on in Ward 8. The experts concede with few exceptions, that rudder-only no longer is for the beginner. So throw it open to the multi boys! Well, if it isn't for the beginner, why limit it to rudder? Why bother? The beginner, they say, has no interest in contests. Who can blame 'em when the rules cut the legs from under the event? And how do you square these arguments with the evident fact that single-channel—we do not say rudder-only—is fantastically popular for sport flying. Let's turn back the clock.

In 1948 there appeared the Rudder Bug, a six-foot, 72-ounce, 29-30 powered aircraft. For a period of five years this craft dominated R/C competition the way the Zipper once monopolized free flight. What the Bug lacked,



Modified and enlarged "Charger" developed by Jim Shows used the Veco 19 up front to good advantage as witness competition hardware it accumulated.

in common with the Parly Beam, Live Wire, etc., was motor control. Today, with motor control, the Bug concept, long since discarded, is the basis of rudder-only. With stronger wings, a lower aspect ratio, and more rudder action for pulse control, a 45-60 engine, the Bug would be hard to beat today. In a 50-56-inch size it would be a terror. But if that throttle failed in high motor, the pilot would sweat bullets—as he must do with any modern RO of prize-winning potential. An exaggeration?

Consider, then, the predicament of a proud kit manufacturer who visited an eastern contest last summer. So appalled was he by the carnage among the RO's that he was overheard to wish for a fox hole, presumably to hide in and not necessarily for protection.

What had gone wrong with his products? Simply this. Everybody had jammed in bigger engines, some of double the recommended displacement. Like all modern RO's, his kits were thick-winged, cabin jobs intended for moderate airspeeds. Now they were jumping jacks. Why? Because you cannot win with anything else.

This is the sort of thing that attracts the wolves, the hot-shot prize winners to whom the balloon-bomb is just a tool to capture prizes that are offered. These are the pros who would fly a Dynajet-powered kitchen chair if such an event were offered. (Now they will barge in with 10-channel sets!) The fun wears off rapidly when John Doe the beginner has recommended to him that jet chair because it was kitted—just because some John Bunyon of the microswitch won contests with it.

Better airplanes than the Bug were built in the early 1950's. But it is the basic Bug concept that survives. One of the greatest flights witnessed by the writer was made by Fran McElwee at a Mirror Meet in about 1950. In a day when everything ballooned like crazy—like now—to get loops from spirals, Fran's Mac 19-powered Robot turning a 9 x 6 prop tore into the teeth of a high wind, penetrating into the distance like a bolt from a crossbow. He had complete command of the sky afterwards for a spectacular bit of flying. But the rules said, and continue to say, "There shall be no progress."

Good or bad, both airplanes and technique will develop along any line. If overpowering slow-flight airplanes is the way to win contests, aircraft must become more bizarre year after year. Look what some of the boys are flying.

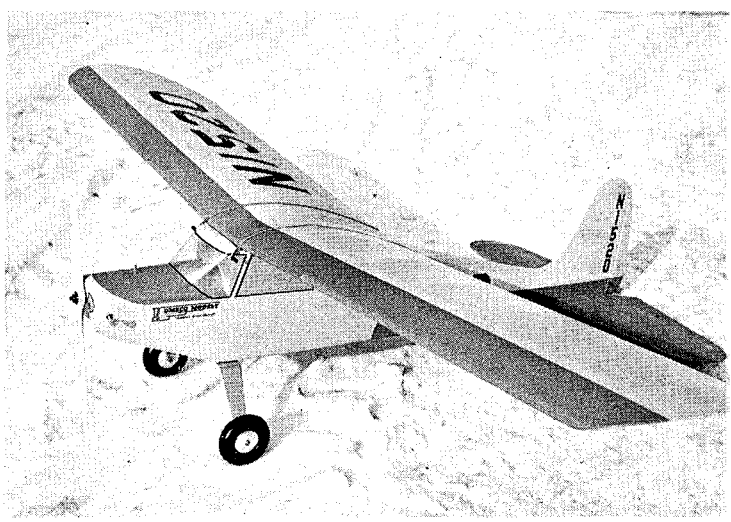
Around San Antonio, for example, they are down to 15's and 19's in a 41-inch model, a 15 in a 36 incher. If your idea of a going machine is a Max 15 Charger—and a 15 is pretty lively at that—just think of something three-quarters that size with the .19. What can it do? On high motor it can VTO and do rolls while climbing straight up. On half-throttle it cruises and, being small, does fine touch-and-goes. Well, isn't that good? It's incredible!

Whatever happened to the so-called beginner event? The event we protected so strictly by rules (until 1963) to keep simple? Why, rudder requires an expert pilot to win, a veritable iron-nerved astronaut. It is like riding the bull in the rodeo. Multi takes finesse, but rudder requires a man who can face down Billy the Kid.

Is there an alternate? And, if there is an alternate, will it not take away the fun from those who prefer skill to be required in their flying? There is an alternative and it, too, requires skill—but skill of a different kind. To properly evaluate this alternate, we need first to understand what makes the rudder job such a hard-to-use, ultra-specialized tool.

Rudder rules have always given points for maneuvers which really cannot be performed (*Continued on page* 60)

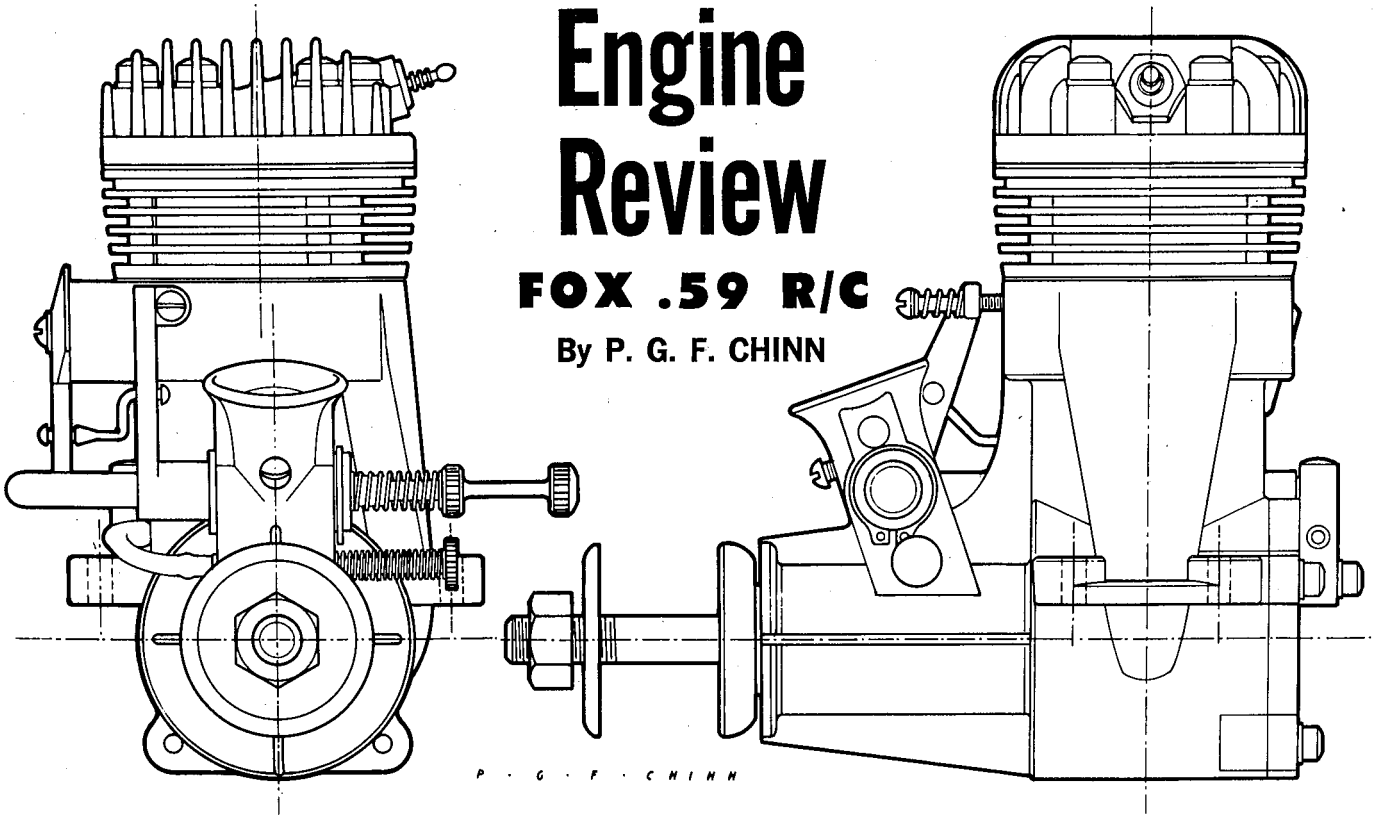
And here, we have deBolt's old reliable Champ that has started many RC contestants down the winning path, it's still the Bible in Rudder-Only.

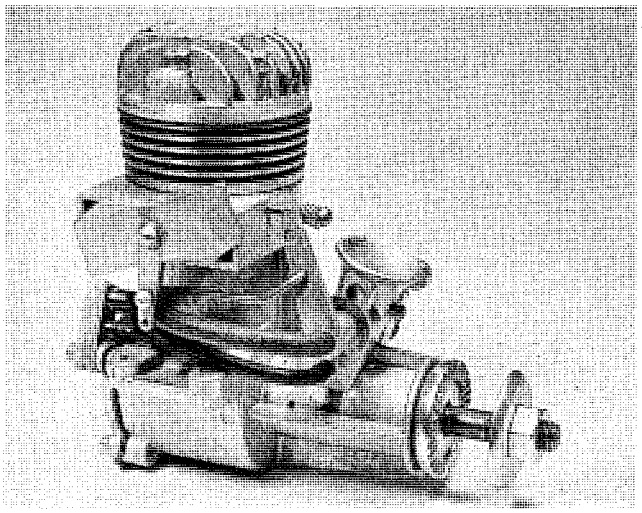


Engine Review

FOX .59 R/C

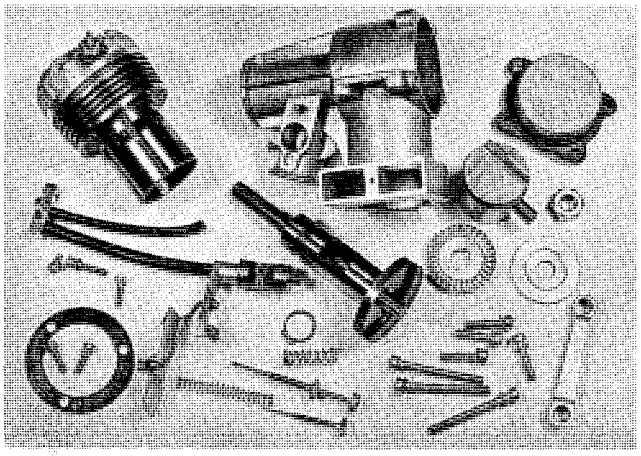
By P. G. F. CHINN

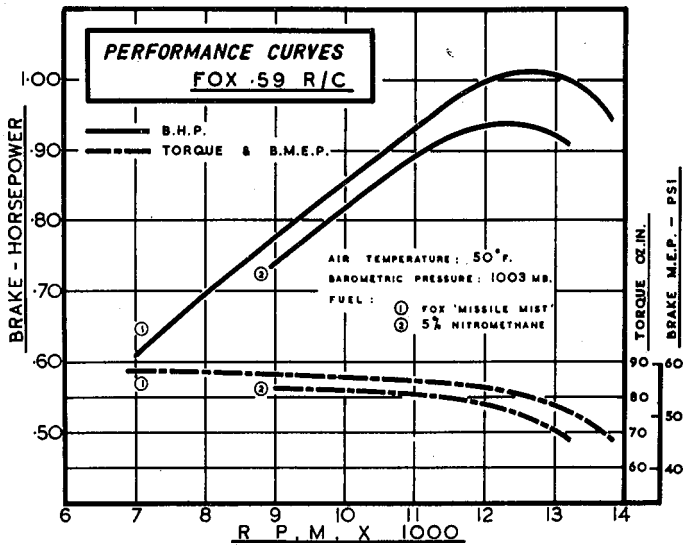




Latest Fox .59 R/C proved to have excellent power-weight ratio and reliable throttling on test. Bears close resemblance to Fox "Hi-Torque .59."

Design stems from Fox .59 spark ignition of 1947, uses adaption of the original case with Desaxe (offset) cylinder, twin pipe carburation.

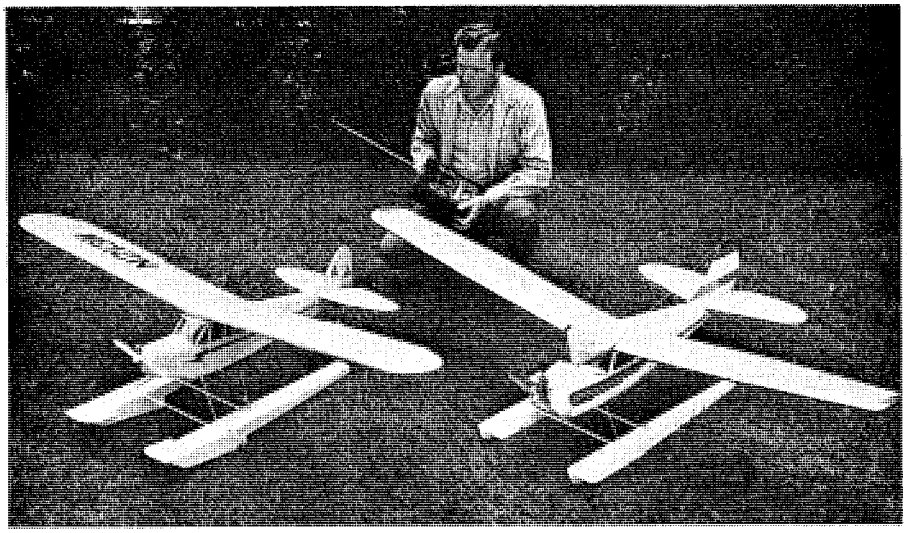




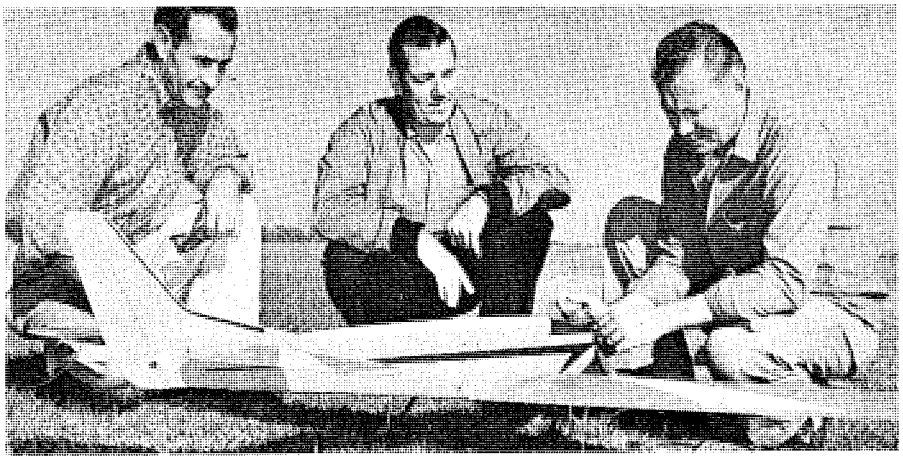
FOX WENT ALL-OUT FOR POWER AND ACHIEVED IT WITH THIS LATEST IN THEIR LARGE LINE OF MINIATURE POWER PLANTS.

► Those whose knowledge of model motors stems from the early post war period, will know that the origin of the Fox 59 goes back some seventeen years. It was in 1947 that the Claude C. Slate Company of Los Angeles put on the market a sleek looking, lightweight .60 class motor called the Fox "Hi-Torque" .59. It had a long, thin crankshaft supported in twin ball-bearings, rear disk rotary-valve and spark ignition.

The present "Series IV" version of the Fox .59 has none of these features and has numerous other differences, but its ancestry, nevertheless, cannot be mistaken. For example, the main casting is basically still the same: it has merely had 7/8-in. chopped off the front end, a front intake added and the beam mounts strength- (*Continued on page* 50)



Bob Bartuska, Skokie, Ill., with float equipped 6' Cub and 7' Cessna. Cessna single channel-operated, built in 1954 it has had about 1,000 flights. Cub uses 10-channel equipment.



Don Brown, fixing prop, is about to fly Quadruplex-equipped Taurus at Mercer County Radio Control Society field. Joe Pasquite at left and Charles Brushe of Society, watching operation.

BUILDING SEASON IN FULL TILT, NOT MUCH FLYING SO TECH TOPICS, CLUB NEWS AND NEW ITEMS, GOOD TIME FILLER.

Wonder if Ken Bard equipped his JU-87B Stuka with whistles used by Germans in landing gear fairings to frighten civilians. It should have the same effect on the fliers around Chicago.

radio control news

by EDWARD J. LORENZ

TECHNICAL TOPICS

► From time to time, we have mentioned various items concerning the care and feeding of cells and batteries. Don't drop them, be aware of the false bottoms, etc. The latest oddity is that a shipment of large 9 volt transmitter batteries was found in our locality by Fran Reisert to have the polarity mark on the case reversed. Equipment could be damaged if one made up individual snap connections, unaware of this condition.

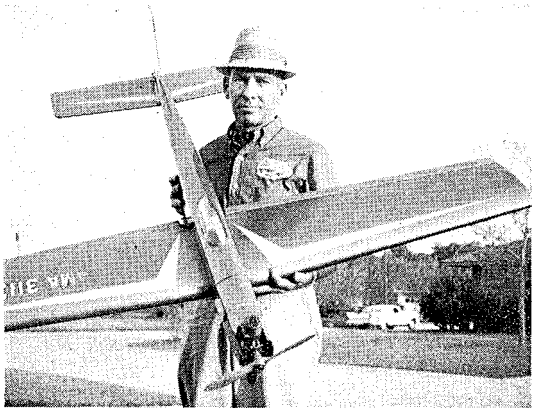
Bruce Blake of ACL has found that there are virtually no problems with the Micro-Mo motors. The only thing to look for when using the TO-5 type with the removable gear train, is the potentially loose joint between the metal case and the plastic bearing support (shaft end). *Carefully* apply a small amount of epoxy cement along the joint line. Occasionally the plastic works loose and since the permanent magnet is attached to the plastic, this allows the magnet to rotate. Needless to say, this will give spurious and erratic results.

In the November issue, we showed the circuit of a pulser designed by John Phelps. While the drawing was correct, the text gave the 2N404 transistor as an NPN instead of a PNP. The control pots were given as 90 degree rotation pots. Mr. Phelps used standard 270 degree pots. Oh yes, the text also gave the second transistor as a 2N1696 instead of the 2N1694 as per the schematic. As if this wasn't enough of a problem in our house, John also advised that this circuit, which has appeared in many club papers, was never meant to be published. Why? In most cases any error, whether the fault of the originator or not, reflects in much undue correspondence. We have always honored the request of any club paper not to republish information if they so state. Otherwise, this type of thing generally falls into public domain.

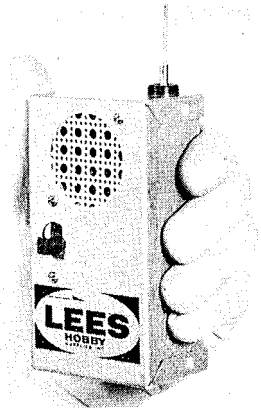
Bob Yates of the RC/NC group has developed his own proportional gear and here are some of the highlights: Transmitter now on 11 meters but could go to 6. Conventional stick control with all controls trimmable in flight. 3A5 for RF oscillator and modulator and a 3B4 in the output. Power from regular batteries or nickle-cad cells and a converter. All AF circuitry is transistorized, the tone generator being a simple uninjunction transistor circuit, immune to temperature and (*Continued on next page*)

Roger Barton and his rudder-only winning Zeus at recent King of Cajuns meet at Baton Rouge, La. Roger has attended several of the Nats.

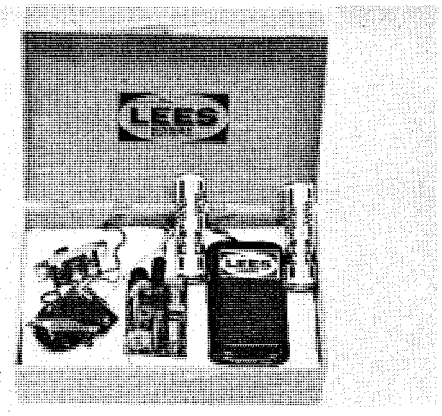
Dr. Bob Lien, sparkplug of the Crescent City RC Club, totaled his Stormer prior to scoring flight at the King of Cajuns meet at Baton Rouge.



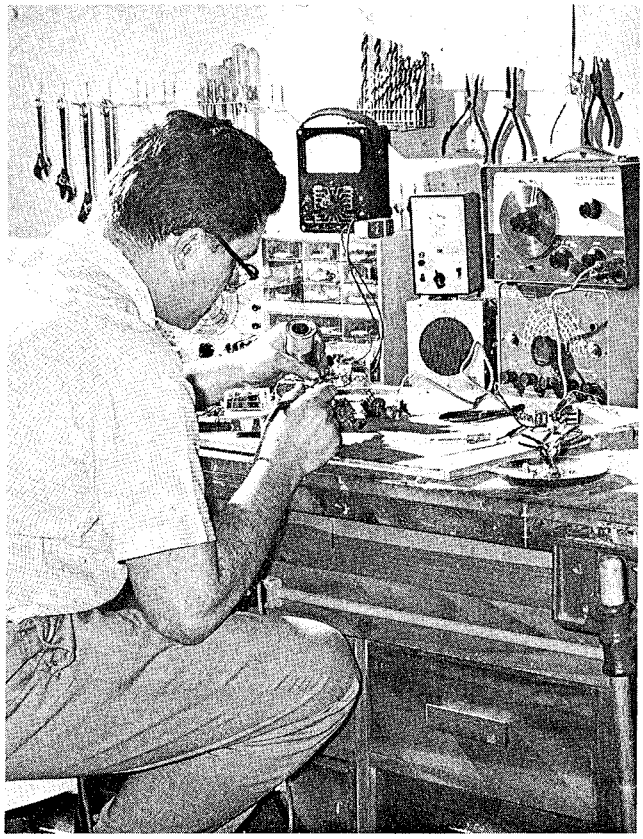
Don Bryant, one of the many Citizen-Ship award of merit winners, with his original multi design.



Lee's Hobby Industries new monitor. With interference a problem, every flier should have one.



Complete single channel packages are very popular and Lee's offers their ready-to-install unit.



Here's how that smart looking work bench on page 63 of R/C Digest really looks when its owner, Andy Medwid, puts it to the use it is intended for.

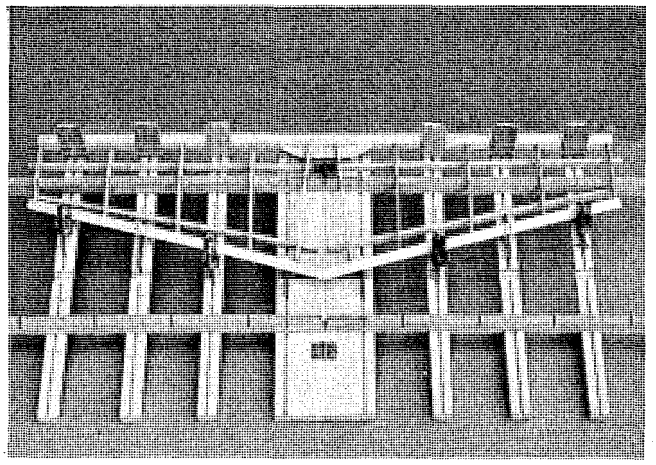
RADIO CONTROL NEWS . . . continued

voltage changes. Four transistors switch this oscillator to four separate frequencies which are transmitted separately. Controls are simultaneous. Size is 3 x 6 x 8 inches. The superhet receiver and REM servos are in one 1½" x 2⅝" x 5¼" package. Weight of receiver plus aileron servo is 14 ounces, less batteries and switch. Power comes from 12 pen-cells, good for six week-ends of flying. Anti-backlash gears in the servos results in smooth, quiet operation.

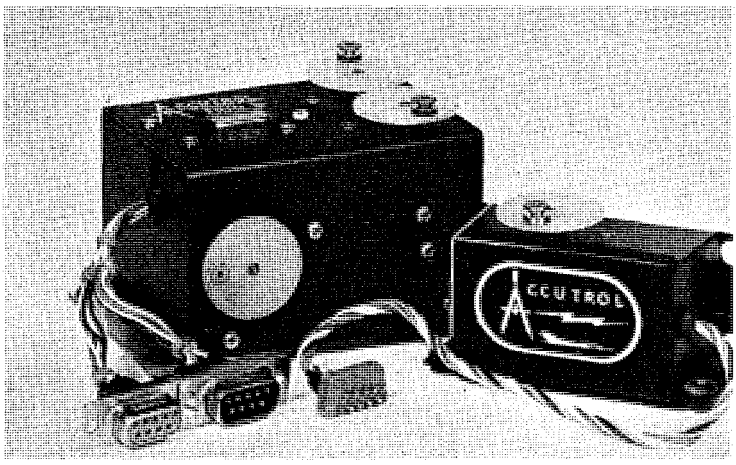
With flying sites shrinking, the noise problem arises from time to time. A report from the Whirlwinds states that a Fox muffler, fitted, to a Fox 35 reduced the noise level 25-40% with no apparent loss of power. From the NJRCC comes a design by H. Davis for a "Crazy Can" muffler, Figure 1 is self-explanatory. Be certain to use silver solder when joining the exhaust fitting to the muffler body. The front of the muffler is closed, the baffles allow gases to escape around the edges and holes are drilled in the rear as required. The space between the two baffles is filled with coarse steel wool (do not pack tight). Tried on a K & B 45, it did not reduce power and a .15 engine flying nearby nearly drowned it out.

The balance of Tech Topics will be devoted to the work of the AMA-FCC Committee and some of the problem areas.

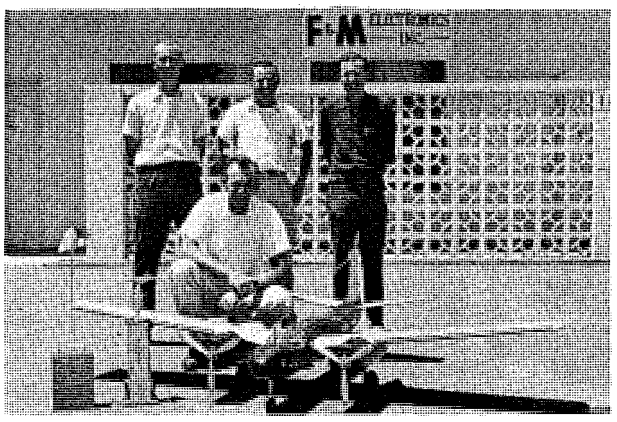
The first item, while potentially a bit of a hazard, is not serious but bears considering. Many modelers have written to various CB magazines expressing, in no uncertain terms, their feelings about Citizen Band operation. From the magazines' editorials, it is apparent that these letters are doing us more harm than good. It is suggested that if you want to write a letter, send it to the AMA-FCC Committee at AMA headquarters. We now have a very capable lawyer



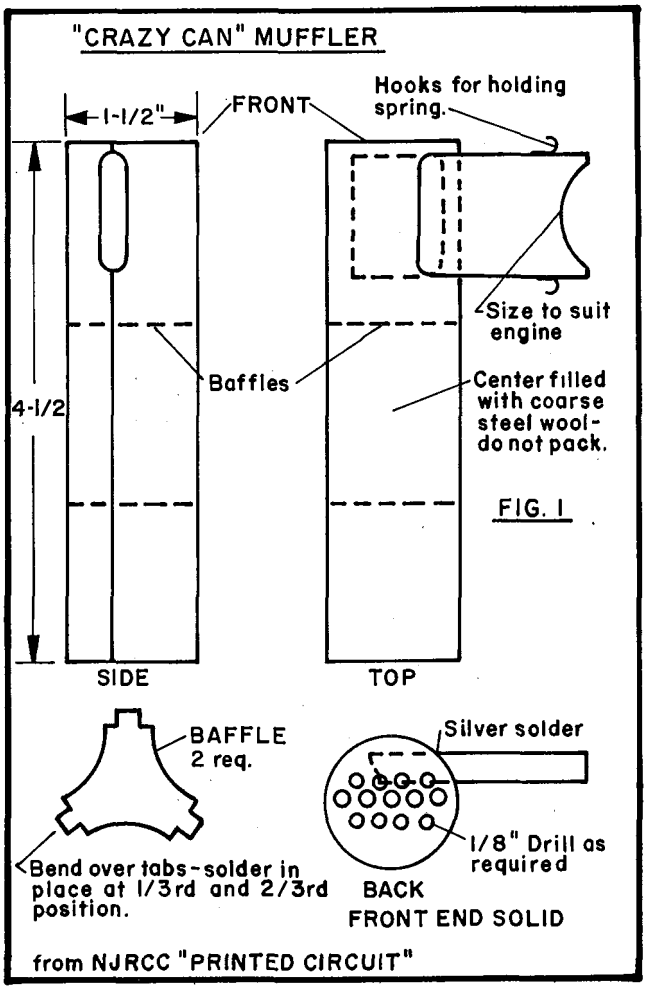
Tired of worrying about worped wings, why not try Broadfield Model's RC Wing-A-Jig which offers an almost fool-proof method of construction.



Accutronics Trio Model PR301 proportional servo package. Unit offers feedback servos for rudder, elevator and engine control, plus single servo.



Bob Doell, kneeling, '62 Nats scale winner; Nate Rambo left, Cliff Weirick, ctr., and Doug Spreng stopped off at F&M plant during return to Cal.



representing us.

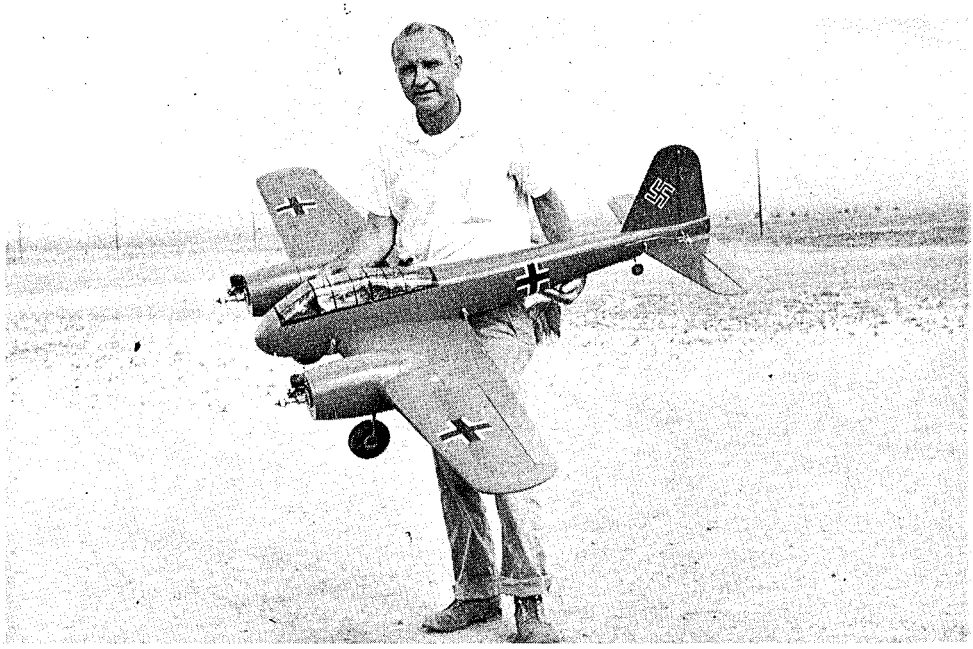
Mr. J. Courtney, our lawyer, has done an excellent job of preparing for us proposals to the FCC. His future work is anticipated to be in the field of keeping the AMA updated as to FCC matters and the proper interpretation of the various rules, regulations and proposals.

Many considerations were made concerning "cleaning up" the present CRS band. Despite the efforts being made by FCC monitors in various parts of the country, the fact remains that there are well over 500,000 Class D stations, the majority of which carry on unnecessary and illegal conversations. In addition, cases have been noted where Class D stations were right on the Class C spots, and with plenty of power. It is apparent that success would not be forthcoming in the near future if we had to rely on cleaning up the present spots. The AMA has petitioned for a number of other frequencies. One group is in the area around the TV channels 4 and 5. Another group is in the 30-50mc range and the third in the 150-160 megacycle range. It is proposed that any of these be limited to one watt of power. To date, monitors, around the country have shown no signs of interference (to the RC'er) from TV stations. On the other hand, opposition (and rightfully so) has been raised by those whose job it is to protect TV interests.

Now let's take a look at the future, should these higher frequencies be available. There certainly is no problem in the lower band since many modelers are already using the 6 meter band. The next two ranges may necessitate the use of tube transmitters and perhaps even the front end of receivers would have to use a tube. This of course would only be true if a low cost transistor could not be obtained. However, recent transistor developments indicate no great unsolvable problem. The next item is how close each frequency is to the next, both in and out of the band. It may be possible to use super-regens. We feel this is not taking a step backwards, but rather opening the avenues to other approaches. We remember when the use of 50mc was considered by many to tax the ingenuity of the circuit designer and builder. It must also be remembered that if any frequencies are allotted for our use, the present 27mc spots would probably stay in effect for a number of years. We will keep you, as well as all other publications, up-to-date on the committee's progress and again, urge you to contribute whatever you can. Send your contribution directly to the AMA, 1025 Connecticutt Avenue, Washington, D.C. Mark it "AMA-FCC Fund." (*Continued on page* 62)

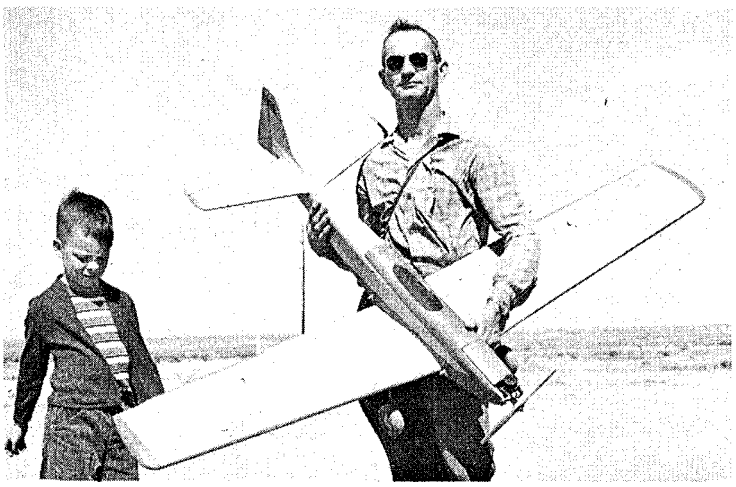
Some of the Albuquerque fliers and their many models. Note the great number of scale models in the collection among the many standard multis.

Frank Hoover's pride and joy, C.G., his number one son, his contest winning flat top Stormer.



Scale is very big with this group, here we have Don Parsons with his Messerschmidt ME 210 developed and designed by him. Uses two K&B .45 and also F&M ten-channel radio equipment.

Harry Mason, his son and Torp .45-powered Orion. Harry in electronics, worked closely with Frank Hoover developing Digital Proportional gear.



AIRWAYS SOUTHWEST

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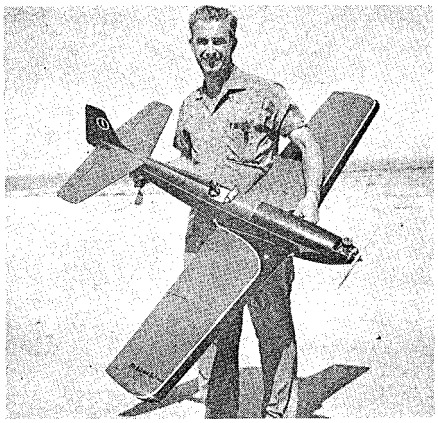
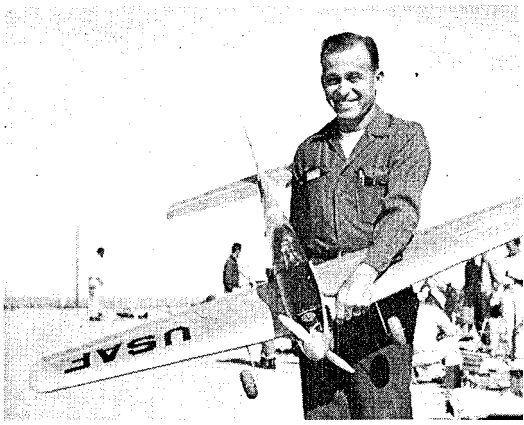
Albuquerque Fliers

IMAGINE FLYING AREAS AROUND THE ENTIRE PERIMETER OF THE CITY, ALL FLAT AND COMPLETELY CLEAR OF OBSTACLES.

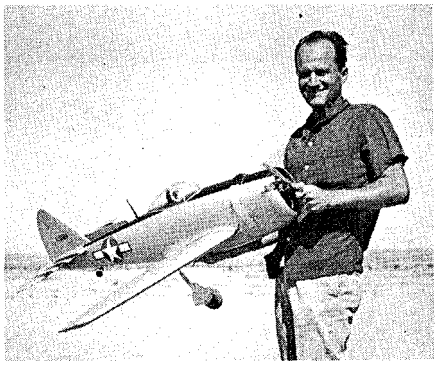


The man himself, Frank Hoover and his Orion. This model used to check all the Midas equip.

Another scale job, Jack Whiting with Jetco PT-19-powered with a Torp .45, 10-channel Midas.



Still more scale, this time it's Sterling's P-51 by Doc Savage, also Torp .45 and Midas gear.

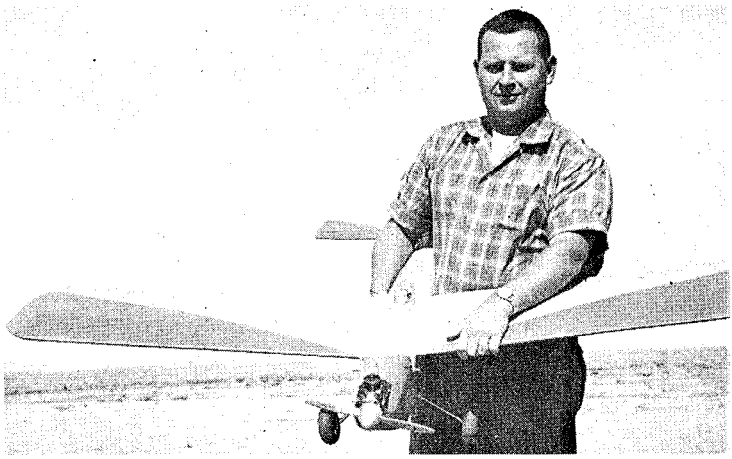


Ralph Schellenbaum and his famous Republic P-47 flown at '62 Nats and used retracting gear.

Here we are with a standard, Art Everett and Nelson Qualifier powered with Super Tigre .56.

The scale to end all scale, Doc Savage's Drakken. Model designed by Jack Blything, uses pressurized S/T .56, Midas gear and weighs 8½ lbs. Flies well but is a bit underpowered.

Stormers popular, Paul Humphries with Torp .45-powered round top.



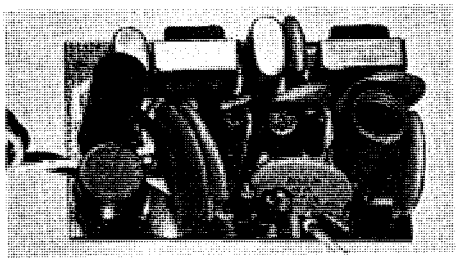
► Best operating non-organized flight group that we have heard of in years. R/C fliers around Albuquerque, New Mexico did not feel moved to form a club or other formal organization to pursue their favorite sport as they felt that with the many open desert areas surrounding the city, there was more than enough room for all to fly.

We all should be so blessed, as soon as they lose one field to the real estate developers, the city designates another spot and then moves in and cleans the area, rolls it and into the air they go.

Frank Hoover, F&M prexy, is one of the guiding spirits and helps keep the radio interest high in this area.

• • • • IT'S ACE R/C • • • SINCE 1953 • • •

NEW LOW PRICE ON THE SUPERB K3VK KIT!



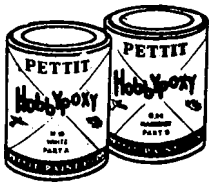
THE K3VK KIT DESIGNED BY PHIL KRAFT has won many friends to RC. The fantastic reception of this low priced kit has made even more price reductions possible. ACE again leads the way in bringing to you the highest quality receiver kit at the lowest possible price. Our ability to buy in fantastic quantities make this price possible. The K3VK kit now features a brand new set of instructions which are very complete, including valuable trouble shooting information, and contains the same quality of components as previously. PC board is completely drilled, coils are wound. Designed for 400 to 450 CPS audio as put out by the KT1K Kraft transmitter kit. Not recommended for use with transmitters of higher CPS. **Just it for Compact planes,** recommended for use with 6 to 8 ohm escapements.

Measures 1 11/16 by 1 1/16 by ¾. Weight ¾ ounce. Uses 2.4 to 3.6 volts for receiver and escapement, 26-28 megacycles only. Temperature stable from 40 to 90 degrees F.

No. 12B10—K3VK Kit, Now ONLY $9.98

ACE R/C

ACE HAS HOBBYPOXY!



GREAT NEW EPOXY FINISH FOR YOUR MODELS

No. 24A11—H26 Lt Blue, ¼ pint 2 can prepack 1.80
No. 24A12—H33 Stinson Green, ¼ pint 2 can prepack 1.80

HOBBYPOXY solves your finishing problems forever! Check these amazing features—Really hot fuel proof!—Superior covering properties!—Finishes balsa and silk FAST with only 3 coats!—Exceptional high gloss finish! —Far less cost with much less weight!—Clear overcoating not required for high gloss or fuel proofing!—Brushed or sprayed easily!

HobbyPoxy will be carried in ¼ pint cans for the colored and clear initially; in ½ pints for filler and 1 pints for the thinner. Thinner and Filler are complete. Clear and Colors require ¼ pint can EACH A and B. Price given is COMBO price. Pre-pack contains 1A and 1B. MUST be mixed. (Other source may list single price—ours is COMBO 2 can price.)

No. 24A1—H-07 Thinner, pint $1.00
No. 24A2—H-90 Filler, ½ pint ..... .90
No. 24A3—H-08 Clear, ¼ pint 2 can pre-pack 1.80
No. 24A4—H-10 White, ¼ pint 2 can pre-pack 1.80
No. 24A5—H-65 Brt Red, ¼ pint 2 can pre-pack 1.80
No. 24A6—H-49 Cub Yellow, ¼ pint 2 can pre-pack 1.80
No. 24A7—H-56 Intl Orange, ¼ pint 2 can pre-pack 1.80
No 24A8—H-81 Black, ¼ pint 2 can pre-pack 1.80

HOBBYPOXY TACK RAG

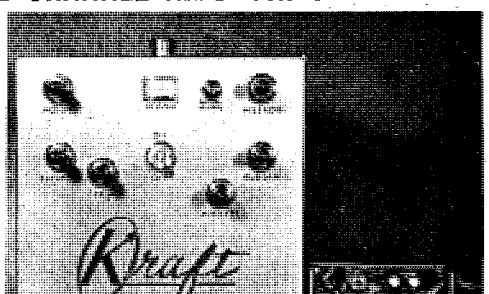
From Hobbypoxy comes word that to achieve a high gloss, dust free finish using Hobbypoxy, a thorough cleaning with a "tack" rag is necessary. Since a "tack" rag is something new to most of the modelers and is somewhat difficult to find, Ace R/C is stocking tack rags. These are for use with Hobbypoxy, although they will also help out on any type of finishing product where dust free cleaning is absolutely essential.

No. 24A10—Hobbypoxy Tack Rag, each 35 cents.

KRAFT CUSTOM 10 AND 12 CHANNEL REED UNITS

These finest reed units are available on a drop ship basis from the factory. Highest quality and dependability and reasonable price. Increased production means quicker shipment. For 1964, the finest in reed equipments carries the Kraft label. Reeds offer dependability and expandability and lower cost. Superhet—all five frequencies available, please specify.

No. 12A22Z—Kraft Custom Superhet 10 channel Receiver . . $89.95
No. 11A11Z—KT10 Kraft Custom Transistor Simul Transmitter . . $119.95
No. 12A32Z—Kraft Custom Superhet 12 Channel Receiver . . $99.95
No. 11A17Z—KT12 Kraft Custom Transistor Simul Transmitter . . $129.95



NEW! NEW!
From ACE R/C

ORBIT ELECTRONICS is listed in the Ace 1964A catalog. This NEW CATALOG is just off the press and contains many other fine prestige R/C items.

COMING — the Uni-junction Transistor Pulser by John Phelps. This is by far the best all transistorized pulser we have ever seen, and we are proud to have been given kitting rights for it. Watch our future advertising.

Special Edition Plans announces their Galloping Ghost Control Coupler. KIT CONSISTS of two completely jig formed 3/64 inch wire elevator tie bar, universal coupling is already on the tie bar. Wire and bolt are joined under slightly more than three tons of pressure prior to being soldered. Kit also includes the master crank ready to be soldered to models torque rod, thrust eyelets, etc. The Modeller has an almost infinite degree of variation to get more or less control from the GG Control Coupler Kit. This accessory pack of **completely finished parts** is almost ready for instant installation. **Priced at only $1.00! This should please the pulse fans!**

NICAD®

NICAD RECHARGEABLE BATTERIES

Here are the only GENUINE NICAD (Trade Mark Registered)—batteries distributed by Gould National—a top name in batteries in the world. We are offering their two button type cells first, but will add others during the year. These are high rate units—and are ideal for R/C receiver uses. GENUINE NICAD Construction offers the best mechanical type of seal we have seen. Offered with soider lugs to make it easy to connect. (Do NOT solder directly to the case of any NICAD).

500 BH is 500 mah. Size is ⅜" thick by 1-23/64" dia., fits nicely into Medco PM5 case. With solder lugs. With full charging instructions.
No. 38A38—Nicad 500 BH $2.50
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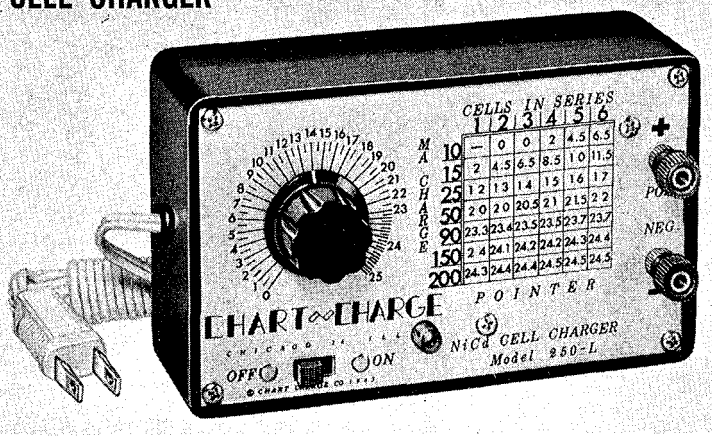
NiCd CELL CHARGER

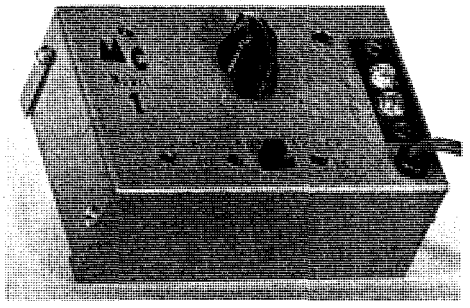


THE CHART CHARGER HAS BEEN AN INSTANT SUCCESS and the manufacturers have improved the introductory model even more. Now it will charge up to 10 cells at a full 250 mil rate. The range has been extended beyond what the introductory model had, and the new model is an improved version. Will now come with a pilot lamp to determine on and off. Charging is still very simple with the Chart Charger, since you simply select the number of batteries and the rate of charge and turn the pointer.

The introductory offer price of $7.95 is discontinued effective October 1, 1963, and the new price is $9.95.

Unit is housed in a molded bakelite instrument case, with an etched aluminum front panel. Measures 3¾ by 6¼ by 2 inches. Completely assembled. **Catalog #34B12, Nicad Cell Chart Charger $9.95**

NEW—From ACE R/C



MC NICAD #1 CHARGER REDUCED!

MC MANUFACTURING & SALES of Kansas City, Missouri, announces the volume purchasing of components as used for their MC Nicad #1 Charger. This has enabled them to pass on substantial savings to you. This former $6.95 seller, will be only $4.95 for 1964! This has a potentiometer with a variable charge rate from 0 to 250 milliamps, and is just it for charging nickel cadmium batteries. Comes with a sheet of instructions which completely detail where to set the pointer now for charging whatever battery of the nickel cadmium type up to the 2.5 amp per jobs. *This is a new model* and is housed in a smaller and better metal case than the older MC #1. This represents a real buy at $4.95.

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HERE IS A BRAND NEW PRODUCT which will find extreme favor with the do-it-yourselfer. If you've been looking for an ink which is easy to apply and forms a hard resist for etching copper laminate for one or two bases at a time, this is it. *The Tate Resist Ink is available in 1 oz. and 2 oz. bottles.*

VERY EASY TO APPLY with a speedball type pen, Ink-O-Graph or other pens of this nature. Dries hard and forms the resist pattern for your developmental PC boards.

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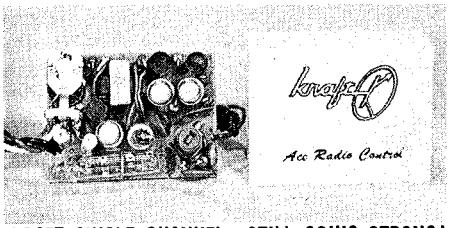
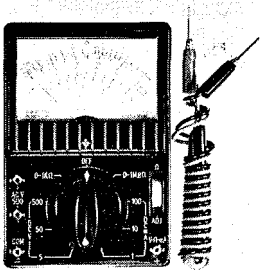


KRAFT SINGLE CHANNEL—STILL GOING STRONG!

THE KR1K KRAFT SINGLE CHANNEL RELAY RECEIVER has been the most popular receiver in our almost ten year history. It has been responsible for a satisfying radio control experience for more fans than any other single receiver. Even with the popular relayless receivers going for the smaller jobs, the KR1K enjoys a continued high sales volume to satisfied customers for the following reasons: No. 1, it is easiest of all receivers to put together, and the easiest to get into operation; No. 2, because of the fact that it uses a relay it has more versatility and can be used in many more systems of all kinds, and does not require any gadgetry to achieve stable and consistent results. Housed in a high impact plastic box, the unit is light enough for almost all R/C installations except the compacts. Superregen and requires 1½ volts of A and 22½ volts of B. Requires 400 to 600 cycles per second tone, which may be had from the KT1K transmitter kit. If you've been looking for a reliable and sure fire performer for any R/C application, this job is for you. **KR1K 26-28 mc version $19.95. KR1K 50-54 mc version $21.95.**



NOW! YOU CAN OWN A RELIABLE MULTITESTOR AT A VERY REASONABLE PRICE!

At Last! Here is a Multitester for the R/C fan at a price that is reasonable. Imported from Japan, this meter has 0-1, 10, 100 ma milliammeter readings; 0-5, 50, 500 volt reading, and measures DC resistance from 0 to 100K and 0 to 1M. One percent precision resistors and a switching arrangement used. Complete with test leads and priced at only $9.95.

NICKLE CADMIUM CHARGER PACKAGE

Requests from the field make this basic nickel cadmium charger package available. Comes complete with 9 volt transformer for complete isolation from the AC line, UL approved line cord, and 500 MA 400 PIV silicon rectifier. Also included are complete instructions and schematic for charging 1 to 6 Nicads at a 2.2 MA or a 5 MA trickle rate, or 22 MA or 50 MA 14 hour rate. May be housed in a case of your choice, and resistances are given so that a fixed resistance may be used for a one type battery box charge set up. This is a once in a lifetime opportunity, and when the quantity of these packs is exhausted, the offer can not be repeated. The transformer is a surplus item, but is brand new and has *never been used. If you were to purchase this quality of transformer by* itself, it would cost you more than the cost for our basic parts package kit.

Basic nickel cadmium charger kit #2 ..... 1.39

NEW EDITION R C HANDBOOK
Most popular RC book ever published. The Gernsback Library-Radio Control Handbook, by Howard G. McEntee. This one is practical, and will offer a lot of meat to the advanced R/C modeller. Completely revised —the original sold over 8 printings. Assumes you know theory and concentrates on advancing the RC art by offering circuits, ideas and data on receivers, servoes, pulsers, and transmitters and all other R/C details. Gernsback Library #93, 304 pages. Well worth the price. **P.P. $4.95**

R/C PRIMER
At long last—a new R/C book with the beginner in mind. Published by Kalmbach Publishing Company. Written by the old master, Howard McEntee, this takes a beginner, through the maze of electronics and helps him to know where to begin and what to do. 8½" x 11" book, full color cover. Price is low considering the wealth of information it contains. **$2.00**

NEW GERNSBACK LIBRARY BOOK.
"HINTS AND KINKS FOR RADIO, TV AND AUDIO," features 280 ways to make your hobby more fun. 280 ingenious ways to use paper clips, cork screws, tape, drinking straws, grommets, tooth paste caps and hundreds of other likely and unlikely articles to make your R/C hobby easier and more enjoyable. Carefully selected from Radio and Electronics magazine. The book is edited by Martin Clifford, and has many hints that are useful for the hobbyist. Order Gernsback Library No. 103, 128 pages, only $2.35.

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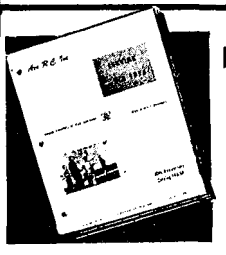

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Historical Aircraft

(*Continued from page* 18)

the provisional Kerensky government during the October revolution quickly convinced him that his destinies lay elsewhere. When he took ship from St. Petersburg in March, 1918, he was not only leaving his homeland behind, but also a career in which he had become the premier aircraft designer in Holy Russia—builder of the Ruskii Witjas, or Grand, the first four-engined aircraft and a flying ship of truly magnificent proportions; plus a series of even larger military bombers, the famed Ilya Mourometzes that formed the elite Squadron of Flying Ships, of Eskadra Vozdushnykh Korablei, an independent strategic bombing unit that was assigned its own transportation, supply, and portable shop units. Nearly seventy-five of these large ships were being used by the five squadrons of the EVK in February, 1917, and they established an enviable record in action. The pilots swore by them because of their strength and reliability—there were numerous times when a Mourometz would limp home with dead or dying crewmen, two or more engines shot out, shredded fabric, and bullet-splintered struts.

Early 1919 found Igor Sikorsky in the United States—a stateless refugee, with limited capital to carry on his chosen vocation. After leaving Russia, he had worked with the Technical Section of the French *Armèe de l'Air* on the design of a proposed four-engined bomber until the Armistice halted the project. His first and only formal employment in this country was as a temporary technical assistant at McCook Field, Dayton, working on the preliminary design specifications of a three-engined bomber that later became the LWF "Owl." After that, it was back to New York City, where for a period of two years he eked out a modest living by giving lectures on astronomy and aviation, and instructing in mathematics at a private college attended mainly by Russian emigres. During this period he started to design his idea of the ideal transport aircraft, and the S-29A began to take shape.

Things started to shape up on the financial front, also; some of Sikorsky's friends were convinced that the time was ripe to begin putting his ideas into tangible form; as a result, on March 5, 1923, the Sikorsky Aero Engineering Corporation was formed with a paper capitalization of $200,000. A New York office was opened at 114 East 25th Street in Manhattan, but the actual progress was being made at a farm near Westbury, Long Island. Officers of the new firm were: Igor I. Sikorsky, president; W. A. Bary, treasurer; and L. A. Shoumatoff, secretary. Later on Serge Rachmaninoff, the composer, was named vice-president in recognition of his financial aid and moral comfort to the perennially straitened organization. The office was usually bare; nearly every day the entire staff, plus volunteer workers from Manhattan's Russian colony, could be found at the Long Island site busily fashioning not only parts for the new ship, but also the tools with which it was being built. The operation was on a shoestring from the strat; much of the labor that went into the ship was by men unskilled in aircraft construction, and material was purchased as needed in bits and pieces from war surplus sources, or improvised from hardware obtained at a nearby junkyard. Igor Sikorsky, in his book "The Story Of The Winged S" blandly admits that a number of angle irons from discarded bed springs went into the structure of the S-29A.

Although the farm was rent-free, it did not provide a building large enough to serve as a workshop during assembly. When finished, the larger sections of the

ship were moved outside and work continued there—weather permitting. If the S-29A had been made from wood, as all of the previous Sikorskies were, this would have been impossible; however, it was fabricated entirely of open-section duraluminum and steel members, with wire cable cross-bracing in the fuselage to keep it rigid. All joints were bolted and no welding was used, except on shaped fittings. The wing spars were made up as Warren trusses, with deep "T" section spar caps at top and bottom; channel-section webs were riveted between in "bridge girder" fashion. Drag loads were assumed in the wing structure by sections of angle riveted between the forward and aft spars as "X" braces; these were doubled in the inboard wing bays to form a stiff center section, needed to resist the torsional forces set up by the heavy engines, which were mounted far forward of the wing leading edges.

The upper wing was built in three sections, with a wide, constant chord and used a medium-thick airfoil. In comparison, the lower wings were thin and narrow, swept back from a thickened stub-wing center section that supported the engine nacelles. The unbalanced twin rudders were mounted in pairs, above and below the horizontal stabilizer, and were cambered to diminish the yawing force that would occur during flight on one engine. In spite of the many improvisations required during construction, the S-29A airframe was well-built and extremely strong. Engines were one of the few weak points; due to limited funds, the best that could be obtained were two war-surplus 220 hp geared Hispano-Suizas—the same as used in SPAD pursuits during the war. The Hissos turned up a maximum 440 hp at high rpm, but due to being geared, needed high-pitched propellors—excellent for cruising or high-speed flight, but giving poor power at take-off. The Grand and Mourometz aircraft had flown successfully on approximately the same horsepower, but the engines and the aircraft were more compatible. Tires and wheels posed another problem; war surplus articles had been obtained, but the quality was debatable; blowouts had occurred while the aircraft was standing idle.

By early May, 1924, the S-29A had been completed. Final assembly and adjustments had been performed in a rented hangar at Roosevelt Field—fighting the weather in the limited accommodations at the farm had proved to be impossible. The Hisso engines were run up in a final check, and enough money was obtained—some from interested onlookers—to purchase several five-gallon cans of gasoline which were then transferred, bucket-brigade fashion, to the tanks in the upper wing after being strained through pool-table felt to remove sediment and water. Some taxi tests had been made the previous day and everyone in the venture, except Sikorsky, took it as a matter of course that the airplane was now a success. Several members of the "corporation" pushed into the narrow cabin and seated themselves on the bare floor, holding to the fuselage structure—anxious to share in the triumph to come. Only three persons were to have been carried on the initial flight; the extra weight was a tremendous disadvantage.

Sikorsky, from his seat in the cockpit high in the aft fuselage, did not have the heart to order his "staraya druzja"—old buddies—out of the airplane. Opening the throttles, he taxied the S-29A slowly out to start the takeoff run across the turf of Roosevelt Field. The ship was heavy and unresponsive; half of the field went by under the spinning wheels before it finally left the ground. Slowly, the S-29A inched

(*Continued on page* 42)

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FOR TWIN ENGINES USE TWO .09's or .15's

What a song those twin engines sing!

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SPAN . . . . 56"
LENGTH . . . 44"
AREA . . . . . 528 Sq. In.
WEIGHT *(With 6 Chan. Eqpt.)*
SINGLE ENG. . 3½ lbs.
TWIN ENG. . . . 4 lbs.

SKYLARK is a sister-ship to our famous Falcon—but is a tested and proven low-wing! For Multi-training, it's tough, and right to learn on before you try the "contest" birds. And if you're a Rudder-Only fan, you'll really like Skylark's easy handling. But the real surprise is that Skylark is an **optional** twin! With the extra parts in the kit, you can build it either as a sleek single or as an exciting twin engine job! It's tested and proven both ways, and the highly "pre-fabbed", fast-building kit has full basic info on building and flying. Flies and maneuvers with one engine out. To begin one of your most memorable experiences in R/C, see your dealer for the SKYLARK!

NEW FAI VIKING

WITH *UP-THRUST* FOR EVEN FASTER CLIMB!

FOR THE ADVANCED FREE-FLIGHT MODELER!

WING AREA (proj.) 463 sq. in.
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WEIGHT (for FAI) 26½ oz.

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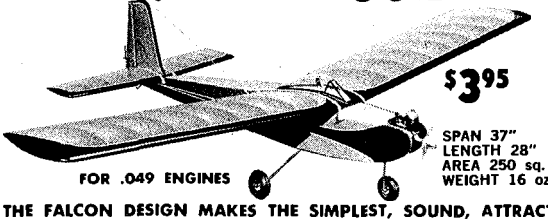
FOR SINGLE CHANNEL—ESCAPEMENT OR PULSE—
A NATURAL FOR THE COMPLETE READY-TO-USE R/C UNIT

Junior FALCON



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FOR .049 ENGINES

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AREA 250 sq. in.
WEIGHT 16 oz.

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BOTH FALCON KITS FEATURE . . .

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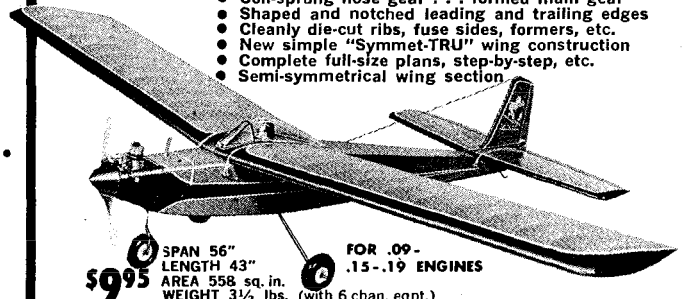

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SPAN 56"
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WEIGHT 3½ lbs. (with 6 chan. eqpt.)

FOR .09-.15-.19 ENGINES

FOR SINGLE TO 6 CHANNEL—
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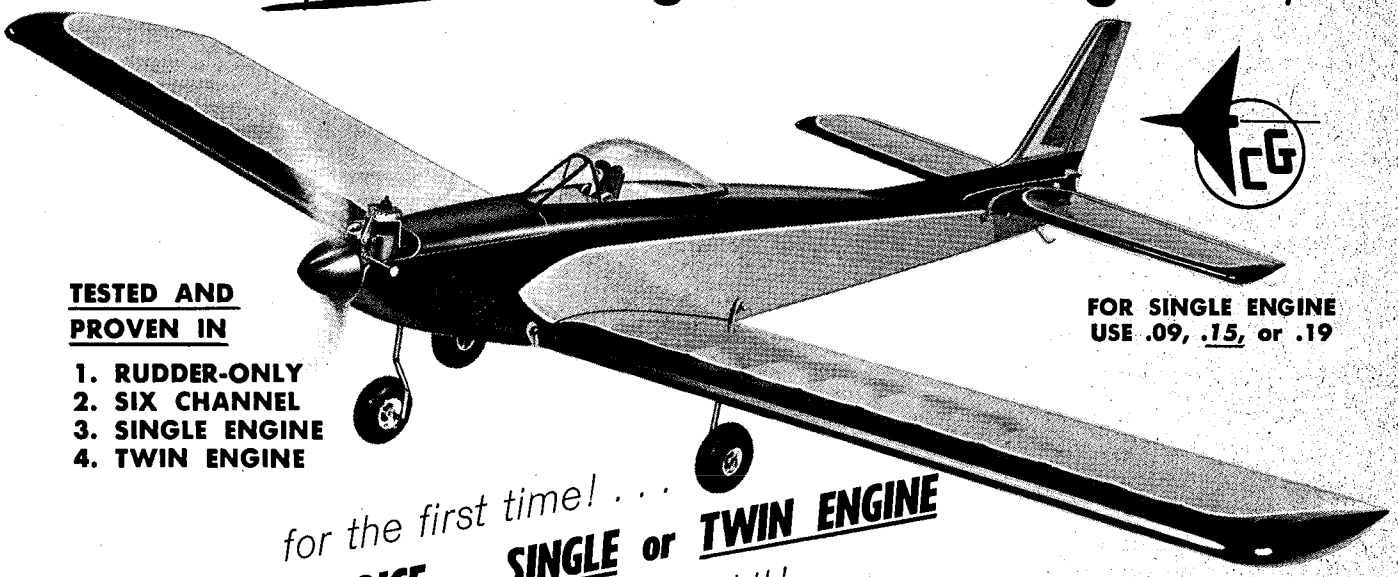

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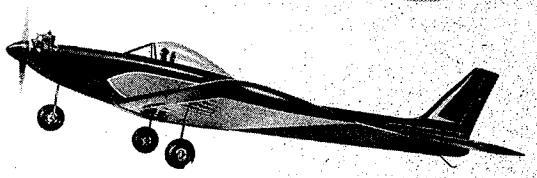
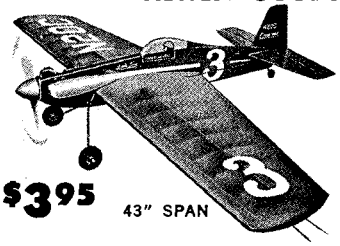


NEWEST GOODYEAR STUNTER . . .



$3.95 43" SPAN

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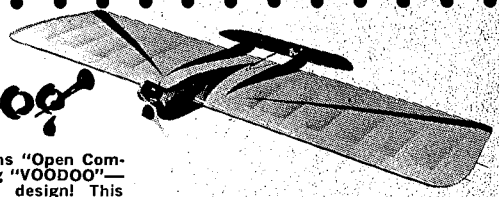
Here is the sharp Cosmic Wind-latest in our series of fine stunt models. Performance is fast and smooth with real "square" corners when you want 'em. Really easy to build, too. The many die-cut and shaped parts are not only clean—they fit! **FOR .19 TO .35 ENGINES.**

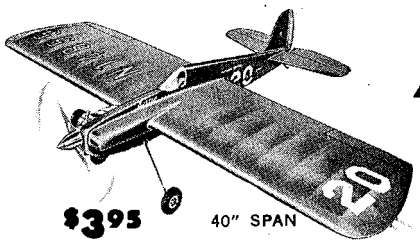
RILEY WOOTEN'S

VOODOO



Riley Wooten wins "Open Combat" again, flying "VOODOO"—his top combat design! This highly maneuverable ship features simple, light yet tough construction. FULL LENGTH leading and trailing edges. 36" span. 330 sq. in. **FOR .19 TO .35 ENGINES.**

SINGLE KIT $2.95 **DOUBLE KIT $4.95**

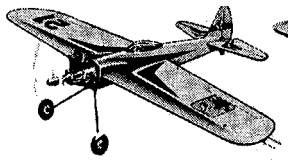


$3.95 40" SPAN

STEVE WITTMAN

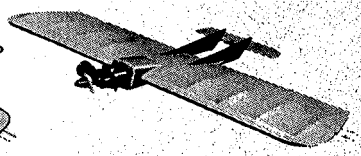
BUSTER

The **SIMPLIFIED** new top stunt model! Really sharp performance through advanced, sturdy design. Full-length leading and trailing edges, new construction improvements. Includes pictorial "Learning How to Stunt," plus "Tips on Winning the AYSC," complete step-by-step plans, etc. **FOR .19 TO .35 ENG.**



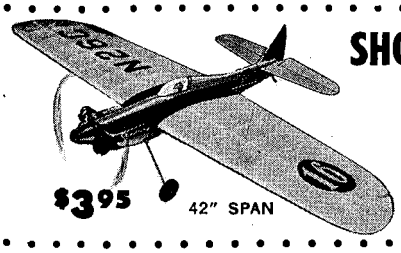
LI'L JUMPIN' BEAN

21" span for .049 eng.
Favorite ½A stunt model,
Kit G8, $1.49



LI'L SATAN

19" span
½A combat-stunt for .049 eng.
Kit G12, $1.29



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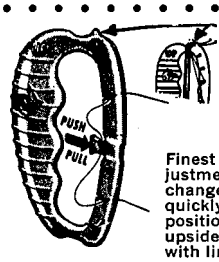
The beautiful TOP STUNT ship that's made the biggest hit in years! Fast, smooth, turns very tightly, cuts sharp corners. Real quality jam-packed kit worth a full buck more, with features as in Buster above. **FOR .19 TO .35 ENGINES.**



Your lines wrap up quickly, ends snap into slit at top

SAFTI-FLITE ½A HANDLE

Finest handle made. Fast, easy line adjustment for "neutral-neutral." Quick-change "line spacing." Lines wrap up quickly, snap into slit at top. One-position grip—feels wrong if picked up upside-down. At your dealer, complete with lines.

59¢

P.S. Easiest way to get any of these planes is to see your dealer. If he's out of them, or no dealer near you, send me cost of plane plus 25c each for postage and packing. Outside U. S. add 75c per kit.

MODELS INC.

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CHICAGO 8, ILLINOIS

Historical Aircraft

(*Continued from page* 39)

its way upward, clawing for height. Seventy-five ... eighty ... one hundred feet of air slid beneath the wings as it grumbled across the limits of Roosevelt Field and over Mitchell Field, the adjacent Army base. The engines began to overheat and lose even more of their limited power; as Sikorsky gingerly banked the big ship to return for a landing it settled soggily, losing precious feet of altitude. A quick, heavy landing was made on a nearby golf course; after a single bounce, the S-29A hooked into the rough and ended up in a small gully—torn, tattered, and bent.

Another four months of patient labor, plus an incipient financial crisis, went by before the S-29A was again ready to fly. Two reconditioned direct-drive 400 hp Liberty engines were purchased and installed in place of the useless Hissos, and larger wheels and tires—of the type used on Martin bombers—had been mounted on the rebuilt landing gear. All damage from the mishap had been repaired and strengthened sections added so that the ship was now better than new. A second "first flight" took place on September 25th, when Sikorsky piloted it over Long Island for an uneventful ten-minute flight which showed the merits of the ship. It proved to be steady and docile, with excellent flight characteristics, if a bit tail-heavy.

During the next two years the S-29A plied the airlanes around New York and in New England, carrying numerous passengers and cargo of all types. One memorable charter flight, which put $500 in the cash box, consisted of air-freighting two grand pianos from New York to Washington, D. C. Its load carrying abilities became so well-known that at times it was difficult to rebuff ambitious bootleggers, who coveted the ship as a means of safely conveying large quantities of imported bottled goods—far above the waiting hatchets of Mabel Walker Willebrandt's prohibition agents.

For a time, it was the sole support of the company, helping to keep it in business while five new aircraft were being built. There was no S-30, and two of the ships which followed, the S-31 and the S-33, were small, low-powered biplanes. The S-32 was a big-five-passenger biplane, strongly resembling the S-29A, and powered with a Liberty engine. This aircraft was sold to the Andian National Corporation, an oil company operating in Colombia; mounted on floats and based at Cartagena, it made regular trips to the headwaters of the Magdalena River, piloted by captain Boris Sergievsky who later was associated for a number of years with the Sikorsky company. The S-34 was a distinct departure from previous designs, being an amphibian with twin Whirlwind engines and a full boat hull. The S-35, the last Sikorsky aircraft completed in 1926, was another large twin-engined transport that was modified to use three Gnome-Rhone "Jupiter" engines (loaned by the French Government) for Captain Rene Fonck's ill-fated transatlantic attempt.

Late in 1926 Captain Roscoe Turner acquired the S-29A in a unique lease-purchase agreement, Turner, a cool, precise pilot combined business acumen with a flair for showmanship, kept it so busy that the original Liberty engines soon had to be replaced. According to one story, he managed to top Sikorsky's record cargo—the two grand pianos—by carrying a lion and an elephant as air freight. He also negotiated a deal with a St. Louis clothing manufacturer to fly their sales promotion personnel from city to city, with the company name emblazoned on the fuselage sides. Later, in July, 1927, the S-29A was fitted out as the United Tobacco Company's flying cigar store, complete with display case and cash register, for a tour of several eastern and mid-western states. Roscoe Turner piloted the ship, while Melvin Dunham hawked the Bull Durham, stogies, and cut plug at each stop. Thirty overnight stops were made during the tour, and a daily average gross of $200 was realized from the 1700 pounds of merchandise maintained in the ship.

In 1928 Howard Hughes began collecting every available World War I airplane to use in filming his proposed motion picture. A number of SE-5's, Fokkers, Thomas-Morse scouts, and Travel-Airs were rounded up, rebuilt, and repainted, and a sixty-foot model of a Zeppelin was constructed for the scenes to be shot in miniature. However, the final climactic sequence centered around the destruction of a captured German bomber which was to destroy an enemy ammunition dump just before the "big push." A German bomber, or reasonable facsimile thereof, was not to be had; Howard Hughes tried to borrow an ancient Martin GMB from the Air Corps; however, he had already acquired a reputation for breaking aircraft up in the interests of realism, so the Air Corps politely declined. Plans were being made to build a flyable replica, as had been done for "Wings," when someone suggested that the Sikorsky would make an admirable "Gotha" with a few modifications.

Turner was not at all averse to a few profitable months in the California sunshine, and agreed to fly the S-29A west in time for the main flying scenes. The transcontinental flight was accomplished in easy stages, with layovers for maintenance and weather. Turner relates that extreme turbulence was encountered at El Paso and again in the San Gorgonio Pass between Palm Springs and San Bernardino, California. The big ship went out of control on both occasions; in San Gorgonio Pass it spun down almost to ground level before he could bring it out of its wild swirl and into level flight.

Hughes' property men and mechanics reworked the old Sikorsky into a respectable Hollywood-version ersatz bomber with new engine cowlings and nose gunner's turret, a prop "pilot's" cockpit just forward of the wings, and a new paint job ... a dull gray-black, with big white-bordered Maltese crosses on the wings and rudders, and a Prussian eagle outlined on the nose. It was festooned with Parabellum guns—two in the nose, one on a ring mount at the side of the pilot's pit, and one in each of the side doors. Bomb racks and a smoke machine were installed in the cabin, with an outlet tube leading to one of the engine nacelles. Roscoe Turner flew the S-29A during all of the flight sequences; however, he balked at Hughes' request to put the big biplane into a full power spin for the final scene unless the ship was first completely examined to assure that none of the fittings were cracked or strained. It is evident that at that time the plan was not to crash the Sikorsky, as a Jenny had been fitted up with dummy nacelles, twin rudders, and a revamped nose; this was to have been used for the long shots showing the destruction of the bomber. Two factors combined which resulted in the Sikorsky being crashed during the final scene; the revamped Jenny was burned in a hangar fire, and Roscoe Turner was called back to New York on business. While he was out of town, the airplane was flown once or twice by other pilots to obtain additional aerial footage and check out the smoke

equipment. As Turner said in a letter to the writer—"No one really had any desire to fly my airplane ... it was the biggest thing in the United States, and it was a little scary looking; also, we were flying out of a real small field." While Turner was absent Hughes contracted with Al Wilson, a stunt pilot and parachute jumper, to fly the Sikorsky during the final shooting, at a price reputed to range from $200 to $1,000. He was not the only substitution; the special effects equipment in the cabin had been handled by Jimmy Barton, a technician with prior experience on "Wings" and other early flying movies. Barton was a large, heavy man and the cabin was cramped with the bomb racks and smoke generator; on a flight the previous day he had snagged the release cord of his chute and was nearly dragged from the ship before Ned Schram, who was flying the Sikorsky, could collar the loose silk which billowed up the passage from the cabin to the pilot's cockpit. Phil Jones, who was smaller and lighter than Barton, rode in his place to operate the smoke machine on the last flight.

To readers old enough, or lucky enough to have seen "Hell's Angels", this was an appalling sight ... back in 1930, first-run audiences leaned forward in excited horror as the big Sikorsky tumbled through the sky to its doom, for a man died in order to bring that scene to the silver screen. At 7,000 feet over the San Fernando valley Wilson pulled the S-29A up into a semi-stall, and for some inexplicable reason, jumped—leaving Jones in the aircraft. The big biplane fell into a spiral dive, dense smoke pouring from one nacelle to trace a curving line of smudge against the brilliant cloud background. In the DH camera ship, pilot Frank Tomick and photographer Burton Steene followed the smoke trail, the Akeley camera grinding as the Sikorsky nosed up only to fall off in a sweeping arc ... then, flicking its tail sharply around and pivoting on one wingtip, it whirled into a pirouetting spin which ended agonizing minutes later as the S-29A slammed headlong into a scrub-dotted wasteland near Pacoima, north of Burbank. To the ground camera crew, the sight of a single chute blooming against the sky was mute testimony of tragedy, and they scrambled to reach the wreckage—their cameras forgotten.

Whether Wilson was or was not guilty of a gross negligence is still a matter of conjecture; however, he was ousted from the Professional Pilots Association, and many refused to have anything to do with him until his death some years later—ironically enough as he was stunting an antique pusher at an air show. The S-29A had its moment of glory, becoming more famous than it had ever been during its years of faithful service, merely because of those few minutes of destiny which were recorded on film.

Piper Apache

(*Continued from page* 12)

for control horn clearance, but rear of blocks must be filled with scrap balsa before carving to shape. After carving tail block to shape, attach elevator, making certain that control horn moves freely. Cement top balsa block in place and carve to shape. The rudder and fin are not added until the ship has been completed.

Any additional items such as throttle, landing flaps, and electrical system must be added at this time. After connecting pushrods, cockpit floor of ⅛ inch balsa is notched to fit formers inside cockpit and then cement in place.

Next, add landing gears of your own choice. Landing gears of ⅛ inch steel wire will work nicely, however, gears on the

original model were machined from 1/4" drill rod and equipped inside with heavy springs to form shock absorbing gears. Gears on the original ship were also scaled along the lines of the real Apache. Main gear wheels are 2 and ½ inch Veco, and nose wheel is 2 inch Veco.

The model is now ready for covering. The original model is covered with ⅛ by ½ inch balsa strips, with some ⅛ by ⅛ strips used for extreme curvatures. When covering leave some space at front of fuselage between formers F-1 and F-2 in order to add necessary weight in order to put nose of plane down. This will not be enough weight, because dope and finish will throw balance off again, but after final finish has been completed, final weights may be installed in nose of each nacelle. After covering add wing tip blocks, nose block, and carve to shape.

Carve rudder and fin from ⅜ inch balsa sheet, making sure that the grain runs vertically. Sand and attach to fuselage, offsetting rudder ½-inch, and then cover entire ship with silkspan.

Give entire plane four to five coats of filler prime, mixed from clear dope and talcum powder so that it flows evenly. Sand primer coat and brush on several coats of clear dope. Sand with #320 wet paper, and then add four to five more coats of clear, sanding between coats with #400 wet paper. Build up final color finish with approximately five coats, also sanded between application, and add trim.

Interior of the cockpit may be dressed up as desired, but the original plane has all details scaled in proportion to the real plane. Ship's instrument panel was photographed from the back seat of the plane, and in enlarging the photograph it was enlarged to size required for the model. Instruments were recessed as in the original by cutting dial holes from 1/16 inch balsa, and steering wheels were made to scale. Seats are made from ¼ inch balsa and padded and covered with upholstering material. The floor carpet is from a piece of Mohawk commercial aircraft carpet.

Door in the cockpit is also cut to scale, and interior of cockpit—walls, ceiling, etc., are also upholstered. An electrical lighting system is installed throughout, including nose light, navigation lights, and cockpit.

Minute details to the outside finish can be added through the use of sequin pins to simulate rivets. This ship has slightly under 3,000 pins of ⅜ inch length. Antennae connections radio omni, and other eye catching details can also be added.

The ship should balance about 10 to 15 degrees nose down for flying, and balance is obtained by holding 1 inch behind the leading edge. Pick a calm day to test the plane, and let it roll freely to gain maximum ground speed before giving up elevator. Plane will rise gently, and it will hang in the groove at any altitude which you wish. When landing, cut throttles about half way, and with slight down elevator, the plane will lose altitude slowly. When about five feet off ground, throttles can be cut to lowest running speed and ship will come in gracefully and lightly for a three point landing.

R/C Glider Pylon Racing

(*Continued from page 15*)

marginal. Most contestants launched and flew toward the most distant pylon, flying along the hollow of the crescent. This is the safest method of flying though the lift is only about half that available at either point of the crescent, due to the angle of the slope of land. When the Pylon Judge saw the model approaching he raised a red flag aloft until the glider had passed a point sight-projected straight out from the aiming stakes. He immediately signalled with the white flag that the pylon had been reached and the turn could be made. At the same time, the Contest Director, standing near the contestant, called out, "Go." As mentioned before, it was most hazardous to turn 180° downwind on this particular day, due to down drafts, plus the natural inclination of the glider to descend down-wind. Consequently, as soon as "GO" was heard, the contestant turned the glider into the wind, made a 180° turn and flew back along the line of flight toward the opposite Pylon. If the model was trimmed correctly, some altitude was gained on the turn, but a sloppy turn or failure to maintain a position of about 60° to the horizon measured from the crest of the bluff, would be cause for the flight to terminate. The approach to the other pylon was made in the same manner, providing lift was available. Here again, the turn had to be away from the crest of the bluff into the the wind. Models dropping to 5 to 7 feet above terrain found little or no lift. There were only 6 flights that completed the required 6/10ths of a mile course out of 14 attempts, due to low wind conditions . . . no wind . . . no lift.

The formula to compute miles per hour was furnished by Lloyd Weaver as follows:

$$\text{Vmph} = \frac{2160}{\text{Tsec}} \text{ for .6 mile.}$$

Fastest time was a speedy 14.1 mph, with 10.8 mph followed by 10.15 mph. The author placed first with the Pelican glider, featured in Sept-Oct issue of Grid Leaks.

The Harbor Slope Soaring Society was organized in April 1963 and claims the title of America's First Radio Control Club Flying Models Without Power. By October, club membership had grown to 37 members and included such well-known names in modeling as Bill Butler, Dr. Rolf McPherson, Don Dewey, Dan Lutz and Dr. Don Crow. The Society's news media is the ZEPHYR, which is published monthly and contains articles on slope soaring techniques, a review of new products related to gliders, schematics and circuitry as well as club news. Popularity of this publication is attested to by the fact that over 100 copies are mailed monthly with some going to non-members who pay the $2 yearly subscription rate. Readers who are interested in Slope Soaring are invited to send 25¢ in coin to Editor, The Zephyr, 14695 Candeda Place, Tustin, Calif., 92680, for a sample issue of this publication.

Prior to organization of the Harbor Slope Soaring Society, there had been activity at the bluff off and on over the past ten years. The flying site is located on land belonging to the huge Irvine Company. They granted official entry permits to their property only after the club had satisfied the insurance liability requirements set by the Irvine Company.

The bluff is a sandy topped area situated about two miles from the Pacific Ocean, overlooking a bay where speed boats and water-skiers hold forth. For those who have never flown models, (oh yes, we fly scale models of powered airplanes too), I go on record, to state that after 28 years of building and flying models of all kinds, the chosen sport of slope soaring is—

Easiest—No chasing models as in free flight, well, almost no chasing.

Coolest—Just stand on the edge of the bluff and let a cool breeze caress you.

Economical—No props, starting batteries, engines, glow plugs or fuel to buy.

Flexible—We have had spot landing contest, (winner landed within 2'3" of spot) Pylon Race. Endurance event (2 hours and 53 minutes without landing), and plan to hold a balloon

(*Continued on page 46*)

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★ HILLSBRO — Hobbies - Toys 321 East Moin Street

★ PORTLAND 17 — Hobbyland 4503 North Interstate

PENNSYLVANIA

★ FOGELSVILLE — Don Mohr's Hobbyland 6 Mi. West on Rt. 22 Fogelsville (Allentown)

★ MONROEVILLE — Loreski's Photo & Hobby Mart, Town & Country Shop. Center

★ PHILADELPHIA 34 — Northeast Hobby Shop 2503-05 Eost Allegheny Avenue

★ PHILADELPHIA 43 — Richard Francis, Bicycles & Hobbies 5815 Woodland Avenue

★ UPPER DARBY — Todd's Model Hobbies 7036 Terminol Squore

★ WILLIAMSPORT — Krim's Hobby Center 115 West Third Street

RHODE ISLAND

★ BRADFORD — Quonnie Hobby Shop Rt. 216 just off Rt. 1

TEXAS

★ DALLAS 4 — Bobbye Hall's Hobby House, 4822 Bryan St.

★ FORT WORTH — Edd Alexander's Hobby House, 313 Main

★ HOUSTON 9 — Ace Hobbies 5409 Nordling

★ HOUSTON 45 — S.M. Model Supplies 5503 Lotus Street

UTAH

★ HOLLADAY — Skip's Hobby House 4694 Holloday Blvd.

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★ NORFOLK 4 — Toy Craft Hobby Shop 3904 Granby Street

WASHINGTON

★ SPOKANE 23 — Lloyd Hobby & Variety 4507 N. Nevada Ave.

★ TACOMA 5 — Ron's Model Airplane Supply 1209 South Woshington

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★ CHARLESTON 2 — The Fountain Hobby Center 200 W. Washington St.

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SIG MANUFACTURING COMPANY • 401(M) SOUTH FRONT STREET • MONTEZUMA • IOWA

R/C Glider Pylon Racing

(*Continued from page 44*)

busting contest, a scale contest, and a distance record attempt.

Active—Getting out into good old California sunshine almost every Sunday afternoon and tromping around in the sand will almost guarantee good health.

All this by taking advantage of the lift provided by the wind blowing off the ocean, striking an embankment about 175 to 190 ft. high. It has been estimated that winds below 7 mph do not create enough lift to fly models over 10 to 11-oz wing loading. We depend upon the prevailing westerly winds (Zephyrs) that blow 14% of the time between 215° and 260° at a strength of 7 to 12 knots, based on a Wind Rose diagram recently acquired by the Society. So you can better understand that life is not the same for members of America's First Radio Control Club Flying Models Without Power, without Zephyr winds.

Ja-Tex

(*Continued from page 17*)

The original JA-TEX, has flown in nine contests, placing in seven, but became lost on the first flight of the 1962 Air Training Command Elimination in one of those Texas boomers that doesn't let go of your ship even when D-T'ed. A second JA-TEX was built and proved to be of the same quality.

By this time, other fliers were asking for plans, and were also having good results. Last year at the Air Training Command Eliminations my twin brother, Roger, nosed me out of first by turning 8:51 out of a possible 9:00 minute total. The following week at the Air Force World Wide Championships, held at Otis A.F.B. Mass, I turned the tables on him and reversed our placings. Three out of the top five places taken there were with JA-TEXs.

Two weeks later at the Nats, fellow Air Force team member, "Tommy" Thompson placed in the top five, showing that this is not one of those "one man's designs."

WING: Pin L. E. pieces in place, notch trailing edge pieces, and pin down with the front blocked up 1/32" as shown on plans. Glue in ribs and tip blocks. Do not put in any spars until after you have put in the dihedral.

Pick wing up off plans and put in bottom spars, using the same type of dihedral joint as shown on plans for the top spars. Pin back down while drying, and glue in top spars. After drying, carve L. E., sand, and gauze dihedral joints. Bright red Jap tissue was used for visibility. Use no more than three thin coats of dope, and be careful to keep all warps out of wing.

STAB: The stab must be kept light, so be careful in choice of wood.

Start by making a template for sliced ribs as shown. After pinning down L. E. and T. E. pieces glue in 1/16 sq. rib bottoms and diagonal braces. Slide four "A" ribs into place on spars, and glue spars down. Next glue sliced ribs on top of the spars, and then glue on tip blocks. After carving and covering, glue in vertical fin and D. T. hook, water shrink and apply two thin coats of dope.

FUSELAGE: Start by cutting out two fuselage sides, pylon, center nose piece and center tail piece from a sheet of light 1/8". Pin down one side, glue in place pylon, center nose piece, center tail piece, and two 1/8" sq. longerons. Glue on second side. Allow to dry overnight. Glue on wing and stab platforms, and 1/8" x 3/8" spruce motor mount. Sand and cover with Jap tissue for strength. Before doping glue on wing tie-down hooks and stab D-T hook. Apply four to five coats of dope.

Assemble model and key wing and stab with split 1/8" dowels. Next slide Jetex Motor and mounting clip along nose to obtain CG as shown. Attach mounting clip with wood screws supplied and mount with no side thrust.

Test glide over tall grass, shimming either the leading or trailing edge of wing platform with masking tape to obtain a soft slow glide, do not change CG. Tilt stab high to the right to obtain loose right circle in glide.

Some modelers use V-Max fuel when testing, intending to use Red Spot fuel for contests. I feel that this is dangerous since the thrust with Red Spot is so much greater. So when test flying your JA-TEX, start with one pellet of Red Spot and gradually work up to all three pellets.

I use no thrust adjustments on the first flight, watching to see if any unnoticed warps cause dangerous flight tendencies. The right stab tilt should bank the JA-TEX to the right in a loose circle.

If it does not circle to the right under power, loosen your mounting screws and twist mount to give right thrust (remember a little goes a long way). If your JA-TEX is circling too tight to the right, use a small rudder tab for left rudder, but *do not* ever use left thrust. The reason being, about half way through your second pellet, your power will almost double, and if your plane is climbing right with left thrust when this happens, it will loop over the top and then it's, "Boys, put on your hard hats." The stability and altitude the JA-TEX will have under full power, depends on its ability to hold a constant power pattern on its way up. If you have this, you can have a winner.

Good luck and happy thermal hunting.

AMA

HOW MANY AMA PEOPLE ARE WORKING FOR YOU? Here's a list of groups and the number of people involved who are looking after your modeling interests:

EXECUTIVE COUNCIL (Top Brass)	13
FINANCE COMMITTEE (Money watchers)	5
FREE FLIGHT CONTEST BOARD	11
CONTROL LINE CONTEST BOARD	11
RADIO CONTROL CONTEST BOARD	11
NATIONALS EXECUTIVE COMMITTEE	4
F.A.I. FREE FLIGHT COMMITTEE	4
F.A.I. CONTROL LINE COMMITTEE	7
F.A.I. RADIO CONTROL COMMITTEE	8
F.A.I. INDOOR COMMITTEE	4
INDOOR ADVISORY COMMITTEE	6
SCALE ADVISORY COMMITTEE	5
HELICOPTER ADVISORY COMMITTEE	5
NATIONALS ADVISORY COMMITTEE	10
CONTEST COORDINATORS	14
	118!

Add Seven more paid HQ Staff members, plus three dozen more volunteers on special and temporary assignments and it comes to over 150 people, not to include several hundred more CONTEST DIRECTORS!

There are over 10,000 adults in AMA and another 10,000 members under 21, including about 4,000 under 16. That's the cream of the crop of U. S. modelers.

There hundreds of volunteers enable AMA to give you the most for your membership dollar. If we had to pay everyone to obtain the services these AMAers provide, the membership fee would easily triple.

AMA spends well over 50,000 dollars a year on model programs, competitions, services, etc. And the more AMA grows the more it can do for you—it's a non-profit organization.

AMA is the only national aeromodeling organization and also the only one authorized to represent the U. S. in International competition.

AMA membership is your ticket to a share in this fine company of modelers and the prestige they uphold, plus the concrete benefits of a competition license, insurance against personal injury and property damage while flying models, a subscription to AMA's magazine, MODEL AVIATION.

PLEASE ENROLL ME AS AN AMA MEMBER for which

I enclose $.....Date of Birth.....

Age as of July 1, 1963 .....

Junior Class (under 16) .....($3.00)

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Membership includes subscription to Model Aviation and free Rules Book. Check main interest:

Radio Control ..... Free Flight.....
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Send to: Academy of Model Aeronautics
1025 Connecticut Avenue, N.W.
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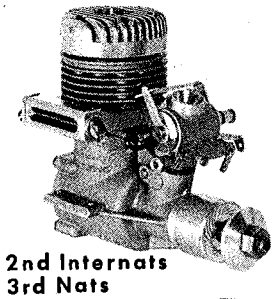
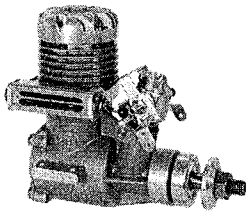
Supertigre



2nd Internats
3rd Nats

S.T. BB 56 R/C. Iron rings. cast alum. piston, chromed sleeve, twin BB, only 1 or 2 oz. over many 45s. No break-in. A real **bomb.** Good idle, **$35.00.**

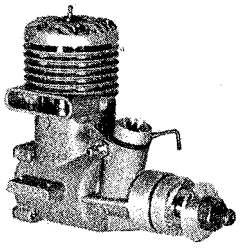
Supertigre



1st Nats

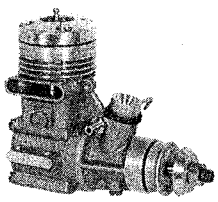
The new ST 46 R/C has duffers shooting touch and go's that couldn't hit the field last season. ST 40 R/C, ST 46 R/C, **$24.98;** 40 R/C, **$21.98;** ST 40 Lap, **$17.98;** 40 Ring, **$17.98.**

Supertigre



ST 35 and 29 BB (G.21 Series) with flat piston racing configuration. The 35 used in combat and RR, the 29 for speed. **$17.98.**

Supertigre



The S.T. 15 BB used in the latest 170 plus mph F.A.I. record. No other 15 (production or hand built) amassed such a string of records and victories. **$14.98.**

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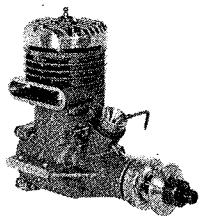

1st Nats

ST 35C PB $13.98; ST 35 Stunt $13.98
ST 19 $13.98; ST 19 R/C $17.98
ST 23 $13.98; ST 23 R/C $17.98
ST 06 Diesel $9.98; 09 Diesel $12.98
St. 15 Diesel $14.98; 15D R/C $18.98

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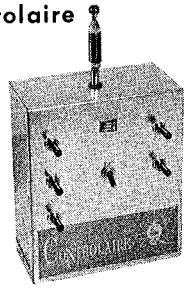

Controlaire 10 Channel Tx. — 9 Volt. High quality dual simultaneous — 2 torroids — moving coil meter. Center loaded antenna. Made in U.S.A. from prime domestic components. Model MTT-10 matched with assebled Rx. **$99.98.** Model UTT-10 assembled but with untuned pots — for kit Rx. **$85.00.**

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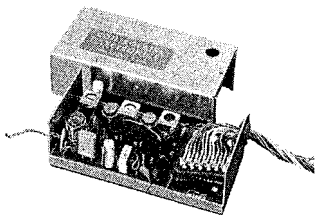

Superhet 10 Channel Rx, Available with Medco reed bank assembled **$79.98** or in kit form **$54.98.** High quality components plus sound proven circuitry insures trouble free operation in either extreme hot or cold. Kit instructions simplified and illus. for beginner

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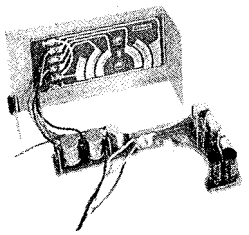

Controlaire 6X Amplifier — fits Duramite servo. Latest version incorporates heavy duty transistors that are rated at 3 amp peak current. Simplified illustrated instructions for a beginner.
Neutralizing $11.98 — Trimmable $9.98

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Jeffersonville, Ind.

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Iowa Service Co.
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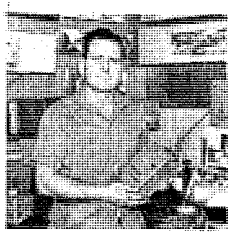

DEALER OF THE MONTH

Pfohl's Auto Service, 2704 Main Street, Anderson, Indiana, is our Dealer of the Month. They win an assembled Controlaire 10 Channel Tx and Rx — a $179.96 value.

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Field's Hobby Center
3184 Bailey
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Lee's Hobby Industries, Inc.
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Hobby Haven
3470 Salem Avenue
Dayton, Ohio

The Hobby Shop
177 Miracle Lane Plaza
Dover, Ohio

Brucks's Radio Service
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Hamilton, Ohio

Kirtland Hardware
Kirtland, Ohio

Glenmore Hobby Shop
Rte. 1
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C and S Hobbies
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Flegel Hobby Service
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Don Mohr's Hobbyland
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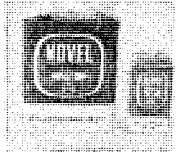

Novel Batteries

67½V BL 145 (XX45)	1.98
1½V Pen Cell	.095
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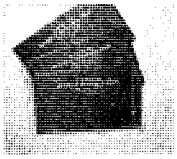
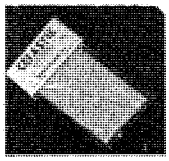
9V Tx S-206 Sm.	.80
9V Tx (306) Lg.	1.40



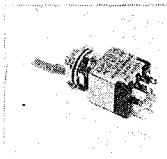
Silk & Glass Cloth

1 Yd. Silk 1.25
2 Yd Silk (white only) 2.50
Colors: white, red, yellow, orange, lite & dark blue, green(fluorescent red.
Fibre glass 19 x 50 (lite) 1.25



Celastic

12" x 16" sheet of tough Celastic, excellent for field repairs. Soak with thinner and apply. Also excellent for new construction. $0.98.



Tiny Quality Switch

Excellent for relayless multi installations where small size and space mean so much.
DPDT $1.59
SPDT $1.19

WORLD

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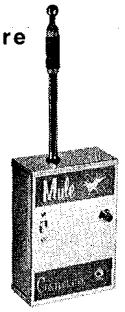
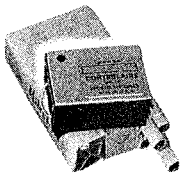


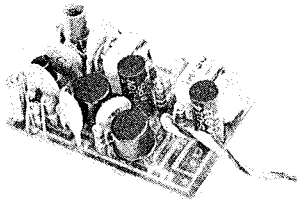
Mule 1 Ch 9 V Tx. (Tone 700 C.P.S.) Named the "Mule" for extremely high RF output. This output the result of center loaded antenna design operating with latest transistors. Special new key switch has good feel for single channel control. **Assembled $29.98. Kit $23.98.**

Controlaire



Controlaire 4, $22.98. Single Channel Relay, S/Regen. Works best on tone signal 500-1000 cps. Swamp-free circuit particularly recommended for **pulse.** Will follow up to about 23 cycles per second. Size 7/8 x 7/16 x 2; 3v. Oper.; Wgt. 1¾ oz. Assem. **$22.98;** Kit **$17.98.**

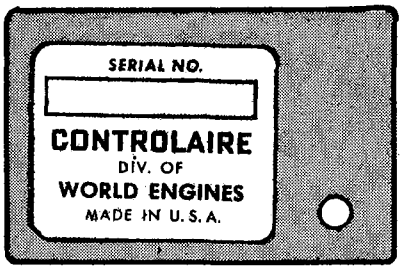
Controlaire

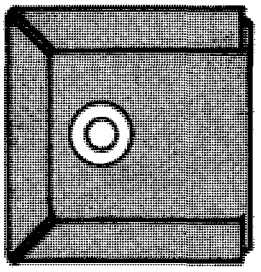


Controlaire 5 — 3 v relayless 1 Ch Rx. Size 9/16 x 1⅛ x 1⅞. Weight ⅝ oz. Circuit board has room for add-on switcher, **$1.98.** Circuit employs more components than avg. relayless Rx which results in more range and thermal stability, less swamp. Assem. **$18.98;** kit **$14.98.**

CONTROLAIRE 6 Ch COMBO

THIS Rx WILL FIT EASILY INTO THE JR. FALCON OR SCHOOLMASTER.

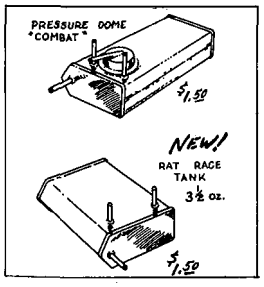




FULL SIZE DWG.

IS IT 6 CH OR 10 CH??

The Controlaire 6 - 10 set includes a 10 Ch S/Regen Rx and a 6 Ch all-transistor 9V Tx. This makes a later conversion to 10 Ch much simpler as only a Tx change is necessary. Incidentally, Controlaire will make such a Tx conversion at a later date for $40.00. The really amazing feature of this Rx is its tiny size. It can be used with one or two servos in any number of really small planes — brings multi flying into your back yard.

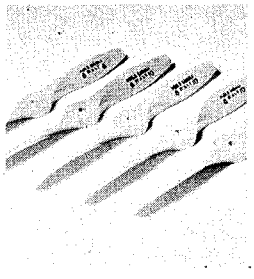


W.E. TANKS

WORLD ENGINES TANKS

A complete line of tanks for every type of U-Control flying. These include special combat, stunt and rat racing tanks. (See World Engines new catalog — 70c). The 4 oz. pressure dome combat tank is available in kit form 79c

Assembled tanks....$1.10 to 1.50



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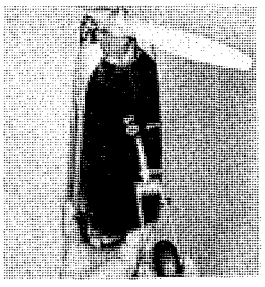
These propellers are made in Italy especially for World Engines. They have an excellent blade shape for speed and are preferred by many speed competitors to any other propeller. At the moment we have the following sizes in stock:

5½-7, 5¾-7, 5¾-8, 6-8, 6-9, 6-10, 7-8, 7-9, 7-10 ....30c ea.
8-8, 8-9 .....35c ea.



BREITEN GEAR

Breiten Steerable Nose Gear:

The above picture shows the new "Quick-Lock" steerable nose gear. To mount — the bearing block is bolted to the front of the firewall with four bolts and completely sealed in the nose block. Struts can be removed or installed in 10 seconds.

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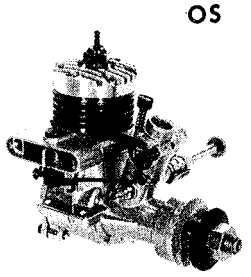
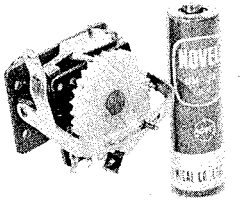


The OS MAX III 19 like the **Max 15** is a favorite R/C choice. Exceptional idle, high power and light wgt. Max 15 & 19 Std. **$10.98;** R/C **$15.98;** Max 19 w/cooled Marine **$15.98.**

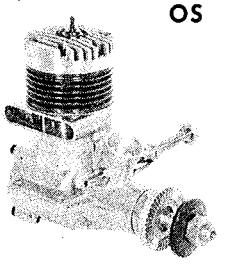
1st Nats

OS



These new tiny **OS Escapements** Wt. ¾ oz., width under 1⅜" — high 10 ohm coil for operation with relayless Rx. Compound **$8.98;** 4 Claw Motor **$5.98;** 2 Claw SN **$5.98.**

OS



Max 35-29 engines are high output and high quality, piston-sleeve feature transfer ports, bushed head for g-plug. Max 35, **$10.98;** 35 R/C **$15.98;** 29, **$9.98;** Max 29 R/C **$14.98;** Max 29 Speed. **$11.98.**

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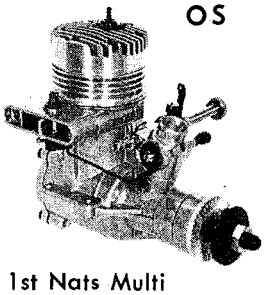
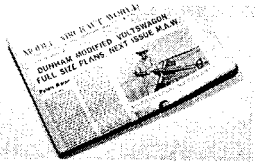


Max 49 R/C, $24.98. Used by Kirkland in his KO winning Beachcomber. A light, compact, BB OS-exceptional low speed. A lapped engine yet one that requires only moderate break-in.

1st Nats Multi



Full Size Voltswagon Plans M.A.W.

Full size plans for a famous multi design like Hartramft's Voltswagon - with the Dunham modifications for only 25¢. Thats what the January issue of M.A.W. costs. Subscribe to this paper for 2 years for only $2.00 and get all the full size plans. We have some real good and interesting designs coming.

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Engine Review

(*Continued from page* 30)

ened. So far as the cylinder and head are concerned, close scrutiny is required to detect any departure from the original, distinctive, Fox design, with its deep finning and side mounted plug.

Progression, from the original disk-valve, spark ignition motor to the present model, has been in several stages. The first major change came in 1951, following the switch to glow ignition, and the abandonment of the original backplate assembly with its disk rotary valve and spark timer assembly. This was replaced by a new backplate and downdraft carburetor feeding through a 5/8-in. diameter drum type valve rotor. A new piston and cylinder assembly was also adopted and the original bore and stroke combination, of .937x .860 in., was changed to .920 x .906 in. In 1954, a change was made to front intake, plain bearings and a shorter, stronger crankshaft. In this form, the engine was accepted, by the U.S. Government, as a power unit for R/C target drones. So far as the model market was concerned, the .59 was aimed at the U-control stunt flyer, but, with the Fox Stunt .35 already firmly entrenched as the world's No. 1 C/L stunt engine and with practically every leading stunt ship designed around the 35, the 59 clearly had an uphill task in competing with its smaller brother and, with demand for other Fox motors growing, production of the .59 eventually lapsed. Four or five years later, however, it was becoming apparent that the market was ready to accept the .59 again. In C/L stunt, .35 models and their pilots had now reached a stage of such consistently high performance, that many experts were turning to larger engines and larger models in an effort to break the deadlock and find some advantage. In R/C, there was clearly a market for a good throttle-equipped motor of larger displacement than the popular .45-.50 cu. in. class. At this juncture, Duke Fox took the .59 out of cold storage, began working on it and reintroduced the motor in the summer of 1962.

The crankcase is a lightweight pressure casting embodying a cast-in bronze main bearing. It has beam mount lugs, located 3/16 in. above the center-line, and a large rectangular exhaust stack. The hardened steel crankshaft has a 9/16 in. dia. journal and a 7/32 in dia. solid crankpin. The crankweb is of the full disk type, with machined-in crescent counterbalance. The intake passage, through the shaft, is bored 0.400 in. and is fed through a rectangular valve port, 0.475 in. long and giving a 180 degree induction period, timed approximately 55-55 degrees.

The cylinder is also hardened and has integral cooling fins. An unusual feature is the witdh of the exhaust port belt. A width covering 180 degrees of the cylinder circumference is the usual maximum. On the 59, however, the exhaust ports extend around the cylinder for 210 degrees. In accordance with usual practice with ringed piston type engines, the actual port area is divided up into six rectangular port with vertical guide bars between. Bypass port area is divided into three ports and is exactly half the exhaust area. By our measurement, the exhaust ports remain open for 128 degrees of crank angle and have only a short lead over the bypass port duration which is 118 degrees. The cylinder is topped by a deeply finned die-cast head, carefully shaped, to form, in conjunction with the flat crown piston, a smoothly contoured combustion chamber. The ignition plug (Fox's own long-reach type glowplug) is set in the bypass side of the head at a slight angle to the horizontal. There are seven cylinder screws, four of which serve to secure the head to the cylinder, while the other three, extra long, tie the complete cylinder assembly to the crankcase. Composition gaskets are used under the head and cylinder base flange.

The lightweight piston is machined from a permanent mold casting of special high-strength piston alloy. It has a fairly high (nearly ¼ in.) baffle on an otherwise flat crown and is provided with adequate wristpin bosses hung from the underside of the crown. Two 1/32 in. deep piston rings are fitted. The 7/32 in. dia. wristpin is tubular, full-floating and without end-pads and the conrod is machined from 24ST aluminum alloy.

The throttle system fitted to the 59R/C consists, basically, of a semi-rotary carburetor throttle (coupled to a pivoted exhaust restrictor) with the addition of a separate idling jet having its own needle-valve. In design and operation it is rather different from the usual barrel throttle with idling via air-bleed mixture compensation or automatic needle-valve closure.

The throttle valve itself is a 13/32 in. dia. brass unit, free to make limited rotational movement, as for a normal barrel type valve, but having flats machined on each side(rather than a cross-hole through the center) for air admission. Fuel is fed through the left-hand end of the valve and flow is controlled by a normal Fox spade-tip needle at the opposite end. Fuel emerges through two jets close to this end, both jets being covered when the throttle is in the closed position. The first jet is very small and is intended to function as an intermediate jet, coming into effect when the throttle movement exceeds about ¼ open. It admits only a limited amount of fuel even with the main needle-valve well opened up, due to its very small diameter. The main jet hole is much larger and is exposed only when the throttle is more than about three-quarters open.

The idling jet consists of a small, pressed-in spraybar and needle-valve assembly separately located below the throttle valve assembly. An adequate supply of air, when the throttle is in the fully-closed position, is ensured by a notch in the top rear edge of the throttle valve. Since the engine has two fuel inlet points (for main and intermediate jet, and idling jet, respectively) two fuel lines are called for. However, to save plumbing complications, late model 59R/C's are now equipped with a special two-way fitting attached via one of the backplate screws. This splits a single inlet (from the fuel tank) into the required two outlets to which the carburetor is connected.

The 59 instruction leaflet states that no break-in is required. To a lot of R/C modelers who have suffered the inconvenience of protracted break-in periods, this will be welcome news and we can confirm that the Fox is refreshingly trouble-free in this respect. The wise 59 owner will, of course, take the precaution of giving his new motor several runs with the needle set rich and will avoid turning it loose on an optimum needle setting unless he is satisfied that there is no risk of the motor overheating.

The manufacturer's recommended fuel for the 59R/C is Fox Missile-Mist, which is a medium power mixture rather than a mild fuel such as we normally use for tests of the larger R/C multi engines. Two series of tests were therefore made, one on the recommended fuel and the other, for purposes of comparison with other engines only, on mild fuel of 5 percent nitro rating. Starting characteristics were without complication. We used an exhaust prime for cold starts and one preliminary

flip of the prop with the air intake choked for warm restarts. Good crankcase depression was reflected in the engine's fuel draw ability and running was notably steady.

With 17.5 percent more displacement than the previous largest R/C engine dealt with in our Engine Review tests, it was expected that the Fox would also prove to be the most powerful. Nevertheless, peak power output substantially exceeded expectations, reaching 0.94 bhp at approximately 12,300 rpm, on the standard test fuel, and better than one horsepower at 12,600 on Missile-Mist. It is rather interesting to note that the figure of 0.94 bhp is not merely 17.5 percent, but over 40 percent, higher, although it is also fair to say that many users may not fully recognise the engine's true potential, in practice, since the Fox peaks at higher rpm and, on the usually favored 12x6 prop, rpm in level flight will still be about 1000 below the peak. Typical prop rpm figures included 7850 on a 14x6 Top-Flite, 9400 on a 13x5½ Top-Flite, 10,700 on a 12x6 Power-Prop, 11,600 on a 12x5 Power-Prop and 13,100 on an 11x5 Power-Prop.

The torque b.m.e.p. curves were unusually flat for an R/C engine. Whereas one frequently finds, very large R/C engines, that torque is very high at around 7000 rpm and then drops off quickly as speed is raised, the .59 developed moderately good torgue at low speeds, but maintained a high level right up to 11,000 or so. This, of course, was responsible for the engine's high bhp at high rpm. One can trace this to the engine's porting and port timing. The late closing of the intake valve, for example, is conducive to high outputs at high rpm rather than a lot of low speed torque.

The R/C model Fox 59's are now being put out with the various throttle controls pre-adjusted. This should help those who find difficulty in arriving at reliable throttle settings, but the throttle is, in fact, quite easy to adjust. Fox mentions that an idling speed of 3500-4000 rpm should be obtainable, which is not so low as the idling speeds claimed for many other R/C motors, but seems to be an honest figure. We obtained safe idling at 3500 on 12x6 and 12x5 props with no difficulty. It was noticeable that, on the most practical prop sizes, response to throttle movement was near-linear. Only when the 59 was loaded for very high full-throttle speeds (over 13,000), did we detect flat spots. On the regular prop sizes, the throttle could be jazzed back and forth, or snapped to full open after a long period of idling, without risk of the engine cutting out. Starting was possible with the throttle fully closed when warm or partly closed when cold.

In all, we were favorably impressed by the Fox 59R/C on test and if they are all as good as our test sample, this looks like a good choice for anyone looking for more power—such as might well be called for in an overweight aerobatic multi or a bulky and heavy scale job.

Summary of Date

Type: Loop-scavenged, two-cycle with shaft rotary-valve intake.
Weight: 12.4 oz.
Displacement: 0.5852 cu. in. or 9.590 c. c.
Bore: 0.907 in. Stroke: 0.906 in.
Stroke/Bore Ratio: 0.999 : 1
Specific Output (as tested):
1.61 bhp/cu. in. on 5 percent nitromethane fuel.
1.73 bhp/cu. in. on Missile-Mist.
Power/Weight Ratio (as tested):
1.21 bhp/lb on 5 percent nitromethane fuel
1.30 bhp/lb on Missile-Mist.
Price: $34.95
Manufacturer: Fox Manufacturing Company, Station A, Fort Smith, Arkansas.

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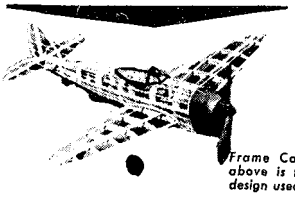
Thousands of U. S. and Allied pilots earned their wings in this famous training plane of World War II. After the war they were outfitted with a 450 H.P. P. & W. engine, and front seat removed for CROP DUSTING which this model does with amazing likeness.



THUNDERBOLT P-47
Kit A-4 — Wing Span 20"
One of the most heavily armed fighters of the United States Air Force accompanied Fortresses and Liberators in destructive attacks on Axis facilities. This model in perfect scale, has operating LANDING GEAR that lowers just prior to landing.

Frame Construction of P-47 shown above is typical of simple assembly design used in all models.

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1959 Winner, All-Westerns

1958 1st Place, Southwestern Regionals

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The editors of MODEL AIRPLANE NEWS think so much of this magnificent model, they featured it in their December issue. And Sterling Models thinks so much of it, they've spared no expense to reproduce it, exactly as designed! Its contest wins would fill many pages! • Construction is entirely of contest balsa wood, especially selected for light, firm quality, and sanded to micrometer tolerances to assure top performance. For smooth precision flights, special jig-type spars **automatically** provide rigid wing support and positive alignment to assure **warp-free** wings. • Features include die-cut full-length fuselage sides, shaped and hollowed full-length fuselage top, probably the longest in any model kit. Crystal clear canopy, wide-tread stamped aluminum landing gear, rubber wheels and hardware included. Special design features such as ⅔ span flaps of new aerodynamic concept, high stabilizer placement, and zero incidence alignment make the SKYLARK first of a new breed of stunt models throughout the world!

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Round & Round

(*Continued from page 25*)

charges us is a slot for somebody named Tiny, who does the typing and proof reading. All magazines have these indispensable lost souls. . . . Fascinating stunt article by Bob Tucker in the *Bulletin* (Tri-City Sky Steelers; John Blum, Sec., 2417 Glen Pl., Granite City, Ill.) suggests ways to personalize your design, including flying tails (recall that a Detroit job—with a flying tail won stunt at Nats around 1950) and enlargement by 25 per cent, to five foot or more spans of popular kit designs, though you might get into 80-foot lines and bigger engines. Results, same issue, of 2nd Annual McDonnell Navy Carrier, indicate 29 entries, with 11 flying 60-class Open Scale, 9 the 40-class Open Scale, 16 the 40-class non-scale, 5 the 40-class Scale, Junior. Novel on-and-off pressure system was flown by Bob Williams, who ran pressure for high speed, switching to outside venting for low. The boys says the 40-class carrier is a comer and recommend AMA support. Non-scale, they argue, is for beginners, and gets them interested in carrier. That's why they plug it at the end of the season. Rat race carrier could be another monster, if you are a purist.

The chances of a parolee making a successful comeback are enhanced when he is a modeler, states W. R. Snedden, Correctional Officer, Model Group, for the California Institute for Men, Chino. Formed as an additional outlet of tension for incarcerated men, the modeling program at the California Institution has doubled in the past two years. Materials, motors, kits and tools are furnished by the inmates from their own funds. Staff advisors or sponsors donate their time after working hours or on their days off. Among outsiders who help are Dick McCoy who has donated Redhead motors, Chino Sporting Goods, Don's Hobby Hut of Claremont, Norton's Hobby Store of Pomona. Ed Southwick (Sterling's new Skylark is his design), Nats third place stunt winner this year, and ex-U.S. International team member, is an advisor whose lectures and demonstrations are looked forward to. Up to 30 men participate in bi-weekly flying meets.

The boys have a meeting and work room, as well as provisions not normally found in a penal institution. Their Flying Fantasy meet in 1962 attracted clubs from as far away as Bakersfield to compete with the inmates for trophies. Rained out, this year's meet was rescheduled for late in the year. Ukie and rubber jobs are built. RC fans are handicapped by high cost of equipment and batteries.

Clubs who say they can't get juniors at their contests might ponder that photo of 30 members of the 40-50 man strong Wichihawks. No less than 22 in the picture are juniors and seniors. Maybe it would help if some of these ingrown groups would widen their interests beyond highly specialized exotic stuff that most kids consider square. Be that as it may, the Wichihawks know how to run a program, and a meeting. A two-hour every-other-week meeting includes a short business period, a time for members to show planes under construction, and winds up with either a talk by some prominent modeler or a 30-45 minute 16mm sound film, and a sound projector, obtained without charge from the film library at McConnell AFB.

Funds are raised by dues and an annual auction. Kits and accessories are purchased, given as prizes at club fly-togethers at the Wichita Modelers Council Park, or as door prizes, thus boosting enthusiasm for building. Big interests are free flight and ukie. Junior and senior members turned out an average of four models each last year. Most members took an active part in the club sponsored mid-summer AAA contest in Wichita. Three went to the Nats—and flew.

"We feel that the active participation by our junior-senior members," states Bud Wilson, pres (6303 Beachy, Wichita, Kan.), "and the methods by which we have attempted to create this interest and enthusiasm, and the attached picture which is 'proof of the pudding,' will be of interest to MAN readers."

After Jose Pardo, in Palmira, Columbia, S.A. obtained an engine for his third-scale Cub — thanks to kind R&R readers, he offered to help Hayes Crotts who asked in our October column about the possibility of modifying the O&R Compact engine.

"I was considering this idea," Jose tells us, "but I cannot see how the power can be increased using Vee belts and pulleys. It is possible to obtain more rpm this way but to make up the difference, a smaller prop would have to be installed.

"I think Hayes can try the following," Jose continues. "Eliminate the blower and blower housing assembly, because the prop can take care of cooling. Eliminate the starter reel assembly. Next, do away with the muffler cups and carburetor air cleaner.

"It is possible to remove the spark ignition system, converting the engine to glow operation. There would be an increase in power but the help of a machinist would be required to modify the head. The volume of the combustion chamber should be reduced so as to change the compression ratio of the Compact from its original 4.86 to 1, up to about 9 to 1, which would improve starting and performance in glow plug operation. Actually, the engine could be used as is, but these suggestions would make it more suitable for airplane use."

The Compact is widely used for R/C boats and holds a closed course record in its class of better than 40 mph (White Heat, by Octura). It is a 1.26 displacement engine developing on gas and oil, ignition, ¾ horse at 6300 rpm. Weight is 3¾ lbs., made up largely of accessories, the blower and blower housing, etc. Heart of the powerplant is a very typical looking, large airplane type cylinder. If only O&R could market an airplane version, we'd have the answer for all those giant scale jobs, etc.

Still more questions on two- and three-line control with engine. It was hoped last month's R&R review of this subject, which included info on significant material previously published in MAN, would ease this problem. W. A. McGarry, why not try Sterling's excellent carrier event kit, the Grumman Guardian (36 in., $9.95). Bob Smurthwaite, who was identified with the commercially offered three-line system, can be reached these days at North Pacific Products Co., Bend, Oregon. . . . thank-you note from Vienna Sky Sharks, Vienna, West Va., for MAN's cooperation on last summer's big two-day meet, which drew 150 entries from 11 states and 8,000 spectators. This 45-member club hopes this will become an annual event in the Parkersburg and Vienna area. When you consider the impact of more than 600 AMA-sanctioned meets a year, and the resulting massive exposure of model aviation to the public, it is realized how valuable competition is to our hobby and industry. Without clubs, modeling would lose a valuable show case. Join a club. Support your club. Start one if you have to.

How good is a McCoy $5.95 .35? Can you make a good engine that cheaply? Well, a recent issue of the Fox Valley Newsletter was devoted to a novel experiment to run a stock version against a hop-up in a Sterling YAK. The stock job ran rings around the so-called hop-up. So, the

hop-up was flown in a Cleveland Nose Cone in a combat turkey-shoot event. Then the club took over and ran the unfortunate engine on all fuels and props until the ultimate was reached—a 7 x 9 prop shattered. Never stand over an engine, warns the writer. (This super rpm stuff is touchy!) The past season saw the same hop-up Mac in a Manx Cat on pressure which it hauls at 75 to 80 mph. Has more compression, starts easier, and seems to be in better condition than before the "acid test."

"Perhaps the high speed running seated the piston and cylinder," guesses editor Ed Jordam.

Since the prop shattered on Blast, reminded of talk with Bill James on this very effect of high speed running. Our own mystery concerned an old Fox .19 which we have to lap about twice a year. It seemed to us that the piston must have been growing. Experts, please come in . . .

To further the interests of Navy Carrier flying in Michigan, the Michigan Model Navy Carrier Committee, consisting of nine representatives from four clubs, established the perpetual Captain's Trophy to be given by the Grosse Ile Naval Air Station to the highest scoring contestant of the year. All AMA members residing in the state are eligible. (George Overby, Chrm., 1551 O'Connor, Lincoln Park, Mich.) . . . San Antonio Gas Model Airplane Assoc. has been running Ringmaster combat and rat races. Recent "standard model" rat race, 70-lap elimination and 140-lap final, took about seven hours to run off, was a big hit. Note that Open in this sore-muscle derby went to a Fox .40 Flitestreak flown by Bob Brown. . . . After June issue *Model Aviation* story on Union, N.J. MAC, the city's mayor requested 8 x 10's of pix to hang in his office. Story was printed through courtesy of MAN who first received the information. Write-up in Union newspaper, by the mayor, was to include notice to kids that they could get modeling help from experts in the club. Publicity pays off . . . Lead-off pic in recent *Flying With the Omacs* (Howard Halm, 920 W. Main St., Ottawa, Ill.) labeled "OMAC's Best in '62" shows 12-year-old Ron Harding and Randy Bon, age six. This club really mixes events—such as a Limbo event where you fly under the Limbo stick which is lowered six inches for each round, to the point of no-make. Handicap point systems give juniors a needed edge. And trainer combat, juniors up to 15, senior and open combined. No pressure or pen bladders. We note that the OMACS go in for picnics and generally well-balanced programs calculated to make the club worthwhile for family interest. Promotion minded too, for they've engaged in two parades this year. In one, the OMAC contingent was led by two guys carrying the club banner, followed by a string of cars with both boy and gal members tossing gliders to the crowd, holding outstanding scale jobs for display. They have built a carrier deck, too. In a week, minus superstructure! In a 4-H parade they started the engines on a B-26 and steered the ship along the street by means of a harness.

Simplified speed contest put on by Westminster Aero Modelers (Randy Smith, Poole Rd., Westminster, Md.) could be excellent *entré* to a good major event. Any engine size, but model must be a profile with fixed gear having at least two wheels. Timing starts with contestant's signal, clocked for 10 laps, 15 feet max altitude. . . . For quick and economical combat and rat projects, see Flite Line Products Sneeker ($2.89), a 35 incher for .19's to .35's—it was a Nats Champ; and Quickie Rat, 24 inches, .19's to .40's, $2.95. They are Riley Wooten designs.

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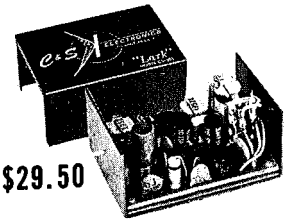

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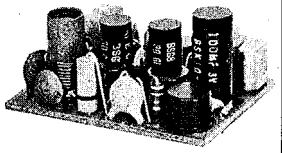

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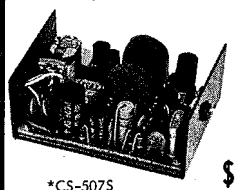

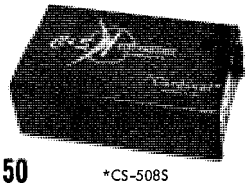

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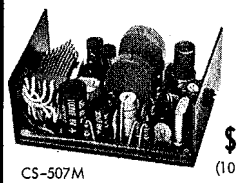

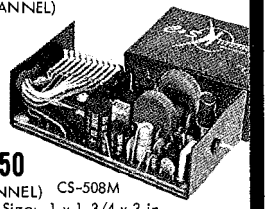

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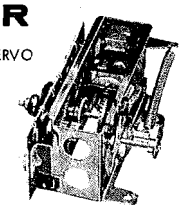

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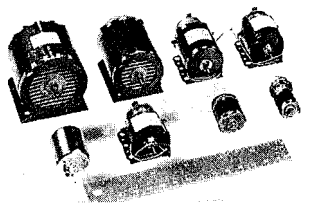

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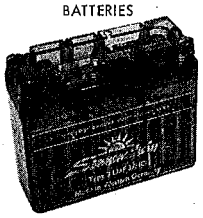

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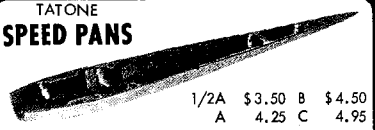

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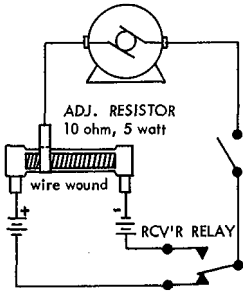

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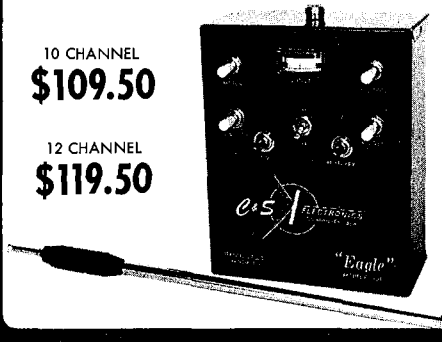

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VTO

(*Continued from page* 8)

only a date, a time and the terse message *Grudge Match At The Graveyard* . . .

A scrap from Alfred Hitchcock's wastebasket? No, the rainout of a club contest. The Winged Motors club of Kansas City has a flying site that is next door to a cemetery. The so called "grudge match" was actually a challenge meet in power, rubber, or glider where any member could challenge a particular event. One flight was to determine the winner. Unfortunately, this meet couldn't be fit into the schedule later and had to be cancelled.

The Winged Motors' past president, Roger Schroeder, reports that after a disappointing turnout (due to high winds) at their Class AA annual contest two years ago, they decided to try some small evening contests to pick up the club treasury. These meets were such a success that they were repeated again last year. The calm evening air makes flying more enjoyable and more club members turn out. The meets are held close to town on a field much too small for a regular contest. Roger heartily recommends this to other clubs as a good answer to the lack of a large site for regular flying.

KNOW YOUR TEAM: When Ed Stoll won his place on the three man U. S. FAI Indoor Team in the fabulous flyoff held at the Santa Ana Air Dock last August, it was another high point in his modeling career. He first became interested in model airplanes at the age of eleven and competed in his first meet at fifteen, which was also when he began flying indoor models. Ed credits members of the Detroit Balsa Bugs with supplying his technical knowledge and starting him in competition.

WWII and a hitch in the service curtailed his modeling activities for awhile and he wasn't able to enter his first Nats until 1949. Since then he has attended several, winning free flight scale three times and Wakefield once, along with a number of seconds and thirds.

A considerable amount of planning went into his FAI Indoor efforts. About the first of last year, he discussed the basic idea of a new design with Paul Crowley and Dick Kowalski. Stoll and Crowley decided to go to the German force arrangement and with the help of Kowalski, who had been corresponding with the Germans, they worked up their own version as shown in the drawing. The model proved very satisfactory, exceeding 26 minutes under a 65 foot ceiling.

Ed qualified in the first two elimination rounds with only fair times. He felt that although his models were flying well the two spar propellers he was using were not as efficient as the single spar props the others were using. When the third round was shifted to the blimp hangar at Lakehurst, N. J. he built three stiff mono spar high ceiling props of different pitches. The results were most promising, first breaking the 30 minute mark (which he hadn't done before) and eventually increasing his times to 35:09 and 36:48. Another factor he feels contributed to the higher performance was that he decided to fly without being over-cautious.

After the Lakehurst competition Ed concentrated on completing another, lighter model, giving him three of exactly the same configuration for the California flyoffs. He also constructed a prop of 35" pitch in case the others of 32" and 38" pitch wouldn't prove suitable. (He ended up using this new prop.)

Much time was also put into preparing rudder motors. Kowalski had made extensive tests covering winding techniques, maximum turns, properties and characteristics of the rudder. Every motor was weighed, measured for potential energy and prewound to maximum safe turns. This was all noted on the motor packages and a master list, so in effect Ed could duplicate motors when one broke or lost its elasticity. He believes this factor alone was probably most important in his winning a team position.

As to the forthcoming World Championships, he reports that both Dick Kowalski and Joe Bilgri have been most helpful in relating their knowledge of building and flying conditions at Cardington, England. Ed is building three completely new models and hopes to refine his present models by making them lighter and possibly changing to elliptical dihedral with tight microfilm. Initial tests will be in the 65 foot Detroit site and then he will make a number of trips to the East Coast to fly under high ceiling conditions. When it's time for the big meet Ed Stroll will be well prepared.

2/3 FAI: The First Annual Buckeye FAI contest at Reynoldsburg, Ohio proved to be an experimental success according to our informant, Bill Bogart. In order to keep ships on the field, make chasing easier and permit entry into more events per contestant the 2/3 FAI idea was conceived. Engine runs were cut to 6.7 seconds, Wakefield motors reduced to 1.2 oz. and Nordic towlines tied off at 105 feet. Maxes were set at 2 minutes and turned out to be no easier to get than a 3-minute max under regular rules.

75 minute rounds were used, with 60 min. for official flights and 15 min. for test and retrieval. A large status board presented running results and included a clock indicating official time of the day. Another section of the board indicated round start and stop times.

The contest was held on an airport and went smoothly, with full-scale flying kept to a minimum by prior agreement with the owner. Whenever an aircraft indicated a take-off or landing a red flag was run up high above the status board to halt moled flying and the clock stopped until the field was clear. Then the green flag was raised. A yellow flag was put up during the 15 min. interval between rounds, indicating no official flights.

BEGINNER'S CORNER: Since the height of the Indoor season is upon us, it seems appropriate to pass along some of the advice given by Charlie Sotich (of Chicago) in the *IMAC Newsletter* on getting started in Indoor:

"Indoor models *are not* difficult to build or fly. Before starting, however, it is a good idea to learn as much as possible about the sport. Read all the articles available on the subject. If any indoor flying is being done in your area, go and watch. Look over the models (*but do not touch*) and also the boxes they are transported in. Most indoor flyers are willing to answer any reasonable questions you may have. If you can arrange it, try to watch someone actually build a model. By observing, many of the questions that would arise when you start work will already be answered.

"Which kind of model should you choose for your first attempt? If you want something that will be capable of reasonably good duration, steer clear of very small models and ultra-light construction. Small models are usually much trickier to adjust, and won't do as well as a larger model time-wise. If, on your first few planes, you build very light some part will invariably be too weak and will break before the model can be flown much.

"Make sure the model is strong enough. Even if it is double the weight of some design you are copying, don't worry. It is surprising how well a heavy model can do when properly trimmed. However, a record should be kept of the weight of each part before and after covering. This will allow you to replace the parts that are heavier than need be after some experience has been acquired.

"Covering with microfilm is much easier than with condenser paper, and is also much lighter. I believe it is wise to buy a good grade of ready mixed microfilm rather than try to concoct your own solution. This allows you to concentrate on the techniques of pouring the film and lifting it from the water. A commercial film used in accordance with instructions, is not likely to cause trouble after it is on the model. Some home mixed films will keep shrinking indefinitely, causing hopeless warps. Microfilm should be made before starting anything else, to allow it to age several days before it is used. Make a lot of film in the event it is necessary to patch or replace damaged parts.

"The heart of any indoor model is its propeller. When you start constructing the prop take lots of time and do the best job you possibly can. If the model is a copy of a record setter or a contest winner, it is a good idea for the neophyte to make one or two extra props. They should be smaller in diameter, have less pitch and less blade area than the original. This will help insure that the model has the necessary thrust to care for the extra weight.

"While a fancy wooden box is nice to transport models in, cardboard boxes will do adequately. Make sure the side which opens overlaps the mating side to keep out any drafts. It is a good idea to put some protective finish on the box to be safe against moisture."

Charlie adds that the most time consuming part of indoor building is making templates. He suggests that several modelers get together and make up one set of templates that they all can use.

NOT TOO SCALE: Paul McIlrath (of Cedar Rapids, Iowa) who wrote the above titled article on semi-scale flyers in the June '63 MAN, sent us a beautiful color shot of his latest job, Morane Scout. Scale outlines came from old plans by Steve Ward, and general modifications were made as per the article's recommendations. Strictly an old fashioned rubber job, the ship spans 33 inches. Fuselage diameter of 4½" makes it a real fistfull. The only modern feature is the 3/2 gear ratio between rubber motor and prop shaft. Model flies 30-40 seconds, hand wound.

ODDS and ENDS: 293 contestants attended the Third Annual Free Flite-Arama held at Taft, California. The two day meet had 12 events including one for *night flying*. The old master, Joe Bilgri, won Unlimited Rubber and set a possible record with a time of 30:52. At this same meet, Judy Grigsby won Sr.-Op. ½A with a possible record time of 31:02.

The Airplane Goes to War

(*Continued from page* 22)

craft as they encountered. True a few daring souls tried using carbine and similar light weapons and Major Lanoe Hawker actually shot down two German planes with such a weapon—a deed for which he received the Victoria Cross, highest British military honor. As we shall see in the next installment, the first armed single and two-seat fighters first appeared in 1915 and from thence on the war in the air started with a vengeance with all combatants striving for the mastery of the air. We shall follow this fascinating struggle to the end of the war, showing all the more interesting warplanes developed between 1915 and 1918.

Flintstone Event

(*Continued from page 29*)

on rudder—that is, the maneuvers are not the result of control applications, but the uncontrolled results of other maneuvers. Purposeful instability is the pilot here, not the human. The loop, for example, is performed by an airplane which is badly out of trim at speeds above its normally low-low cruising speed. After velocity is built up in a spiral, the ship is not directed into the loop, but is allowed—rather is not prevented from—to enter a 360-degree zoom on its own to dissipate the excess airspeed.

Here is ballooning carried to the Nth degree. Many factors in the design are bent to accentuate the zoom. The wing is flat-bottomed and thick, with an atrocious Center of Pressure travel. The decalage—angular difference between wing and stabilizer—is greatly exaggerated. Stabilizers are small. A designer introduces the maximum of ballooning that his particular skill is capable of handling with an assist from a three-position (now variable position) throttle.

Unless well throttled back, the airplane has no penetration, and what it has, when throttled down, is extremely limited. If the engine cannot be throttled (failures are common place), the best flier is in deep trouble. The average flier, too, has his moments after a loop or even an abrupt turn into the wind when his throttle work is not sharp.

The defeatist rules for Class 1 that went into effect June 1 do not alter the basic concept. The function of Rudder is determined by the Class 1 dictum that the craft is to be controlled only about one axis—the yaw axis. This, of course, means rudder. Not ailerons. And it is interesting to speculate how a machine not controllable about its pitch axis can legally perform a loop. There's a loop alright, but show us how the pilot directly did it.

What the rules did for Class 1 was to open the door on equipment. You can wiggle that rudder with a 12-channel rig, if you wish. A four or a six will work a servo on rudder for selective control (pulse by beeping) plus positionable throttle. Since the airplane remains basically the same, except perhaps for natural adjustments in size and power, poor old rubber-only would appear to be becoming more specialized than ever.

But most amusing is the lack of fear among both escapement and proportional men who say of the multi characters, "Let 'em come." For the rubber-only is such a mixed-up kid already, that they do not believe reeds and the selective servo have an advantage. No matter how you slice it, you still have to stay aboard that red-eyed RO bronc until the bell rings—or turn chicken while running your stunts. Actually, the rules were designed to stop arguments and contest protests, and not to help the forgotten sport flier.

So what do we propose? Simply this: kick-up elevator. Not full elevator as in Class 2 and 3, just kick-up—or the possible choice of kick-up or kick-down. There are other possibilities for rejuvenating RO, but we'll settle for just this one.

Possibly the fact that many pulse people regarded escapements plus kick-up—which is a cinch to build and fly—to nullify the natural advantage of proportional rudder which allows handling hotter ships with better control, has motivated resistance to kick-up. But kick-up additions to pulse rudder have appeared in the magazines lately. Kick-up—or down—is feasible for either system.

By limiting the kick-up feature for one direction of elevator movement, Class 1 remains less capable aerobatically than Class 2. Also, there is no simul. Considering the tens of thousands of escapements with kick-up—and other—features being sold to beginners and sport fliers, those guys we thought protected by rules which actually required greater skill every passing season, now are able of performing stunts, such as loops, by pilotage. If they win it would not be because they had devised a more unstable airplane than anyone else.

Since airplanes would not require built-in zoom potential, we no longer would have to construct ballooning fools incapable of decent windy weather performance. More stable, more controllable ships would be possible—ships which would go where you want them to go, without gyrating wildly all over the sky while the pilot fights to regain the upper hand. Excess power—a constant threat—no longer would be needed for stunts.

Better airfoils could be used. Stability could be enhanced. Cruise performance would be improved with genuine penetration, not unwanted Otis elevator climb. Sink on low motor with improved design would be steeper for easier touch-and-goes, without needing a pint-sized rock of a crate. Two-position motor—even by an auxiliary escapement—would suffice. The 15-powered machine would fly faster upwind, and would be less of a homesick angel, than present 19's to 35's. General flying skill would not be eliminated either. The payoff would be on precision, through pattern and stunts, not for bronc busting.

Airplanes would not be limited to the 1950 concept which is the archaic looking cabin job of today. Why should Rudder, or Class 1 be penalized for all eternity, whereas Class 2 and 3 are granted freedom to develop? Lack of artificial restrictions has made multi the tremendous sport and enjoyable contest event it is today. Sure, flying skill is required, but this is the kind of skill we should reward, not some freak skill for riding a unicycle while standing on one's head.

It is difficult to make a shoulder wing today that will compete in Class 1 with a cabin model, other things being equal. It probably is impossible to build a long wing that would stand a chance against the drunk-driving cabin models. What a shame. Both shoulder and low wing would fly very well and permit a refreshing option in the types of ships you can fly. The good effects would be felt, via kits, right down to the grass roots, for airplanes should be interesting if the movement is to grow.

It probably is unnecessary to limit the kick-up elevator area because if the elevator must enable to loop, nothing further would be gained by making the elevator bigger than required for this maneuver. Whether or not kick-up should be limited is a fine point. A small or limited elevator, for instance, could recover the ship from a dive or spiral, then execute a loop. The unlimited elevator would permit loops from level flight. Probably there should be no restriction.

The flat-trimmed ship with kick-up is a pleasure to behold in high-motor, so good, in fact, that you can fly up a storm around pylons. Why, then, an optional kick-down? By holding down for a dive, a loop can be performed, though this is a reactionary stunt, true. Or you can go inverted from level flight by performing a half outside—from whence a flat-bottomed section will remain inverted for as long as down is held—provided elevator area and movement are correct. Also, it would give more flexibility in designing, and make the event more interesting—you'd have a choice of method, each with

(*Continued on page 62*)

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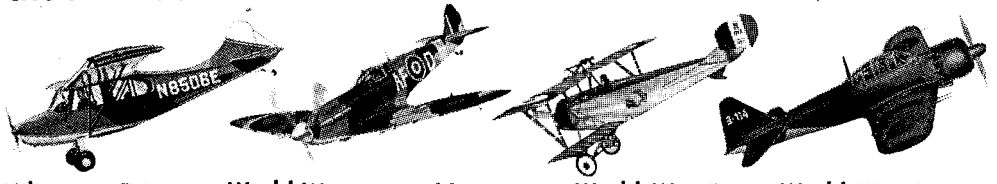

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Flintstone Event

(*Continued from page* 60)

pros and cons, and you couldn't have it all at once.

Ten years ago we watched a sport flier with a Live Wire Trainer. His equipment was the cheapest. The plane was lightly built so that it could be flat trimmed with minimum decalage. In a dive the stab took over ever so slightly. He had a Babcock compound with quick blip for two-position on a K&B 15, operating the elevator in a hold three.

This chap taxied out, turned into the wind, revved up and took off smoothly after a good run. After his pattern he entered a spiral; on relaxing rudder a shallow, steady drive resulted until he took it out with kick-up, holding for three consecutive loops. He rolled it. He might have spun it had he fought it. His touch-and-go was beautiful and the glide right on the spot. He was not an expert. Why can't we see this kind of flying at contests?

For one thing, this chap would have to fly in Class 2, against ships having selective, simultaneous control of everything but ailerons. He would do well, but he couldn't win. He couldn't fly in Rudder where he belonged because he was so well protected by those Flintstone-event rules.

Meanwhile, the whole country may be flying kick-up—look at Willard and those Top Flite kits for just one example. Oh, well, see you Sunday!

(P.S. When the pundits allow an option between ailerons and rudder in Class 2, we'll really be cooking with gas.)

Radio Control News

(*Continued from page* 33)

Future columns will contain what we feel are controversial points, either technical or philosophical. We might touch on the first item, that of what is happening to the Junior member. This problem covers the entire model industry and hobby. Why are there not more Junior members entering contests? And especially, why are there not more at National meets? Are these younger members really getting the help they should from the advanced modeler? You only can tell us and we would welcome your comments.

CLUB NEWS

The EBRC Carrier is one of the first papers to devote space to the AMA-FCC cause, giving a little explanation of same and why there is a need for contributions. Many thanks. Many clubs are now donating money to the AMA-FCC fund and the latest to do so, at time of writing, are the Country Squire Modelers of Norwalk, Conn., and the Crescent City RC Club of New Orleans.

The EBRC's are considering changing their flying rules to permit three flyers in the air at a time instead of two. It should be noted that in some of the petitions submitted by the AMA, it was stated that 5 spot frequencies would be sufficient for sport flying and two for contest work.

Scale is still hitting the news and we hear of a Stuka (Junkers JU-87B) by Mr. Kenneth Bard of the Northwest and Chicagoland RC Clubs. This 68" job was scaled from an original in the Museum of Science and Industry in Chicago, no mean job in itself. Weighing 9 pounds and powered with an ST-56, it is controlled by a Kraft 10 Triple Simul. Seven months abuilding, it has a black Lucite finish over the balsa planking, making it appear like a plastic model. Flying? The first two flights were described as 'hairy,' especially just before touchdown. The tail stalls out and it snap rolls into the ground. Ken is now modifying it by cutting down a little weight and increasing the horizontal stab.

From Sid Voigt of the Baton Rouge RC Club, we received a number of snapshots from their 'King of the Cajun' meet held last July and they are shown in this issue. Doctor Bob Lien, sparkplug (or plug) of the Crescent City RC Club, reported on the manner in which three MAN contest subscriptions were distributed. They went not to contestants but to three of the younger members of the club who did the most to make a success of the contest. With the concern going around the hobby circles as to why more junior members are not active, we feel this gesture will go far in getting and keeping younger hobbyists.

Now hear this! The Saginaw Valley RC Club has voted to pay $3 towards any member's AMA dues and has contributed $25 towards the AMA-FCC fund. What more can we say?

Have no doubts that various 'awards' programs by manufacturers pay off. Don Bryant is the recipient of a Citizen-Ship award by merit of being a winner of several AMA contests and using Citizen-Ship equipment. Flying an original design with a modified Taurus wing, plus using C/S 10-channel gear (CNT-10 and WR-10), Don has won 2nd in multi stunt in Dallas, 1st in multi in Houston and 1st in expert multi at the King of the Cajuns meet. Don is no 'old hand' at RC, having started in the spring of 1962.

A quickie report from the Remote Control Association of Central Florida shows that at their 3rd Invitational they had the following winners: Cliff Nunnery-touch and go, and consecutive loops, Aubry Radford and Bill Brokelhurst-spins, Walt Schoonard-drag and the Spectacular Flying Award to Jim Kirkland. Quite a few Sampey 404 systems were used.

Mr. Chet Tuthill, 101 Westwood Drive, Tullahoma, Tennessee advises that the Coffee Air-Foilers are an all-around club, having a Vice President for FF, U/C and RC. Membership is mainly from those associated with the Arnold Engineering Development Center, the free world's largest aerodynamic and simulated altitude rocket testing facility. Anyone interested in RC, or in any of the other phases of modeling, contact Chet.

Good flight reports and plenty of activity at the one-hundred-and-seventy-four acres field of the Mercer County Radio Society in Pennington, New Jersey. With fields in the East being scarce, this is a flyer's paradise, with the grass mowed close as in a country club lawn. Joe Pasquite is President and Charlie Brushe is Program Director of the MCRSI club.

Mr. Robert Bartuska of Skokie, Illinois has had lots of success with his 6 foot, 10-channel (Orbit) Cub and the 7 foot single channel (Orbit) Cessna 170 sea planes. The Cessna, built in 1954, has about 1000 flights on it, on both land and water. Can anyone top that record for an RC job? Being a member of the Chicagoland RC Modelers, Bob flies these from the club field and from the waters of Lake Geneva, Wisconsin. See Tech Topics for the unusual spray deflectors used on the floats.

The Tropic Aero RC Club of Miami Florida, (this group handles the judging at the King Orange Meet), has two members, Bob Quick and Charles Gray going to Colombia (S.A.) at the invitation of the Colombian Air Force and the Club Aeromodelismo of Bogota. The planes will be lightweight Taurus jobs, weighing about

(*Continued on page* 68)

Foreign Notes

(*Continued from page 4*)

being grooved to assist gas transfer. By-pass timing is very close to that of the exhaust. The engine has a bore and stroke of 14x16.1 mm (.5512 x .6339 in.) giving a displacement of 0.1512 cu. in. and weighs 6.3 oz. Power output claimed by the makers is .36 bhp. It will be interesting to see how the new Mach-11 makes out in competition against the currently favored teamracing machinery, such as the Eta Mk.2, Oliver-Tiger and Super-Tigre diesel.

Great Britain: Britain's No. 1 radio-control engines, the Merco 49, will appear in an optional "bored and stroked" version, known as the Merco 61. Six prototypes were built during 1963 and were flight tested by leading British R/C fliers, including Van den Bergh, Johnson and Olsen. No definite release date for production models has yet been given, as demand for the .49 still outstrips supply and the availability of the new model will be dependent on the factory's ability to fit it into their production schedule. Incidentally, although we described the 61 as being an enlarged 49, it would be more accurate to say that the 49 is, in fact, a reduced 61. When the 49 was designed, the main casting was dimensioned with the possibility in mind of eventually producing a 60 as well. This much we learned in June 1961, when the original 49 prototype was shown to us, but we were asked not to say anything in print, at the time, for fear that the manufacturers would be embarrassed with premature requests for a 60! We mention it now to emphasis that, unlike some "enlarged" motors, the Merco 61 does have the necessary strength built in. Prototype units used ex-Hornet rings and also had the Hornet's stroke (15/16 in. x ⅞ in. = .604 cu. in.). Overall dimensions are similar to the 49 and the engine is only fractionally heavier.

Most British engine manufacturers make their bread-and-butter from small diesels and it is surprising to find that there always seems to be a market for yet another small diesel. Latest to enter the fray in the Z-A .92 (.056 cu. in.), a low-priced item, selling at a little less than $7 including tax. This is a plain bearing shaft-valve radial-port diesel—in other words, the "mixture-as-before."

Australia: Our latest arrival from Down Under, is a new Taipan sport type diesel from Australia's only model engine manufacturer, Gordon Burford & Co. This is a 1.5 c.c. (.09 cu. in.) motor and supercedes the earlier Taipan 1.5 moled from which it differs extensively. The new Taipan is a neat little job, rather heavy for a .09 (3.8 oz) but of really robust construction. The crankcase has both beam and radial mounts and, clearly, is modeled on certain of the Herkimer-OK engines but is of rather heavier proportions. Reduced risk of crash damage was obviously a design consideration. As well as a robust casting and crankshaft, the engine has a replaceable prop stud, hefty needle-valve assembly and even the tank is machined from bar stock instead of being spun or drawn. Thanks to the recent installation of new automatic machinery at the Burford plant, the price of the Taipan is really low by Australian standards. A glow version is also being made.

Japan: The O.S. company have given us the okay to announce the many new models that they will be putting on the market in 1964. We must also emphasize that these engines are additional to the present O.S. motors, which will be continued in production and are in no way rendered obsolescent. Most of the new models have been designed for specific contest uses and will, in most cases, be higher priced than the current range.

The new O.S. Max-R60 R/C engine and Max-S 35 stunt engine, have already been announced in this column (October 1963 issue). The 60 will, in due course, also appear in a C/L speed version. The basic design embraces a twin ball-bearing shaft, ringed aluminum piston and rear rotary drum valve intake. The Max-S 35 is intended solely as a stunt engine and uses a one-piece body casting of crankcase, cylinder-block and bearing housing with drop-in leaded steel sleeve. This model will also be made in a smaller bore (.29 displacement) version, known as the Max-S 29, for sport flying.

The rest of the new range comprises six entirely new shaft intake contest models, ranging from .29 to .50 cu. in. displacement and having ball or roller bearings. These are as follows:

Max-H 29R. For C/L speed. This has a rugged one-piece casting with drop-in hardened steel sleeve and a 13 mm crankshaft supported in ball-bearings fore and aft. It has a pressurized fuel system and a 1¼ in. dia. spinner will be included. Bore and stroke are .7392 x .6890 in.

Max-H 29TR. For team-racing. This is similar in construction to the 29R but has different rotary-valve and cylinder port timing and has only one ball-bearing, the front end of the shaft being supported in a bronze bush. The engine is for suction feed and has a normal type spray-bar and an extended venturi intake.

Max-H 35C. This model has a bore and stroke of .8110 x .6890, one 13 mm ball-race, plus bronze outer bush and a pressurized fuel supply. It is, of course, intended for C/L combat.

Max-H 40RR. For rat-racing. Similar in design to the above, with pressure fuel system but with stroke lengthened 2 mm to increase displacement (.396 cu. in.) to maximum allowed under rat-racing rules.

Max-H 40RC. Similar to 40RR but fitted with new type coupled throttle assembly. Carburetor is of barrel throttle type with adjustable air-bleed. Needle-valve and plumbing are both on left side, clear of throttle arm and linkage on right side. Exhaust throttle is totally enclosed in new rearward-facing extension duct.

Max-60 R/C. For R/C multi. Bore and stroke .9055 x .7854 in. Crankshaft supported in one 13 mm ball bearing and one 13 mm needle roller bearing. Low-expansion, light alloy, gravity diecast piston with two rings. Crankcase similar in appearance to existing Max 49 model. Separate cylinder barrel and head. New throttle similar to type described for 40RC above.

NC-4

(*Continued on page 21*)

NC4 design was born of a collaboration of the finest Navy and Curtiss engineering minds. Each element of the proposed aircraft was designed to do its work efficiently. With exceptionally long flying hours in mind for the transatlantic flight, much care was taken in the design of the large hull and the arrangement of the power plants. Thus this type of aircraft engineering almost guaranteed America a successful transatlantic flight.

The semi-scale, all wood, model of "NC4" should indeed be an interesting and unorthodox project for the free-flight fan. Many features never found in average flying models are used; triple-rudders, twin stabilizers, skid fins, free-wheeling props, and yards of brace-wire. These unorthodox features do wonders to the model's flying qualities. Although the model is extremely stable, each flight on the model is slow, appearing to be in great labor to achieve

(*Continued on page 66*)

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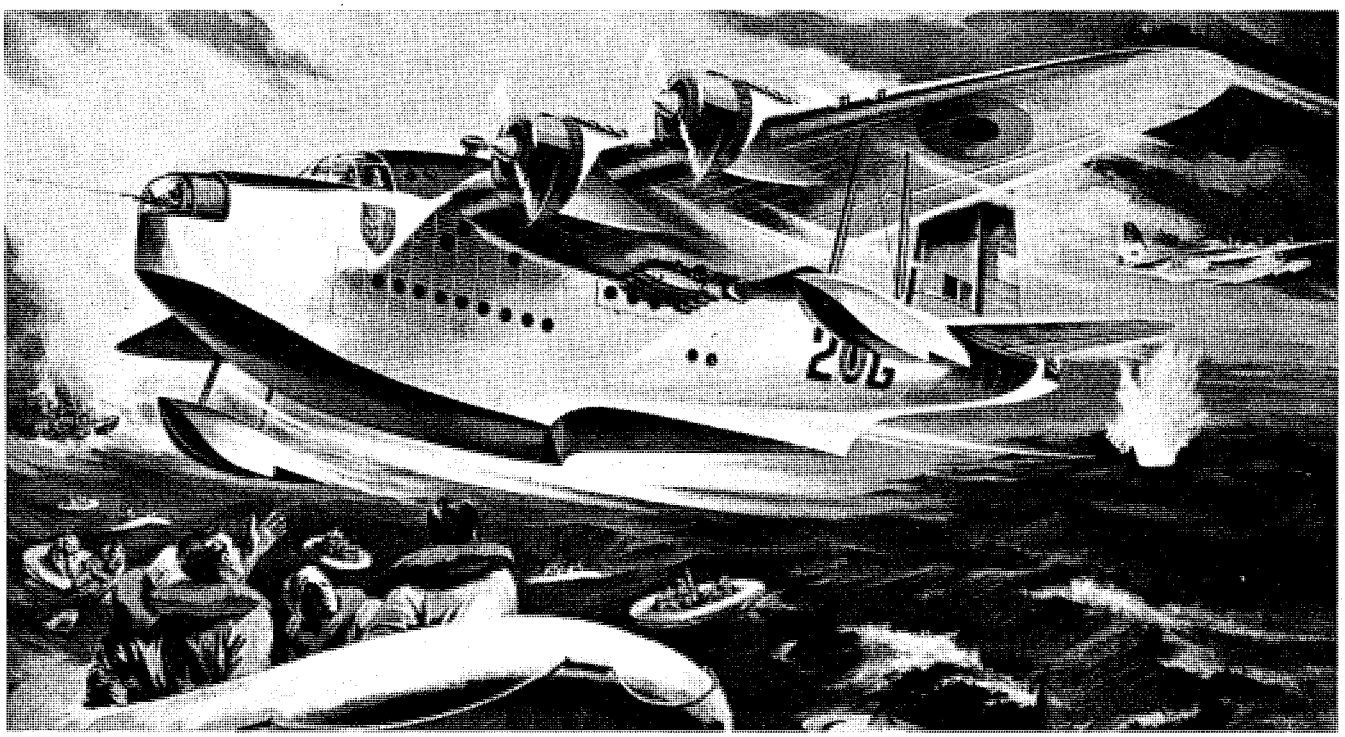
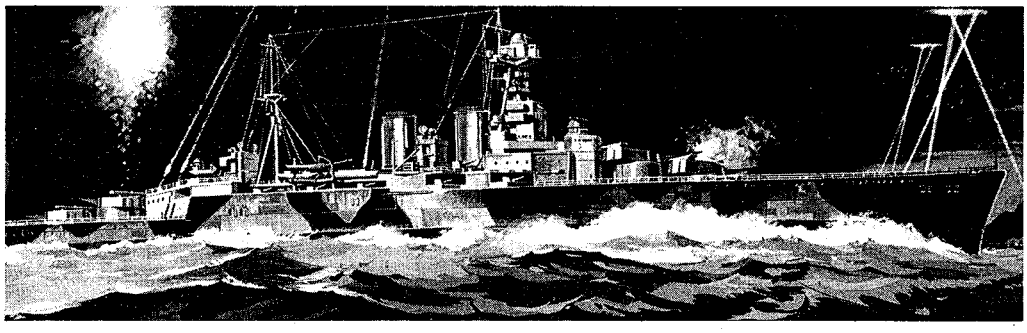
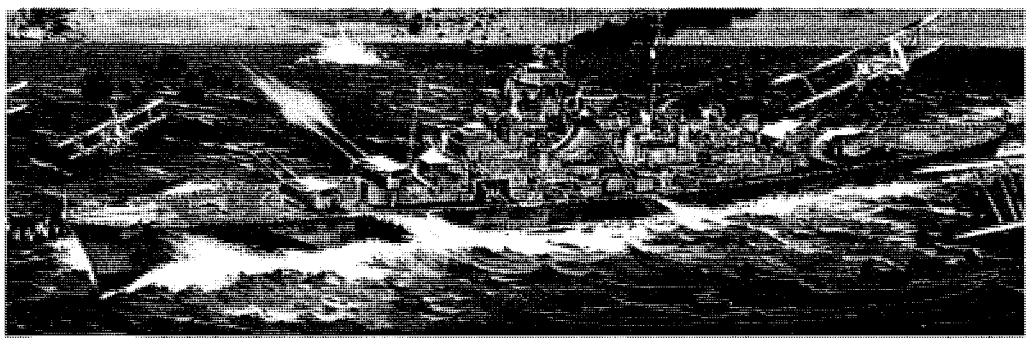


SHORT SUNDERLAND III — The Short Sunderland was one of the most famous and popular aircraft ever to serve with the Royal Air Force. It has one of the longest histories, being in use for twenty one years. Designed as a long-range open sea reconnaissance flying boat to replace the biplanes then in service, the first Sunderlands were completed in July 1938. At the outbreak of the Second World War three squadrons of Sunderlands were operational. As the war continued Sunderlands were used in increasing numbers. Sunderlands were in use on the Berlin Air Lift, in the Korean Conflict and in ainti-terrorist operations in Malaya. In 1/72nd constant scale, this Sunderland model is the largest in the Airfix Line, having a 19" wingspan and a 14" fuselage. An excellent value **$1.98**



HMS HOOD — HMS Hood was laid down in 1915 and launched on August 22, 1918, three months before the end of the First World War and too late to see action. Immediately after commissioning the Hood sailed on a summer cruise to Scandinavia—the first of many cruises between wars. After considerable refitting and rearming, in May of 1941, the Hood joined other ships and a squadron of Swordfish airplanes (available in the Airfix line in 1/72nd constant scale) in pursuit of the German Battleship, the Bismarck. The third & fifth salvo from the Bismarck struck the Hood amidship. Within two minutes she sunk leaving only three survivors **$1.29**



THE BISMARCK — The German battleship Bismarck was laid down in 1936 and launched on February 14, 1939. On the 24th of May, 1941 a squadron of Swordfish airplanes (available in the Airfix line in 1/72nd constant scale) attacked the Bismarck and at least one torpedo hit her amidships. On the evening of May 26th, the Bismarck — alone, on fire and sailing at reduced speed — was sighted by destroyers led by HMS Cossack. Having sustained terrible damage, the Bismarck was sunk. 110 survivors were picked up meaning that almost 1,900 German sailors lost their lives. **$1.29**

AIRFIX CORPORATION OF AMERICA • 421 E. Allegheny Ave., Philadelphia 34, Pa.

NC-4

(*Continued from page 64*)

forward speed.

All block and sheet balsa used in the construction of this model should be of soft or contest model stock, struts and booms of medium balsa or hardwood dowel as indicated on plans.

HULL: Select a soft 1" x 2" balsa block and cut to proper length. From plans, draw in pencil, top and side views directly on balsa block. Carve and sand block to shape, occasionally checking sections "A" and "B" on plans for proper cross-sections of the hull at these points. Since this model was not designed for water take-offs, the hull lines need not be reproduced in any critical or touchy manner.

After completion of hull, check plans for location of the wing platform which should be glued firmly to top of hull. Cut platform from medium 1/8" square balsa. Since the platform will also control the amount of incidence in both upper and lower wings, use care while gluing. The rear of platform should be set even with top of hull, while the front is raised exactly 3/32".

WINGS: Care should be taken in selecting soft, straight-grained balsa for both upper and lower wings. Since both wings are made of stock size balsa 1/8" x 3", only the wing tips need to be reproduced from plans. After cutting wings to shape, sand all wing tips leading and trailing edges to a 1/16" radius. No airfoil section was used other than that formed by rounding leading and trailing edges.

On top wing only, mark off lightly in pencil the center-line of wing and all strut locations. Mark only the center line on the lower wing. Place upper wing directly over the lower wing, keeping center lines of each wing in line. Use tape or rubber bands to hold wings together for next operation of drilling or punching strut holes through both wings. Note that all wing strut holes are 3/32" in diameter, while the center nacelle struts are 1/8" diameter.

After drilling holes, separate wings and check plans for dihedral and dihedral breaks in lower wing only. Cut trim tab in upper wing only. From plans cut to proper length all wing struts from 3/32" diameter balsa. After the dihedral joints have dried thoroughly place lower wing on flat surface, anchoring wing with heavy weight at center line. Using a slow drying model cement, insert all wing struts in lower wing, glue and set struts in top wing at same time. Now with glue still not dried, use blocks to set and hold proper stagger in upper wing. After checking alignment of wings spot-glue top of wing at each strut location. Note 1/8" dowel center-nacelle struts are to be set later.

TAIL UNIT: All rudders (3) and stabilizers (2) are cut from soft 1/16" x 2" sheet. Cut trim tabs in center-rudder and top-stab only, as indicated on plans. Sand all tips. leading and trailing edges. Assemble tail unit by first gluing all rudders to lower stab, then completing unit by gluing top stab to rudders. Properly aligned, allow unit to dry.

BOOM ASSEMBLY: Cut 3 1/8" dowel booms as indicated on plans (2 upper and 1 lower). With wings set on flat surface, jig-up leading edge of lower wing 3/32" with wood shim. Proceed with assembly of upper booms to top of upper wing. Trim 1/8" dowel booms at this point to fit flat on wing, yet allowing booms to protrude parallel to flat surface. In this manner the wings will be set at their proper incidence of 3/32", while the booms and tail unit will remain at 0° incidence. With upper booms firmly in place, glue the complete tail unit to end of upper booms, as shown on plans.

Glue this completed assembly of wing, 2 upper booms and tail unit, to the wing platform of the hull. Now the third or lower boom may be glued in place. Check plans at section "c" to complete triangular truss between booms.

PROPS, NACELLE AND FLOATS: All of these parts should be carved of soft balsa to shapes indicated on plans. Each outer nacelle should be fitted with a free-wheeling prop. After assembly, notch and glue outer nacelle to proper wing struts. Add 1/16" dowel vee-struts from nacelle to wing as shown on plans.

The center-nacelle should be carved to cross section needed for engine to be used. Reinforce plywood firewall to nacelle with gauze. Mark and drill 4 1/8" diameter holes through center nacelle for 1/8" dowel struts. When mounting nacelle on struts, check prop clearance at top of hull. Mount 3rd free wheeling prop to rear of center-nacelle. Add 1/32" sheet skid fins to top of each wing tip.

FINAL-ASSEMBLY AND FINISHING: With model assembled except for engine and brace wires, finish entire model with one coat of silver Aero-Gloss. All nacelles were finished in black. Add heavy, black thread brace wires as shown on plan.

Mount engine to center-nacelle with wood screws. Add shims behind engine to off-set thrust-line for 1/32" down, and 1/32" right. Check the center of gravity position on plans. Lead weight will most likely be needed in forward end of hull for model to balance.

TEST FLYING: Before attempting any test flying, make the following trim tab adjustments. Wing tab down 1/16". Rudder tab right 1/32" and stabilizer trim tab neutral at this time. Check all 3 free wheeling props from binding at shaft. Props must spin freely, for a binding prop on either outer nacelle will cause considerable trim changes.

With engine running all out, launch model fast and straight. In calm air, the model should climb slowly in 300' diameter right hand circles. Model should glide flat but with considerable sink due to tremendous drag set up by flying wires and struts. Make any adjustments needed for climb by bending stabilizer tab. Steep or shallow turns may be adjusted with wing or rudder tabs.

This semi-scale "NC4" model, climbing laboriously slow, with all 4 props turning, will cause a mass investigation by fellow modellers at your next flying meet.

M.A.N. at Work

(*Continued from page 2*)

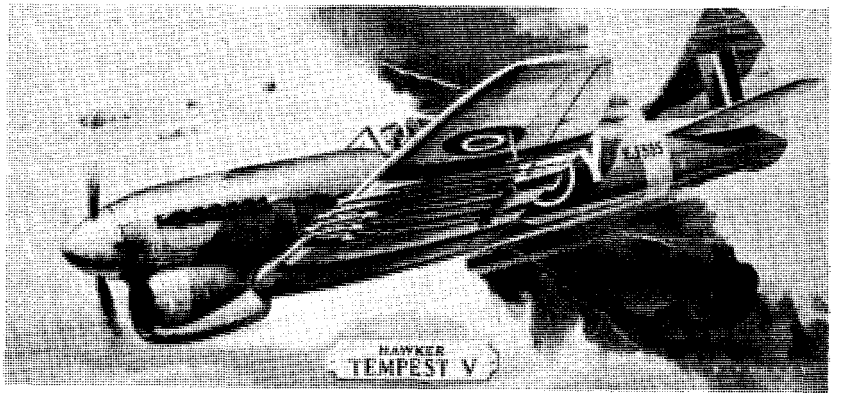
problems. Do yourself a favor the next few times you fly, look around the outside edge of the flying groups and notice the number of young ones that you see each week at this very same spot but never in the air. Pick one of them out and ask him why he or she is not flying. Be sincere and I am certain that you will be surprised with the answer. I know because I have lately tried this very thing and in each case it was some simple problem that kept them grounded and for some strange reason known only to them, they would not intrude with their problem.

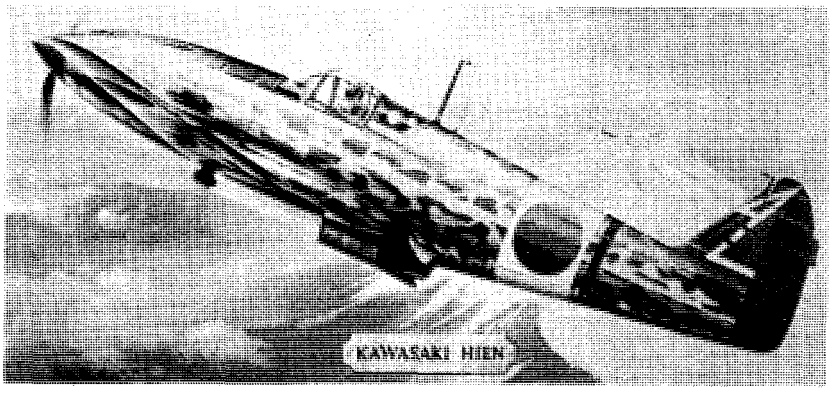
This is not the panacea but it could well be the beginning and without a beginning, it's impossible to consider the whole problem. This is only one thought and there must be numerous better ones but don't keep them to yourself, spread the word and let this be the beginning of spreading the good word. Our few words in recent columns have had results and the following

(*Continued on page 70*)

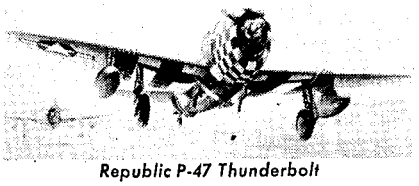
MODELERS! COLLECTORS! WWII FLYERS

YOU'LL WANT TO BUILD ALL NINE OF THESE 1/72 SCALE WORLD WAR II AIRPLANES. ONLY 49¢ EACH

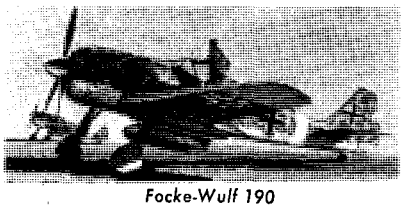




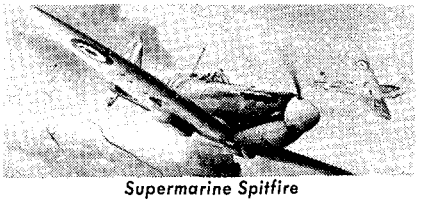
In constant 1/72 scale, these Revell WWII fighter planes are as precisely detailed as the real thing. The props spin, the wheels move. They're easily assembled, so that younger modelers can do a job they'll be proud of, yet the unmatched authenticity of these planes will satisfy the most experienced builder.



Republic P-47 Thunderbolt



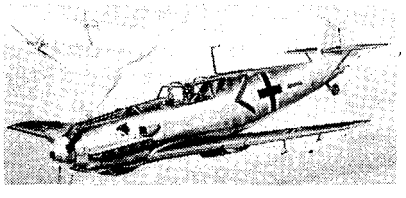
Focke-Wulf 190



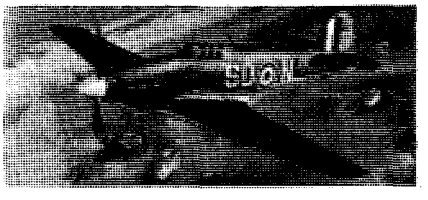
Supermarine Spitfire

Mitsubishi Zero

Messerschmitt Me. 109



Hawker Hurricane



And also, in 1/72 scale
BOEING B-17 "MEMPHIS BELLE"
Ailerons, rudder & elevators move
Gun Turrets rotate
17 1/4" wingspan **$1.98**

Revell
Authentic Kits

Radio Control News

(*Continued from page* 62)

5¼ pounds and using Fox 59's, along with Kraft 10 gear. Said to be real skyrockets at sea level, but then in Bogota they'll start their take-offs at 10,000 feet. Ralph Humphry has built a Taurus fuselage from .016 sheet aluminum. It weighs 20 ounces, with servo rails and engine mounts. A Merco 49 and F & M 10-channel gear complete the installation. Says it looks good and then of course there is no need for fuel proofing.

Just been advised by Ken Borror of the Weak Signals Club that the 10th Annual Toledo conference will be held Feb. 29 and March 1st at the Champion Hangar, Toledo Airport, Toledo, Ohio. For more information, write: "Conference, Box 2864, Sta. B, Toledo, Ohio." See Toledo report in the Dec. '63 issue of MAN.

NEW ITEMS

The last switch in batteries came when the alkaline cells hit the market and prior to that, it was the nickle-cadmium cells. Now there are silver-zinc cells which may open new possibilities for RC use. These cells are not new, but now the price is within reach of all. A silver-zinc cell is characterized as follows: Voltage 1.5v, discharging to zero volt has no ill effects, overloads do not damage it and shelf life in a charged condition is far superior to any other type of cell. We have some 300 mah units on test, and next month will give a full report.

We have had occasion to test and use a number of battery chargers. The latest one tested is the K-F Uni-Charger by K-F Industries, Inc., 230 W. Dauphin St., Philadelphia. This unit is about 2" x 5" by 5½" and has a dual range, 0-125ma and 0-1.25-amps. It also has the highest output voltage of any charger tested, 25 volts. It is well constructed and shows no tendency to heat up except slightly at the higher power settings. A panel meter indicates the charging rate. The only flaw we could find in our unit was the accuracy of the meter and we suggest you make a calibration chart to assure exact charging currents. Typical values, as checked against a meter with 2% accuracy were: (first figures are Uni-Charger, second figures are the standard) 8.5/10ma, 10/12.5ma, 25/26ma, 45/50ma, 75/80ma, 100/107ma, 125/128-ma, 250/235ma, 500/500ma, 1a/1a and 1.25a/1.15a. We feel this is a pretty good unit for $13.95.

Lee's Hobby Industries, has a transistor Monitor available on 27mc for $19.95 and on 6 meters for $24.95. We have not tested this unit but feel that its small size and lack of a large speaker might not make it too suitable for large scale outdoor use (engines running, wind, etc.). What with all the interference though, it looks as if the monitor business is picking up. An other item by Lee's is one that should appeal to every beginner, a low cost, reliable plane installation. This package gives you a Kraft 3VK receiver, a Citizen-Ship SE-2 escapement, a Dubro battery box, two Burgess alkaline cells and a switch, all wired together and factory tested. This kit contains quality components and can even be demonstrated for you by your dealer. No need now to say you can't solder or hope to make an installation. Complete for $19.95.

Broadfield Air Models, Ashland, Mass., home of the Broadfield RC Box, has a RC Wing-A-Jig that takes wings up to 72" in span and with a chord of 6 to 12½", either straight or tapered. Dihedral is adjustable and supports are there for leading and trailing edges. The unit is made of selected hardwood and comes complete with necessary plywood and metal hardware. Acceptance seems to be enthusiastic in the Northeast. For $15.95, you can build true wings and tabs. While we haven't seen this unit at time of writing, we more than appreciate our Fieldbox.

New proportional servos announced by Accutronics Engineering, Linthicum Heights, Maryland. The large unit 'Trio, Model PR301,' consists of three feedback proportional servos for rudder, elevator and engine control, fitting into a 1¾" x 2¼" x 3" and weighing 8 ounces. The Solo, Model PR101 is 1¼" x 1.32" x 2¼" and weighs 2.8 ounces. Thrus over 4 pounds for all servos. Voltage requirements are 2.4v on motor, 4.8v on feedback and .3v for the control (plus and minus). Trio is $120 and Solo is $40. The units are to be used with a proportional system, hence don't rush right out to buy these actuators and then to find that you don't have the receiver and transmitter to match. We haven't seen these units but feel they are a trend, emphasizing proportional equipment. A 'Solo' Model RL102 for relayless reed use should be available by the time this issue hits the newsstands.

Awhile back, we gave a brief review of the Controlaire MULE transmitter, the 9-volt transistor kit version. Since then, we have had a chance to give it a few good field checks. Using it with an Ontario receiver in a Top Flite Cessna, the range was unlimited, at least as far as we could see the model. Easy to assemble, no trouble to adjust and plenty of range in the air.

Royal Products Company of Denver, Colorado, distributors of Silron, now has a line of well-prefabricated plane kits, three high wings, a shoulder wing and a low wing job. We have not seen these imported kits yet, however, photographs of their contents look impressive. They come in two styles; the standard having all-wood pieces cut and shaped to size, the deluxe kit contains all other needed hardware, and in most cases even the wheels. They range from the STAR, a 37" shoulder wing for .049's to .07's at $5.25-$5.95 to the SKEETER, a 42" high wing at $6.45-$7.95 and the 64" HUNTER, a Taurus-like low winger at $20.95-$23.95.

GM Hobby Specialties, Clifton, New Jersey stocks the Micro-Mo type motor by Siemens. The TO-5 size 19/32" diameter, has an integral gear case with reductions of 41:1 and 59:1. This is the same type motor used in some of the proportional gear due to its ability to start on very low voltage. Our 41:1 units checked out at 18ma no load, 40ma light load, 90ma moderate load and 180ma fully stalled with a 2.4v input.

Ace Radio Control also carries the small Siemens motors and by now you probably have noted the price reduction in their K3VK receiver. An excellent receiver for the money, but please note the temperature restriction from 40 to 90F. For the beginner who wants a simple and inexpensive package with which to get started, check Ace for the Ace/Top-Flite Compact Combo. This gives you a receiver, Babcock escapement, an .024 engine, all switches and hardware plus one of the Top Flite Compact planes for $20.95. All you need in addition is cement, dope and a transmitter, plus fuel and batteries.

Received a Citation kit and a Thermic 72 from Jetco. Needless to say, they met our expectations for quality. Perhaps enough has been mentioned on this point but we feel that the majority of kits now offer improved quality over a few years ago. The Citation is a fairly easy job to build and appears to be pretty rugged. The Thermic 72 struck our fancy for RC

(*Continued on page* 70)

MODEL AIRPLANE NEWS FULL SCALE PLAN SERVICE

PLAN OF THE MONTH

2/64 **28A.**

PIPER APACHE: Contest winning scale U-Contro. Two .35s.
JA-TEX: Jetex-powered F/F.
NC-4: Rubber-powered free flight semi-scale.

COMPLETE LISTING

10/58 **51**
AMERICANO: .15 FF, by Blanchard.
BOMARC: Scale, Jetex, missile.
CUTLASS: Sport U/C, .049's.

12/58 **53**
SNAP: Sport U/C, .19-.23.
PELICAN: PAA Cargo, .049.
WINDMILL: FF, 'giro, .02-.049.

7/59 **60**
BELLANCA: Scale U/C, .19-.29.
HALF ALPHA: FF, .049.
DUNWOODY GLIDERS.

9/59 **62**
SAFIRE: Delta U/C St., to .35.
ASTEROID: Rubber and glider.
THE HOOK: Free flight, ½A.

11/59 **64**
STUNTACULAR: .29-.35 Mono-Line.
RAMROD 600: FF, .15's.

12/59 **65**
BUTTERCUP: FF, Scale, .02.
SKY-SCRAPER: Wakefield, rub.
ALTAIR: Rat Racer, UC, .29-.35. Hatschek's Wakefield, tied first World Finals.

2/60 **67**
THERMAL THUMBER: ½A, FF.
HOT TUBE: ½A, Ducted F, UC.
THE LARK: UC Stunt, .29-.35.

3/60 **68**
WORLD CHAMP NORDIC: Towline.
EL BOBO: FF, sport, ½A.
KINGFISHER: U/C, Scale, .05. Nordic is Gerry Ritz's great 1959 winner.

4/60 **69**
PEACEMAKER: .15-.29 U/C Stunt.
EMERAUDE: FF scale, .02.
GYRATOR: .29 Stunt, U/C. Peacemaker, George Aldrich's latest.

7/60 **72**
THE SLIVER: RC, speed, .19/.60.
BREWSTER BUFFALO: Scale, CL, .35.

8/60 **73**
CHANCE VOUGHT CRUSADER: Scale, C/L, Jet.
BUTTONS: .020 Free Flight. Exciting scale liner world's fastest fighter.

10/60 **75**
LIGHTNING ROD: High Performance F/F .15.
MILE MASTER #2: Proto Racer .35.
MAC-FAN-TUM: Air Rider.

11/60 **76**
ALOUETTE: R/C Biplane .19.
JEEP: Free Flight Scale Nationals Winner .049.

12/60 **77**
KRAZY KAT: Stunt and Combat U/C.
TIPSY "NIPPER": Dual Purpose F/F Scale or RC.
SUPER R.O.G.: Beginners hi-performance F/F.

1/61 **78**
FLY ROD: High performance ½A free flight.
MISS AMERICA: Reproduction famous old free flighter.
INDOOR CURTISS ROBIN: Indoor Scale.

2/61 **79**
EINDECKER-111: Outstanding control-line flying scale and beauty contest winner.
GYRATOR: Proover of many helicopter model theories.

*4/61 **81**
"JAY-DEE" FALCON: Trophy winning stunter up to .35.
MAX MAKER: Wakefield National records holder. Rubber. Wakefield '62.

5/61 **82**
HI-THRUST "VIKING": Goldberg ½A Free Flight. National winner. .049 with mod. to .09 (FAI Power).
PATRIOT: A/2 Nordic Glider Contest winner with long record of wins.

6/61 **83**
WIRELESS WIDGEON: Scale R/C for rudder or multi trainer work. .29 engine.
TEE DEE BIRD: First free flight for the Cox .010.

7/61 **84**
VOODOO: Nationals stunt champ.
.35 LIGHTNING BUG: Smallest R/C for .010 engines.
ARROWHEAD-3: Three stunt combinations for .010.
FAMOUS PROFILE: F/F profile of Tri Pacer .020.

8/61 **85**
SCORCHER: ½A R/C Pylon Racer.
LOW DOWN: Class "C" Nationals Indoor Champ.
FAMOUS PROFILES: ¼ & ½A Control Line scale F4-U.

*9/61 **86**
PULQUE: 12/A FF Contest Trainer.
R/C CURTISS ROBIN: ½A Scale Radio Control.
PAA-ABLE: PAA-Load Gas .020.

10/61 **87**
CURTISS TRIAD: Scale Controline .15 engine. Awarded Admiral Pirie at '61 Nats.
PIPER PAWNEE: Super detail. Crop Duster C/L .19 to .29.

11/61 **88**
PHOENICIAN: Contest winning stunter up to .35.
THUNDERBIRD: Unlimited rubber and Wakefield—two models.
FAMOUS PROFILES: Free Flight Scale Stinson 195 .020.

*11/62 **89**
ARADO: WW-II biplane for Multi R/C .35-.45 engines.
CAUDRON: Free Flight scale for .020.
LI'L ZOT: Stunt control-liner ¼ and ½A.

'62 Ann. **92**
GAWN: FAI, .15.
MULVIHILL WINNER: Rubber, Woody Blanchard's GAWN Finest international class free flight.

1A
THE SCHOOLBOY: ⅛A RC by top designer.
ARROWHEAD: Stunt and combat for .049.
P-WEE-B: Hi-performance F/F for .010.
FAMOUS PROFILES: SNJ control-liner for .020.

*2/62 **2A**
STEARMAN PT-17 KAYDET: Excellent scale controliner for .29 up.
FOURNIER AVION PLANEUR: Free flight scale by Walt Mooney—.010, .02 and electronic.

*4/62 **6A**
FJ-3: Nationals Scale Control Line winner—Dynajet engine.
FARMAN MOSQUITO: F/F flying scale rubber power and .010 engine.

*9/62 **7A**
ANGEL: FAI free flight winner for .15's.
CHAPARRAL: National record holder pylon racer R/C .19's.

7/62 **9A**
SEPTAL III: Single channel doubleheader for ¼ and ½A.
A-26 PROFILE: Controline stunter for .19 engines.
STARBUSTER: Free flight contest type by Sal Taibi. .049 engines.

8/62 **10A**
DIZZY BUG: Bob Lauderdale's FAI Speed plane.
WAKEFIELD TRAINER: ¾ size rubber powered trainer.
LONG GONE: Contest winning class B team racer.
HOT CANARY: Hi-performance free/flight for .020 engines.

11A
SUPER TAILWIND: Scale free flight .049 engines.
TWIN'S SPECIAL: Proto/speed contest winner .29.
TOP KICK: Hi-performance A/1 Towline glider.

13A
THE ROOKIE: Multi trainer for R/C. W. Winter.
P-40 COMBAT PROFILE: Good stunt and scale control liner. 35.

12/62 **14A**
U-NAME-IT: Spectacular C/L stunter 35 eng.
FLUFF: Contest winning ½A free flight.

*2/63 **16A**
SLI-FAI: FAI Indoor Contender by Dick Kowalski.
MISS AMERICA R/C: ½A R/C by Bill Winter.
SPARKLER: Co2 free flight.
XA-8: Stunt & Combat trainer.

*3/63 **17A**
SKYSCRAPER: .45 powered Stunter by Bob Palmer.
ROCKET DELTA: Jetex Delta by Larry Conover.
LADYBUG: Sport Free Flight Bipe .020 power.

4/63
X-70: VHTL Free Flight Contest winner ½A and A.
XP-81: Scale Control-Liner .15 to .19.

5/63 **19A**
BEACHCOMBER: Multi R/C proportional and reed. Winner '62.
KOI TOP C.A.T.: Class "C" National record holder and '62 Nats winner.

6/63 **20A**
FAI VIKING: Goldberg's latest F/F contest winner .15.
TARGET & BULL'S EYE: Control line flying saucers for .15 and .010.

7/63 **21A**
NIEUPORT 27: RC multi-scale model. WWI fighter.
SUPER ASTEROID: Perryman's Wakefield and Unlimited record holder/contest winner.

8/63 **22A**
WEEK-END WONDER: Stunt Controliner, easy to build and fly .29.
RED COAT: Wakefield Winner by NEWG and Ed Dolby.
MOONBEAM: Tractor/Pusher rubber model sport flier.
HI-LO DUO: Pair of indoor/outdoor rubber-powered models.

9/63 **23A**
TWIN VISCOUNT: hi-performance multi-twin .25 to .35
BUCKER JUNGMEISTER—Contest winning F/F scale .049 engines.

10/63 **24A**
PAGA TAGA; FAI TEAM RACER; SO. AMERICAN CHAMP .15
CHAMELEON: Semi-Scale Rudder only R/C Make one or three different WWI fighters .15
TWO-BER: Wakefield/Unlimited record holder both categories — real contest winner.

25A
HUGHES H-1 RACER: Control line scale by Musciano.
AERONCA DEFENDER: Rubber powered free flight scale by Walt Mooney.
CORKY: Engine powered soort free flight.

11/63 **26A**
SKYLARK: Beautiful stunt control-line winner, .35 engines.
PUSHDVER: Unusual pusher sport free flight flyer, .020 engines.
FLANGER: Hi-Performance hand-launch glider by Larry Conover.
FAMOUS PROFILE: Fairchild F-24 scale profile free flight.

1/64 **27A**
INTERCEPTOR: RC Multi Stunter, designer calls it the ultimate, .45 eng.
THE MINIMUM: 1/2A Combat simple and fast, .049, .051.

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List additional plan orders on separate sheet.

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ADVERTISING INDEX—FEB. 1964

M.A.N. at Work

(*Continued from page* 70)

that. I do have a suggestion though, which I think would certainly encourage the interest of many modelers. What I would like to see would be a sort of 'Fly for fun' day, put on every year by the local hobby groups in their respective localities. The program for such a day would be first: A rapid-fire flight demonstration of all the types of flying the club has to offer; such as speed, combat, stunt, and so on. When the various types of flying had been demonstrated, each one could be demonstrated in a static display at different parts of the field or building. This display might include a few models of the type, together with the equipment it takes to fly them, so that visitors could look them over. Each display would also be supervised by one or more modelers experienced in that type of flying, to whom the visitors could direct any questions they may have concerning the use of equipment, rules for that kind of flying, and whatever else the modelers might want to know.

"Such an exhibition, it seems to me, could be put on admission free, and if well advertised in the local hobbyshops, schools, flying fields, and wherever else modelers frequent, could not fail to draw a good attendance of fledgling modelers and would be hobbyists. Something like this sure would have been a boost to me when I got started, and could not fail to help others like me also. Your truly, *Louis H. Luth.*"

By now it is quite apparent that many of us are disturbed about the problem of more juniors and as of now I am opening a portion of each month's column as a forum for opinion and/or suggestions and who knows but what we might just come up with an answer.

Been an off and on again sort of month in our personal activities with flying or trying to fly taking up the major part of the time. John's present experiments are with power and with amazing results. An old, standard K&B .29 was converted to R/C with a K&B .35 throttle and intake restrictor and it sure turned over an 11-5 prop with authority. Installed in a Tri-Squire the power flights were a sight to behold, standard free flight contest performance with a straight up climb that would put it out of sight going up in less than a minute. Then vertical rolls (better known as victory) while still climbing straight up, most important is the fact that at all times complete control of the plane was easy, no rip snorting power stalls, no hammerheads but good straight away flight. Also loops from cruise speed were very pretty, just give it full power and consecutive loops until ready for something else, rolls could almost be considered snap rather than the usual barrel rolls associated with rudder only.

It wasn't all fun though as John had tuned and peaked out his transmitter with the antenna retracted with a resultant detuning with the antenna extended. A range check would have indicated this, but who range checks when everything is working well, end result is one Tri-Squire down in the middle of the Kensico reservoir. Never realized just how big this body of water was until we tried to reach an island in the middle with a boat with oars but one broken oarlock. Paddling with an oar is a young man's work not for this tired old man, but we made it and took everything home for a drying out process.

But now this particular bird has developed an affinity for water therefore what is more natural than coming down in the Hudson River. Yep, the following Sunday, old man interference shot him down in the Hudson and with that .29 putting out full bore you never did see such a power spin, splash was at least five feet high and it stayed afloat all of two minutes before it went to the bottom.

So now he is doing the thing he does best, building like mad for the King Orange, hopes to have it ready for first flights by Thanksgiving day and have it tested prior to shipping it off to Florida. Hectic couple of weeks ahead of us, but he seems to thrive on this sort of thing so here we go.

Our sport is pretty much a game of fortune, how many of us have heard this old saying "you lose one and you win one" and how true it is, as tomorrow I have to take off to those New England Hills mentioned in my December opus to pick up the plane that was lost at the New England Championships. A young hunter found it and called us immediately and so here I go again with another Saturday of driving —this was John's Nationals winner so he plans to retire it. Be interesting to see if he does.

Had a couple of visitors go through the office this month. First was Bill James, Sales Manager for the Fox organization. Seems among other things in mind he had an axe to grind—our caption for the picture of Bill, Howard Henry and Carl Perryman on page 16 of our Nov. '63 issue stated that Carl and Howard were finalists in Combat, but made no mention of the fact Bill was also a finalist as he finished third in the event. So here you are old buddy, we have corrected and stated the situation clearly. Glad to set the facts straight as Bill just happened to have a couple of Fox .25's in his car and as the Number One and I hope to continue the power experiments, they fit right into our program. A bit of arm twisting and you can imagine who came out ahead in the deal. Part of the arm twisting included the Playboy Club for lunch so it wasn't too difficult—hope Larry Scarinzi who came along with Bill has had his eyeballs pop back into place.

The Millertown Road Hobby store had a busy month. First we received one of Cox's new Buick Rivieras for gas powered model car racing, and like all Cox products, it is beautifully engineered and conceived and with that .049 Cox powerplant it really moves. Each of the small fry took it to school for "Show and Tell" and needless to say it was a hit. The fold up body arrangement is simple to operate and each was able to display the complete innards.

Straight line racing was quite simple on our hardtop driveway, it was just too fast for circle operation on our hardtop which is a bit coarse after ten years. On concrete it puts out very well, we should see many of these in the future.

Top Flite's new School Master arrived and it's an extremely complete kit—John plans on an eight-channel installation, based on his experience flying the 6-channel original at the Nats. It should prove interesting, will keep you posted.

Vern Kriebel, the VK man, sent two of his Challengers, one for the Number One, the other for myself, here we had excellently cut balsa parts as well as the die-cut pieces, plenty hardware and nose gear and all the other details. Should be a busy winter.

Linwood products sent us one of their new junction boxes and plastic fuel tanks. Claim the tank to be leakproof, will be good if it is as a built-in fuel system is a must with most of the models today.

Had lots more mail will save it for next month—meanwhile why not overwhelm us with Junior forum bit, your letters and opinions are important.

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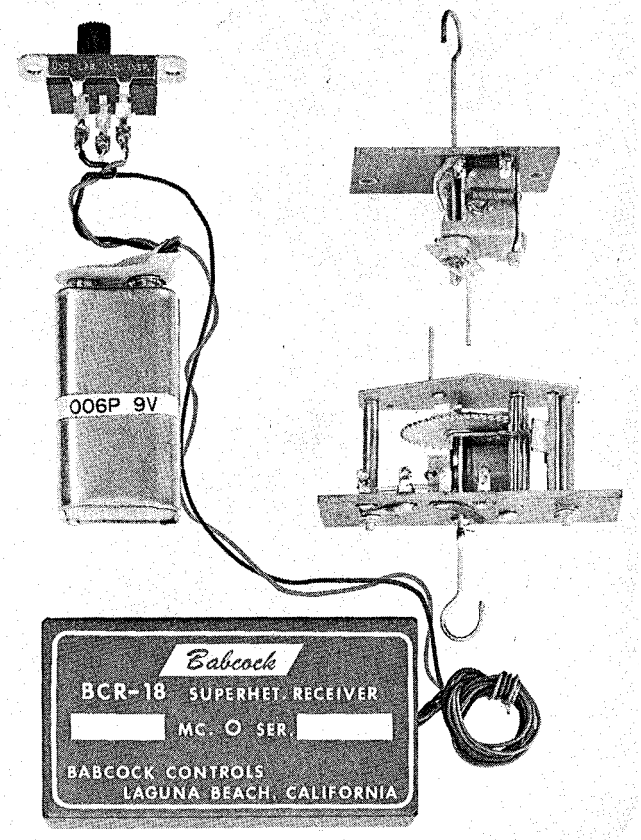

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Super-Heterodyne Receiver and Escapements
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Radio Control News

(*Continued from page 68*)

gliding after reading about the West Coast boys. Only modification needed to convert to RC is to hollow out the pod.

The last item this month is a review of the Butterfly plane kit by Ecktronics. This 36" job is well engineered and with its 'Vee' tail should make an unusual sight in the air. This is for single channel and while the building might be quite easy, it is not recommended for the beginner. Our kit had very good wood and the die-cutting was quite sharp and uncrushed. Plenty of wing area for .049's to .07's, the price is $7.95.

M.A.N. at Work

(*Continued from page 66*)

letters will let you know that there are ears eager for the message. This letter from a 15-year-old indicates their recognition of the problem.

"I am a junior this year and will turn senior next year. (AMA, that is.) I have a few things that need quoting. Just so that you won't think that I am just a crank, my credits this year include placing or winning at the following contests: Longview (3 trophies); Texarkana (1); Houston Prop Twisters (4); Amarillo (2); Southwest Dallas (1); Lake Jackson (3). Most were for combat and rat race.

"First, the question of high speed combat. This is something that I have heard argued about a lot. I attended two contests where regular combat and ringmaster combat was flown. Shreveport and Texarkana. At both contests, more slow combat airplanes were wrecked with more mid-air collisions than in the so-called hot combat. Flying a good fast combat wing is easier than flying the stunt pattern with slow ship.

"As to the BOMB rule, several times this year I had to fly against rat racers that had been flown in open competition. The same plane, pit crew and pilot was used in both Open and Jr. rat race. It was entered by the open pit crew and flown by the Jr. pilot, then re-entered under the Jr. pilot's name. Several times in combat, planes were switched by members of one club to give people in the club that had not been eliminated a better airplane to fly with. Every airplane that I fly in competition has my AMA number on it. It is a rule that is abused at most contests.

"Why eliminate any event. I hear people talk about wanting more Juniors. But cutting out any events cuts a junior's chances. I don't fly much free flight but even I was sorry to see PAA dropped. Sure I am in favor of rat race at the NAT's, but, not at the expense of another event. We can't fly in each event at most contests. We make a choice and fly in those events that we have time for. Why not at the NATs also. Sure I would like to compete in every event at the NATs but I know it is not possible. I'll fly in those events I like best and think I can place in.

"I have said my piece. Hope I haven't stepped on toes. See you at the Dallas NATs. *Sandy Frank AMA 21311, 2933 Blankenship, Wichita Falls, Texas.*"

And then we have this letter from a senior citizen:

"For a few months now, I've been reading about the 'Where Are Our Juniors' controversy, and would now like to throw my two cents into the pot. The whole thing, I think, revolves about that ever-present factor, money. A kid of fourteen gets an allowance of about two dollars a week. Now, whether we like it or not, this is not the kind of money to go into aeromodeling with. I work in a hobby shop, so I know from experience that it takes ten to fifteen dollars to get into the air with a good sized plane (.19—.35). Translated into terms of a fourteen-year-old's allowance, that's about a month-and-a-half without so much as a candy bar or soda to slake hunger or thirst. All right, there's always the alternative source, that limitless (but often reluctant) supply, Dad. Junior drags dad out of the easy chair some Saturday morning and off they go to the local hobby shop, where, in awe of the planes hanging from the ceiling, Junior proudly announces, 'I want to buy an airplane!' The prospective customers are immediately swamped by such terms as 'control line,' 'free-flight,' 'profile,' '½A,' etc. Dad's face begins to pale as prices mount up. '$4 for the plane? That's all right. It doesn't include the motor? Bellcrank? Steel wires? I thought they were strings! What's this 'dope'? A whole pint? Maybe we ought to get the smaller one, Why shouldn't it fly as well? Well, what about that fishing rod I bought you that you only used twice?' You can guess the rest. Junior winds up with a promise, or a 'Wait till your birthday.' Or, maybe, if he's lucky, the cheapest plane in the store, which he immediately proceeds to make a mess of building and wrecks up on his first flight. The junior class in R/C, particularly in multi, to me is a farce. Do you know of any fourteen-year-olds with a few hundred dollars to spare? And as for those who do fly multi . . . with very rare exceptions, do you think they are not 'daddy-sponsored'? (Not so much in the building department, but in the buying.)

"The senior, too, has his problems. He's in high school, dating, going on trips, throwing parties, etc. That doesn't leave much money or time to carry on a full-time hobby. He may fly for fun now and then, but he just doesn't have what it takes to keep up with the full-time crowd. This, plus ribbing from his friends, can cause him to drop out of the hobby altogether. He may return to it ten years later when he's settled down, but as is, he contributes to a lack of seniors.

"Thus, I believe our junior shortage cannot be helped to any large extent. Scheduling of contests with the junior in mind does help (even though you lose almost as many ships in balloon-bust as in combat), but the real secret ingredient is some magic formula to make fathers more generous or airplanes cheaper. Find either, and you're a genius. Sincerely, *Michael Agranoff.*"

P.S. "As to Bill Northrop's solution to the BOMB (builder of the model business), I think his idea is the perfect solution. Giving a model, not flown by the builder, a zero appearance point seems to hit the nail on the head."

Another senior citizen makes an excellent point and he might very well be right as maybe the apparent shortage does not exist:

"It seems like a lot of hobbyists in the older group are growing concerned about the apparent lack of juniors in our hobby. I say apparent because I don't agree that there is such a lack. Just because you don't find them at the NATs or in clubs doesn't mean that they aren't there. I know quite a few enthusiastic modelers, not one of which belongs to any hobby group or club, or even holds A.M.A. membership. The main reason is money. They just don't have the funds to compete with the olders in this hobby. Why pay ten dollars a year for A.M.A. and club membership when that's all you have to begin with? Such a policy would reduce many active young modelers to the status of mere spectators. But anyway, there isn't much that can be done about

(*Continued on page 72*)

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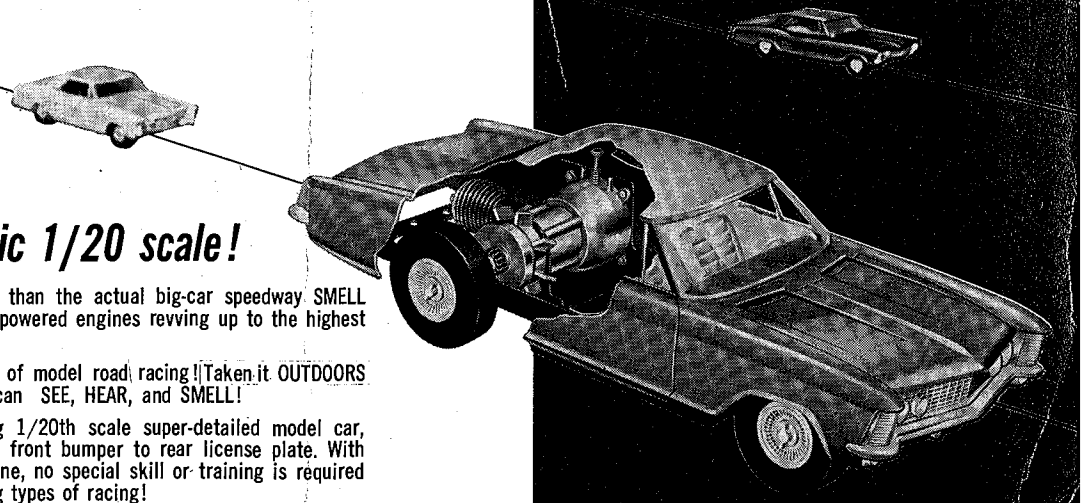

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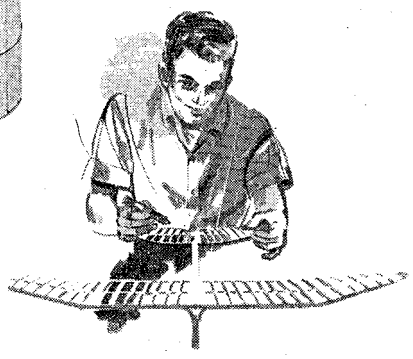

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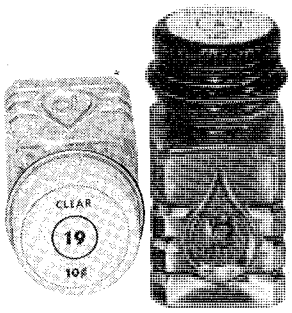

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