RADIO CONTROL

"COMMERCIAL" NEWS

Citizen-Ship Radio Corp. (Indianapolis, Ind.) Model SL-6: all-transistor 6 channel transmitter operates off 9 volts; highly stabilized, circuitry similar to 10-channel C-S; available on all 27-mc R/C spots; $74.95 with collapsible externally-loaded antenna. Matching RL-6 transistorized relayless super-het receiver: 3½ oz, 2⅞ x 1-13/16 x 1"; 9 volts; 5-ma with no signal, 15 with tone; special integral reed bank on epoxy glass P.C. plate; reed frequencies 400 to 600 cycles; $54.95. $119.95 with SL-6. Both plus 3 TNA relayless servos, $189.-95. Model RSH 1-channel relayless super-het receiver: 2 x 1½ x ¾"; 1¼ oz; operates off 3 volts; idles at 5-ma; delivers 2.8 volts to escapement; $34.95. For use with SPX transmitter. C-S combo: TTX transistor transmitter and R/C Pak (includes LT 3 receiver, dual pencell holder, switch and escapement in compact metal mount), $59.95 with PSN-2 escapement, $61.95 with SE-2 (compound) escapement.

F & M Electronics, Inc. (Attica, Ohio, Albuquerque, N.M.) redesigned Matador 10-channel transmitter and matching Midas receiver have stability to 175 F with silicon transistors throughout. New Matador draws 110-ma at 6 volts, gives higher output than tube-type F & M Hercules; $109.50. New Midas operates off 6 volts (as did original); $87.50.

Known for its full-house multi proportional gear, Sampey & Co. (633 N. Lake Barton Rd., Orlando, Fla.) unveils simpler, lower cost apparatus. Starlite 200 transmitter offers 1-channel proportional via front panel lever. There is a trim knob for this, also a motor control button. Sturdy plastic case has Royalite front panel. Single transistor RF section provides 100-mw output to non-loaded antenna. To assure ample range, emphasis has been on modulation system; rig operates over 7 to 12.6 volt range. $59.95 finished; $49.95 in kit. Starlite 200 matching 1.4 oz compact has silicon transistors throughout; with proper RF coil, relayless receiver will operate from 26 to 150-mc. Takes 6 volts. Intended to drive a feedback propo servo, also has circuit for direct escapement drive for motor control or other auxiliary operation, this can provide fail-safe action. Finished, $49.95; kit, $39.95. Heart of receiver is DDM-1 Demodulation Discriminator Module, an 8-gram sealed package that provides plus or minus .4 volts D.C. when driven with input signal range of 1000 to 1500 cycles. DDM-1 separately for application to other receivers, ($12.95). All Starlite 200 control system components compensated for operation from zero to 160 F.

SPAR (for Simultaneous Proportional Aircraft Receivers) at 15302 Oak Canyon Rd., Poway, Calif., offers 2.4-oz feedback propo servo with Micro-Mo motor, operates on 2.4 volts, requires 3.6 reference voltage. Type 1-S for multi operation; samples life-tested to equivalent of 5 flying years by average modeler—over 100,000 operations with 18-oz load. Max output torque, 4-lb; 3-1/16 x 1-5/16 x 1"; $24.95. Similar Type 2-S is for operation without reference batteries. These servos may be used with non-proportional relay or relayless receivers. Special instructions furnished upon request. Other proportional products under development.

Annco Engineering Co. (1830 E. 42nd St., Minneapolis 7, Minn.) items available now only from maker. Servos reduced in price (2R relay type. $7.95; 2RL relayless, $19.95). Annco to have motor driven 1-channel servo; straight line action of output arm like compound escapement, same speed as an escapement, same size as present Annco multi servos, contacts to operate an auxiliary escapement; $8.95 pp. Concern now makes own complete servo motors. Free catalog covers expanded line.

New Dmeco catalog is free from de-Bolt Model Engineering Co. (3833 Harlem Rd., Buffalo 15, N.Y.). Dmeco kits 12 R/C planes, from sleek full-house multi Perigee to tiny ½A Kitten. There are rudder jobs, types for Multi novices, semi-scale models, some for very rapid assembly and top performance. Catalog lists numerous R/C accessories like fuel tanks, canopies, landing gears. Newest Livewire R/C plane kit is the Jenny: not the ancient bipe, LW Jenny is a modern "flat-top" job. Has 600 sq. in. wing area for .19 to .25 power and 1 to 10-channel equipment. Takes two-wheel or trike LG; shoulderwing with radial sideways mounted engine. Fully aerobatic, can be assembled in 24 hours. If ailerons are fitted they are strip style.

Redesigned accutrol servos from Accutronics Engineering (Box 144, Linthicum Heights, Md.); PR 301 Trio is triple feedback 8-oz propo unit for such receivers as the Sampey. Will fit Goldberg's Falcon. Reworked Micro-Mo motors furnish power. Can work with most multi propo control systems, $120. Solo PR 101, essentially one-third of 301, compact 2.8-oz, for wing mounting to operate ailerons; $40.

What hobby source can furnish high quality Sonotone nickel-cad cells? Those sizes generally in R/C xmtrs and models are stocked by Airborne Control Labs (Box 303, Vestal, N.Y.). AA, 1/3C 1/2C, C and D cells range from $2.50 to $5.95. ACL Mark II multi-control propo equipment; detailed brochure is 25¢.

Fiberglass cowls for Bird and Great Lakes bipe made by D. R. Hartman (Argenta, Ill.), who turns out sleek Zeus fuselages. Float and ski kits also available.

High-efficiency motor to operate off several silicon solar cells stocked by Burstein-Applebee Co. (1012 McGee St., Kansas City, Mo.) has self-aligning oilite bearings, unusual 3-pole armature, low drag brushes. In plastic and metal case 1½ dia x 1" long; 2¼ oz; idles at 33-ma on 1½ volts, 400-ma stalled. Well made; $3.95. Firm has high quality surplus foot switch, very useful to control drills, hand grinders, small lathes. DPDT contacts rated at 10A and 250 volts AC; with 6' cable, $2.95.

New connector by W. S. Deans Co. (8512 E. Gardendale, Downey, Calif.) is polarized single row flat style for 8 leads. Compact, light, with insulating tubing for all wires; $1.10 per plug and socket set. Besides 6 (non-simul), 10 and 12-channel transmitters, Deans makes 6-channel simultaneous; all 100% transistorized. Only receiver with front end tube is 6-channel relay style; others are relayless, all-transistor. Concern makes relays in many resistances, reed units from 2 to 12-channel.

Variamp two-range battery charger by Vinco Industries (Box 6506, Long Beach 15, Calif.) operates off 115 volt AC power, has dual range meter with scales zero to 100 ma (for receiver and servo batteries) and zero to 2 amperes. Isolation transformer for efficiency and to isolate battery circuit from line. Transistorized circuit provides smooth variation of output across both ranges which are selected by switch that is also on-off control; slope front case, 4 x 3 x 2¾"; $22.95. Vinco Minimeter has edgewise meter in compact metal case to show RF through antenna, to which it clips. No power is consumed. This is a field strength meter that instead of requiring an antenna itself, measures RF at the source. No batteries needed; meter can be left in place for continuous output check. Also indicates transmitter battery condition (lower reading with low batteries) and if transmitter is being modulated. $10.95.

Looking for a big engine with "lugging power"? Anderson Spitfire .65 available from McCord Precision Products (283 Fulton St., Redwood City, Calif.) as glow plug job, $30; spark ignition, $32. Both have aluminum pistons with two rings. With K&B intake throttle fitted, $5.95 extra. These mills are made up mostly from original Anderson parts, some old castings which were porous have been replaced. Crankshafts have radial and thrust ball bearings; cylinders may be reversed 180 degrees. Engines weigh 13½-oz. McCord has butyrate dope in 10 colors plus black and white, also in four metallic shades. They sell clear dope (in 8-oz cans, pints and quarts), thinner, hot fuel proof cement. Cleaner for baked-on oil "varnish" and other deposits from outside and inside engines, $1.25 pint.

Tiny 5AR super-regen relay-type receiver stocked by Polks (314 5th Ave., New York 1) in plastic case 2 x 1⅛ x 1" weighs 2-oz with cable plug, has socket for latter, on-off switch, plug and jack for test phone. Other than relay, all parts encapsulated, only leads and tuning screw projecting, $21.95. Relayless version available. Pixie transmitter in 3⅝ x 2¼ x 1¼" case is 4-transistor MOPA with crystal control, takes 9 volt battery. Center-loaded antenna 13" long collapsed, removable, extends to 37". Transmitter with battery, $19.95. These are by OS; Polks has all OS escapements: two compounds, one SN. All offer push-pull action for control linkage. Compounds have built-in switching for cascading additional escapements; K2, small enough for .01 planes, $8.98; K1, same price. SN is $5.98. Two mufflers for OS engines: to fit .29 to .49, $3.98; .15 to .19 $2.98. These can be adapted to other makes. Both sizes adjustable for noise reduction with only small power loss. Water-cooling kit to convert OS .19 plane engine to boat use, $4.98. Polks has Graupner Caravelle multi plane linkage hardware (as well as the plane kit) which could be useful in other designs. For $4.95 you get rudder-elevator-aileron horns, 6 adjustable clevises, push rod wire, 3/16" plastic tubing, screws, nuts, grommets, rubber bushings and all other parts (about 70 pieces) to complete full-house Caravelle control system. Many of these parts are available separately. Compact, efficient 5-pole armature Polk electric motor in metal case ¾" dia, 1" long, less shaft, has 14 ohms resistance. Well made PM, 1-oz, idles at 25-ma on 3 volts, stalls at 400-ma. Not a "toy"; $4.95. Polks stocks DEAC 1AH sintered plate nickel-cad cells in packs of various numbers; pair of cells, $9.95. A "sell-out" good for parts is the ED 1-channel receiver and transmitter, $10 with SN escapement; xmtr has single 3A5 tube in large metal

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case (not crystal-conrtolled); rcvr has XFG-1 gas tube.

Latest Aero Modeller and Model Maker Annuals: former is 160 pager with plans for several R/C planes, articles on Lightweight R/C, Dry Cells, Expanded Polystyrene Construction, data on glow plug ignition, engine reports. Model Maker offering covers most everything but planes, also 160 pages. Data on boats, some on R/C for same, data on small electric motors (most available in U.S.), tables on marine glow and diesel engines, weight specs of many woods, sheet and wire gage sizes (including U.S.), threading info. Both published in England by Model Aeronautical Press, available over here from Polks and others around $2 each.

Change in Babcock name and address (Babcock Controls, Inc., 20762 Laguna Canyon Rd., Laguna Beach, Calif.); new items added, some old ones dropped. A complete control system offers instant keying of rudder-elevator-motor control escapements, first two via control stick on new BCT-18 Digitran transmitter which sends necessary pulses to step escapements as required; $39.95. Matching BCR-18 superhet receiver costs same. Escapements are modification of those already in Babcock line, Mark VI Hyper compound (handles R and E) and Motor Minder for throttle. Both transmitter and receiver operate from 9 volts. Escapements are high resistance specials for relayless work off 9 volts. To be dropped: BCC-4 coder, #895 propo servo, #887 boat control unit, BDC-4 2-channel decoder.

Full-house multi Citation kit by C. A. Zaic (883 Lexington Ave., Brooklyn 21, N.Y.) is 62" span shoulder wing plane by John Roth; 740 sq. in. area, for .35 to .45 engines. Won USAF R/C Multi in '61 and '62, originally called Stuntz. Kit has trike LG parts with steerable nose wheel (no wheels included); $24.95.

For R/C beginner is pre-wired, ready-to-install receiver package from Lee's Hobby Industries (2094 5th St., East Meadow, N.Y.): assembled Kraft 3VK all-transistor receiver, Citizen-Ship SE-2 compound escapement, Dubro battery case, knife switch, two Burgess alkaline pencells. Wiring is long to fit most planes up to .19 size: $19.95 in plastic case. Companion piece is Lee's Lightning transmitter, compact to hold in one hand, works from 9 volt battery. MOPA 27.255-mc crystal-controlled circuit, 100% modulation at 650 cycles, 2-piece center-loaded antenna; $23.95. Case mounted quick-blip MC circuit timer, $8 extra. Lee's Rudder actuator, motor driven unit for model boats, operates on 1½ to 3 volts, with potent thrust, drives rudder to any position, holds it till next signal. For 2-channel operation with relay receivers, $9.95.

Multiplex Master proportional system from Glass City Model Electronics (Box 2864, Sta. A, Toledo, Ohio): All-transistor Master Pulsmitter for RF and AF has built-in Glass City motor-driven pulser; parts rearranged from original Pulsmitter for better balance, "horizontal style" case with motor control buttons on end; 6-volt lantern battery for pulser; 9-volt battery for xmtr circuits. Master Multiplex has 3 double-geared Mighty Midget servos plus circuit elements to operate them from output of Master receiver (in separate case). Airborne pack takes four 1¼ AH nickel-cads for servos, four dry pencells for rcvr. Control-connection panel and all parts come fitted with plugs, no soldering required. Multiplex Master affords two independent proportional channels (rudder and elevator, for example) and trimmable MC, via single radio channel thru variable pulse rate and length. Entire outfit with all batteries for both ends of system, a charger to boost nickel-cads from 12-volt car battery, and maintenance kit: $199.95 for superhet version; $174.95 for super-regen. Additional single servo for ailerons (then to operate in conjunction with rudder) may be had separately. Rather high neutral pulse (13-pps) and double-geared servos means control surfaces quiver unseen even at lowest rate.

Superhet receiver kits by New Haven Electronics (579 Royalton Dr., New Haven, Ind.) are all called Telstar-B in 27 or 50-mc versions. Single channel follows 3 to 40-pps at 50-50 symmetry; has arc suppressed SPDT relay; $46.95 finished; $39.95 as kit. Can be converted to 10 or 12-channel relayless reed operation via tiny NHE reed units (which fit same size case as single channel set); 2⅝ x 1-13/16 x 1-1/16"; 10-channel reed job weighs 2¾-oz. Operating frequency set by removable crystal; no alignment adjustment since receivers utilize Clevite filters. Temperature range, zero to 140 F. Works on 3.3 to 6.6-volts, 4.8 being nominal; 1-channel units respond to 400-600 cycle AF range. Dual AGC and AVC permit operation next to transmitter without overloading or blocking.

Dedicated to reliable operation for

those who know nothing about radio, Opal 400 receiver and Mustang I tone transmitter are initial products by Spacetron, Inc. (Box 84, Broadview, Ill.). Rcvr, sealed in light-weight foam epoxy, has been immersed in water then run over by car to test lasting qualities. The 3-volt relayless Opal 400, 2-oz, 1.7 x 1.4 x 0.63", carries two-year guarantee, $18.95; matching relay, $2.95 extra. Transmitter, 7 x 5 x 3", has MOPA tube circuit, transistor modulator; $24.95.

New books from General Electric: Tenth edition of GE tube handbook covers receiving tubes, capacitors and picture tubes, has section on circuits for electronic experimenter; 302-pages, spiral binding, $1.50 from GE distributors or G.E. at 3800 N. Milwaukee Ave., Chicago, Ill. Released by Rectifier Components Dept. is "SCR Hobby Manual", 70-pages for radio amateurs, hobbyists and engineers. Data on how transistors operate in non-technical terms, light-operated switches, silicon-controlled rectifiers and construction projects utilizing low-cost GE rectifiers, transistors and SCR's. Useful info that may lead to understanding of "solid state" functioning; $1 from GE distributors or Hobby Manual (Box A, Auburn N.Y. 13022).

While not active in R/C field, Gyro Electronics (88 Leonard St., New York 13) carries components useful to R/Cers. For example, 105-ohm Radiosonde relays for $2.50, PP.

For operation from relayless multi receivers, RL Fail-Safe by Fly-Tronics Engineering (3010 Brook Dr., Muncie, Ind.) nudges plane engine automatically to low speed, if you fail to give a control pulse for a selected interval. Set for 10 second delay, resistors included for 5 or 15 sec. $16.95 finished; $13.95 as kit. Three other models, for relay-type multi receivers may also be employed with relayless, for 1-channel, and for 1-channel pulse equipment are each $19.95 (no kits). Outfit's Mul-T Circuit Master eliminates "rat's nest" wiring in 6 to 12-channel installations. A 2¾" by 9-5/15" circuit board designed so it can be narrowed to 2" and cut in length without impairing usefulness carries 4 servos, plugs and switches. Extra printed circuit "wiring" is provided for hook-up of flaps, retractable LG, servo overdrives, Fail-Safe, other auxiliary units. Glass epoxy P. C. board was tested to withstand straight-down power crash without dislodging servos or wiring. Perfect for Taurus and other popular planes. Will carry Transmites, Annco, other make servos; $7.95.

Intended for high strength joints, Super Solder by Willoughby Enterprises (14695 Candeda, Tustin, Calif.) has been found fine for emergency field repairs. It will fasten music wire, stainless steel parts, copper; quick repairs can be made with a match. Normally not recommended for electrical wiring, due to type of flux, broken leads to power packs, servos and receivers have been mended in the field. Three foot length of solder is 50¢, plus 5¢ for postage.

Five R/C plane kits by Royal Products Co. (2591 S. Bellaire St., Denver 22, Colo.): Star, 225 sq. in., 37" span shoulder wing for .049 to .07 engines, trike LG; standard kit, $5.25; deluxe, $5.95 with wheels. Cabin mono Skeeter, 42" span, 294 sq. in., high wing, .07 to .10 power, has two-wheel sheet metal LG; $6.45 standard, $7.95 deluxe with wheels. Ranger is similar but larger, 55" span, 540 sq. in. wing, .15 to .35 engines; has steerable tail wheel, working elevator; standard, $11.95; deluxe, $14.95 with wheels, plastic fuel tank. Regulus is 64" span, 656 sq. in. high wing cabin with trike gear, for RME controls. Standard, $17.95; deluxe, $19.95 with plastic tank, sheet main LG, formed nose gear, no wheels. Hunter is 64" low winger for full-house multi; has two-wheel gear mounted in tapered wing, inset type ailerons, Standard, $20.95; deluxe, $23.95 includes formed main LG wire, plastic fuel tank, steerable tail wheel, no main wheels. All pre-fabbed; full length formed fuselage sides. Standard kits include all wood parts, deluxe kits have added plastic and metal parts. Regulus and Hunter have semi-symm wing sections. Royal's N-3PN compact 2¼-oz servo is 2 x 1⅜ x 1", less mounting feet and output shaft. It's "compound" style provides right, left and third position (with neutral rudder) where built-in contacts trigger motor control escapement or servo. Action is rapid and smooth, with power. Silver contact pins ride on P. C. silver plated disc to handle switching. Requires relay-type S. C. receiver; $12.95. Imported motor separately is $4.95, draws 48-ma idling, 150 stalled; ¾" dia, 1" long less shaft. Royal Products stocks well-made wheel hub and brake combo; $4.95. Extensive line of imported dry cells and batteries available.

We omitted address for makers of Accutrol Trio feedback proportional servo recently. Sorry. Accutronics Engineering, Box 144, Linthicum Heights, Md.

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Latest listings from Rameco Products (Box 385, Huntington Sta., N.Y.) includes many small parts useful to those who make their own photo-type printed circuit boards, tone generator modules, coil forms. New Experimenters Circuit Manual contains transmitter, modulator, receiver and servo amplifier circuits, info on filter operation. These circuits, while not construction articles, have been found to work satisfactorily; $2.

Truflite all-transistor, transmitter by Ecktronics (2109 S. Wright St., Santa Ana, Calif.) is in a black hard plastic case 6⅞ x 5¼ x 2⅜" except for batteries which mount on gold anodized aluminum panel. Requires 18-volts, two Eveready #246 (or equiv.) batteries, which slip into aluminum strap holder. Permanent antenna retracts to 3", extends 36" above case top. Outfit provides 100% modulation at 700 cycles; $34.95 less batts.

Plans for his Ambassador, which he flew to 5th place in the 1962 R/C Internats, to 11th at the '63 Nats are available from Don Brown on single sheet large enough to show full 66½" span wing, full fuselage and rudder side view, full stab. Plane has 693 sq. in. tapered shoulderwing, plans show two-wheel and trike LG. Drawn by Bill Northrop, these have plenty of detail for experienced modeler. Designed for Quadruplex proportional, plane should be oke for other propo systems or reeds. Many now flying, most using .45 engines, weigh around 6-lb. Inset (not strip) ailerons are preferred by Brown. Drawings available from Dee Bee Engineering (1102 S. Broadway, Pitman, N.J.).

Basis for low cost battery charger is Lafayette's F-790 "battery eliminator", $2.90 from Lafayette Radio Electronics (111 Jericho Turnpike, Syosset, N.Y.). Intended to operate 9-volt transistor radios direct from power line, also to "recharge" 9-volt batteries from such radios, we found unit will charge four 1.25 AH nickel-cad cells in series at 150-ma max—so it should do fine with lower current cells; it put 50-ma through six VO-500 cells. Unit has line transformer, bridge rectifier, pilot lamp, capacitors across output, comes in small plastic case with battery connectors.

Comprehensive battery manual, $2.50 from Data Book Service Dept., Union Carbide Consumer Products Co. (30-20 Thomson Ave., Long Island City 1, N.Y.), has over 500 pages of info on "dry" cells, nickel-cads, mercury and alkaline cells. Hundreds covered, from tiniest 1½-volt cell up to 510-volt jobs. Each type is illustrated, with service data at various current drains in tabular or graph form. Cross reference tables give Eveready equivalents to ten other makes. One of the most comprehensive battery manuals ever published, invaluable to R/C set designers and experimenters.

Light, compact, powerful proportional servo by Reynolds Engineering (2712 Greenway Ave., Winston-Salem, N.C.) uses T-03 Micro-Mo motor with 60 to 1 built-in gear ratio. Additional gear pair provides reduction up to 240 to 1 for plenty of power and "wiggle free" control action with sufficiently fast surface movement. Servos have been under test for over two years in large planes and small; 1 x 1 x 1½", 1.2-oz. Base is magnesium, centering is by coiled scissor spring; $10.95.