

## The European Space Agency's Ariane

Newest Entry in the World Market for Satellite Launchers

By: Michael A. Banks  
 (NAR #30338)

Early in the afternoon of December 24, 1979, an event took place which may well be considered a milestone in the history of space exploration. At Kourou, French Guiana, the European Space Agency's Ariane L01 launch vehicle rose slowly from its launch pad in the beginning of what ESA officials termed a totally successful test-flight -- the first-ever flight of the Ariane. The flight culminated in the orbiting of a 1602-kg sphere -- a "dummy" satellite which, despite the fact that it carried no transmitters or other equipment, clearly announced Europe's entry into the heavy satellite launching business.

It also marked the end of Europe's dependence upon other nations, such as the U.S. or the Soviet Union, possessing launch facilities. This was one of the more important objectives set forth in the 1973 decision by European space ministers to develop a satellite launcher for Europe. This decision eventually led to the formation of the European Space Agency in 1975, which today functions as an 11-nation consortium.

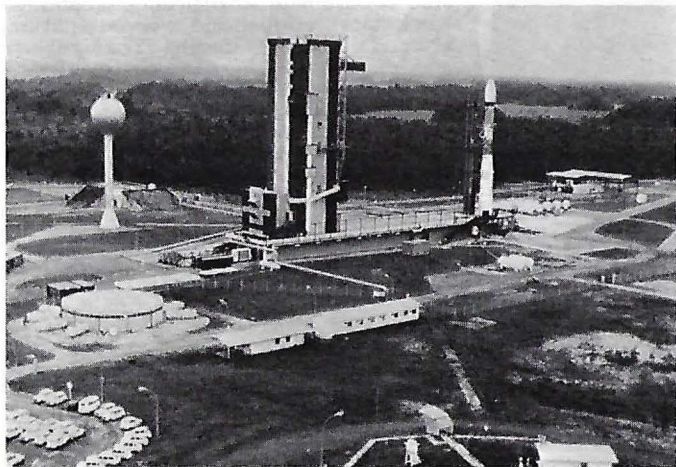
France provides the lion's share of funding for ESA (over half), and is also the prime contractor for Ariane, through its national space agency, CNES. Much of the technology behind Ariane was derived from France's launch vehicle of the 1960's, the Diamant. Ariane itself resembles Diamant only in the fact that both are 3-stage launch vehicles. With a total height of 47 meters and a first stage diameter of 3.8 meters, Ariane easily dwarfs its predecessor. Ariane also has over 20 times the payload capacity of Diamant!

Other "vital statistics" of Ariane include a lift-off mass of 207 tonnes, and a lift-off thrust of 245 tonnes. With the capability of placing a mass of 4500 kg into low circular orbit (200-300 km), or 1700 kg into a geosynchronous transfer orbit (200-35,800 km), Ariane's performance falls between that of the Delta 3914 and the Atlas Centaur.

Ariane's near-equatorial launch site (5.23° N latitude -- North of Brazil) gives it an additional advantage of being able to carry a payload 17% heavier than a similar rocket launched from Cape Kennedy. In addition to obtaining a "boost" from the

Earth's rotation, Ariane can be launched into an orbit parallel with the Earth's equator, without complex midflight course changes such as are required of NASA rockets launched farther North.

All of this, combined with ESA's announced intent and certain ability to provide competitive pricing for its launches, has already attracted quite a few customers. In fact, Ariane's first 6 operational flights (scheduled to begin in early 1981) are already booked and two remaining test flights, in late 1980 will carry satellites.



"The European Space Agency's launch complex at Kourou, French Guiana."

Photo courtesy ESA.



As with any development program, however, ESA's Ariane development has not been perfect. The flight of Ariane L02, May 23, 1980, came to an unfortunate end less than two minutes after launch, due to a loss of pressure in the 4 "Viking" engines of the first stage. But, with only 2 more tests remaining before the operational flights begin, ESA officials remain confident. So confident, in fact, that development of the uprated Ariane 3 (due in service in 1983, with a payload capacity over 50% greater than the current version) continues unimpeded.

Ariane 3 is not the end of the development line in ESA's launcher program. Preliminary projections in the program call for the uprating of Ariane by the addition of strap-on boosters and larger stages in 2 more versions by 1990, culminating in a version capable of boosting a manned space shuttle into orbit. Such a shuttle is still at least 15 years away from realization, but some work has been done on the basic configuration, in which the

shuttle would ride atop its boosters and external tank (similar to the Grumman/Boeing shuttle concept proposed to NASA in the mid-1960's).

ESA does not confine its activities to the launch vehicle business, as important as it may be. Already, 7 ESA scientific and applications satellites are in orbit, and 9 more are scheduled to be launched by 1984. ESA is also participating in the space telescope project being developed by NASA, and in the well-publicized "Spacelab" program, in which ESA's orbiting laboratory, staffed by European astronauts, will be carried aboard the Space Shuttle in one of its early missions. The "Spacelab" concept has perhaps enjoyed even more success than anticipated, as NASA recently purchased a mockup of the Spacelab in anticipation of purchasing a second Spacelab for its own use.

Still, Ariane remains potentially the most exciting ESA program. In addition to providing ESA member nations and other organizations with an economically viable launch system, Ariane represents the opening of yet another doorway for space exploration and the expansion of Human access to Space.

Those wishing further information on Ariane and European Space Agency programs may write to: Public Relations Service, ESA, 8-10, rue Mario Nikis, 75738 Paris Cedex 15, France.

## Attention Rocketeers: "Have You Joined The NAR?"

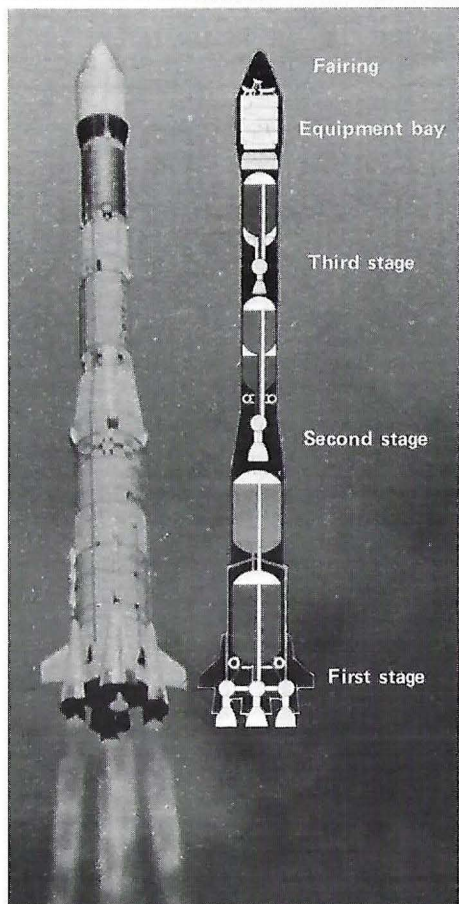
Now that you are an active rocketeer we would like to recommend membership in the National Association of Rocketry.

As an NAR member you will be able to compete in officially sanctioned local, state, national, and even international model rocketry meets. Your rockets and designs will become eligible to set national and international records and most important, you will be kept informed of happenings in model rocketry around the world. Flight insurance is available now too!

Also as a NAR member you will receive a monthly copy of *Model Rocketeer*, a magazine published as a service by the NAR for its members. It contains news of upcoming model rocketry and space events, manufacturer news, modroc tips, designs and plans, news of the NAR, its members, and other people in the aerospace field. Also, it contains editorials, humor and rocket history.

For more information and a membership application write: NAR Headquarters, Dept. E-10, P.O. Box 725, New Providence, NJ 07974.

**JOIN TODAY!**



"ARIANE L01 lifts off in the first successful test-flight of the European Space Agency's satellite launch vehicle." Photo courtesy ESA.



# Bumble Bee

Skill Level 1

WINNER JANUARY 1980  
DESIGN OF THE MONTH CONTEST  
BY ROGER SMITH, Brookville, OH

## PARTS LIST

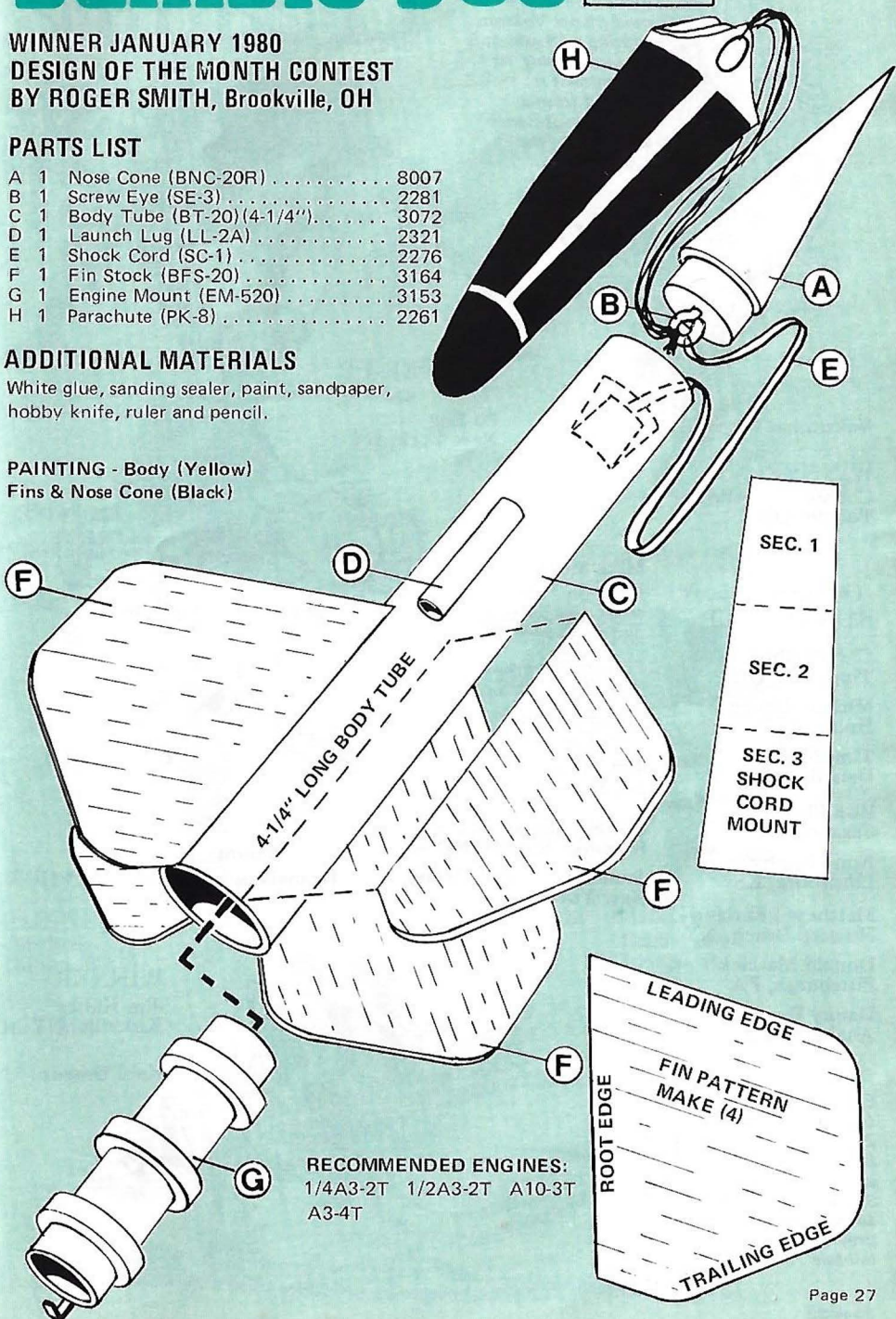
A	1	Nose Cone (BNC-20R) .....	8007
B	1	Screw Eye (SE-3) .....	2281
C	1	Body Tube (BT-20) (4-1/4") .....	3072
D	1	Launch Lug (LL-2A) .....	2321
E	1	Shock Cord (SC-1) .....	2276
F	1	Fin Stock (BFS-20) .....	3164
G	1	Engine Mount (EM-520) .....	3153
H	1	Parachute (PK-8) .....	2261

## ADDITIONAL MATERIALS

White glue, sanding sealer, paint, sandpaper,  
hobby knife, ruler and pencil.

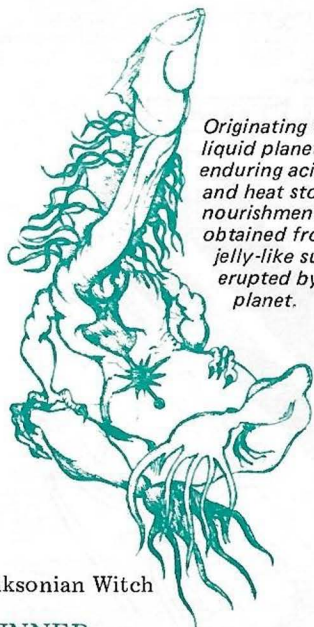
PAINTING - Body (Yellow)

Fins & Nose Cone (Black)



RECOMMENDED ENGINES:  
1/4A3-2T 1/2A3-2T A10-3T  
A3-4T

# The Alien Creature Contest Winners!



*Originating on the liquid planet Vakson, enduring acid rain falls and heat storms, its nourishment is obtained from a jelly-like substance erupted by the planet.*

Vaksonian Witch

## WINNER

Christopher Alleyne  
Toledo, OH

## OTHER RUNNERS-UP

Cliff Willhoff  
Tipp City, OH

Michael Cheng  
Hollis, NY

Tim Beck  
Danville, CA

Ron Plosch  
Savanna, IL

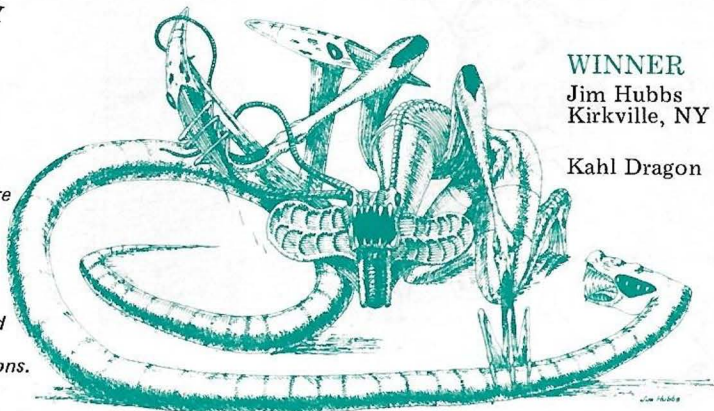
Ron Hirschy  
Lindsborg, KS

Matthew Imbriano  
Howard Beach, NY

Donald Matlack  
Pittsburgh, PA

Danny Reed  
Anaheim, CA

*Eight foot tall creature from Arien of the Zeta Reticuli Star System, seen here attacking a Sand Snake, uses ear-like sensory organs to find prey by detection of tell-tale "life" vibrations.*



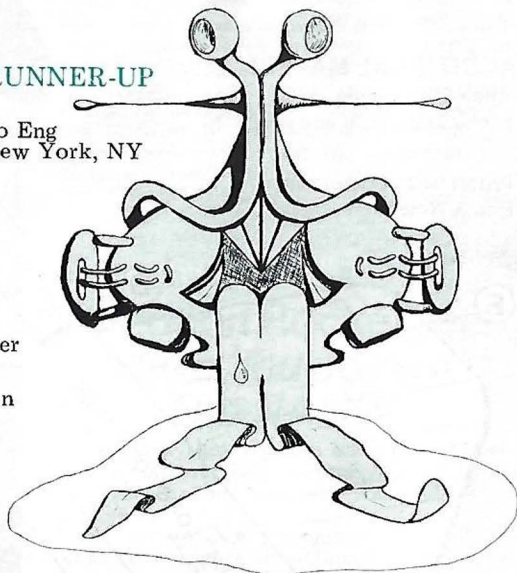
## WINNER

Jim Hubbs  
Kirkville, NY

Kahl Dragon

## RUNNER-UP

Po Eng  
New York, NY



Yuum

(translates into "Joe XXXVIII")

Mike Montero  
Fairfax, VA

Christopher Miller  
Del Mar, CA

Phillip Thompson  
Oak Ridge, TN

Philip Nason  
Pine River, MN

Jim Tibbs  
Sandpoint, ID

Jeff Saunders  
Roanoke Rapids, NC

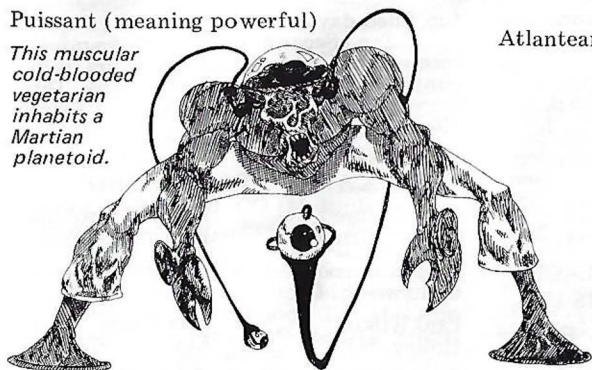
James Hsu & Dale Wang  
New York, NY



**WINNER**  
Paul Pado  
Owego, NY

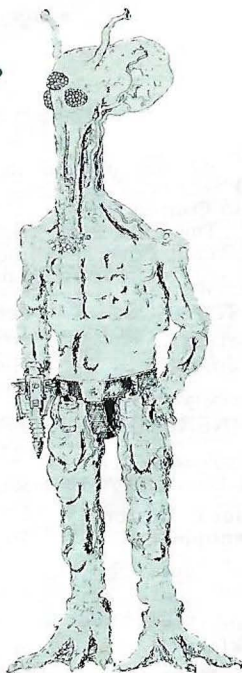
Puissant (meaning powerful)

*This muscular cold-blooded vegetarian inhabits a Martian planetoid.*



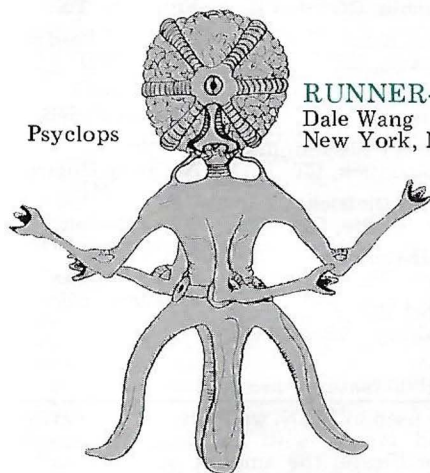
**RUNNER-UP**  
Bart Follis  
Houston, TX

Atlantean

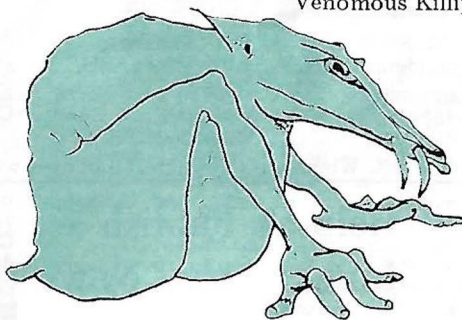


Psychlops

**RUNNER-UP**  
Dale Wang  
New York, NY



Venomous Killipy



**RUNNER-UP**  
Jim Park  
Dublin, GA

Bloo-Bloo

and Glip-Glop



**RUNNER-UP**  
Michael Shaw  
Chicago, IL

David Majercik  
Conklin, NY

David Franklin  
New York, NY

Sean Logue  
Durham, NC

John Schnaubelt Jr.  
Lake Geneva, WI

Tom Paolini  
Blue Ash, OH

# ESTES ASTROCAM 110 PHOTO CONTEST WINNERS

We are pleased to announce the final results of the Estes AstroCam 110 Photo Contest.

The First Place Winner will receive our Grand Prize, a fabulous all expense-paid trip for four to Disneyland . . . for 3

## FIRST PLACE:

Stuart Swan  
San Jose, CA

## SECOND PLACE RUNNERS-UP:

Scott Pearce  
West Chester, PA

Arthur E. Nestor  
Zelienople, PA

David Moosa  
Eunice, LA

Gerald Hosek  
Rockford, IL

Brent Miller  
Manhattan Beach,  
CA

Larry Sloan  
West Chester, PA

John M. Skelton  
Independence, MO

Scott Phillips  
Toledo, OH

Jon Waxham  
Laurel, MD

Herb Desind  
Silver Spring, MD

## THIRD PLACE RUNNERS-UP:

William A. Roskey  
Columbia, MD

Richard Metzger  
Houston, TX

Scott Hardy  
Harrisonburg, VA

Wayne Nelson  
Brookings, SD

Ralph Robinson  
Pueblo, CO

Ray Buteux  
Suffern, NY

Paul Anderson  
Abbotsford, BC,  
Canada

Francis Ruzicka  
Willard, MO

fun-filled days and 2 nights.

Ten Second Place runners-up will receive sleek, new LaTrax Cobra radio-controlled cars and twenty-nine Third Place runners-up will be awarded \$25.00 Merchandise Certificates.

Mike Clary  
Orange, CA

Gary Moore  
Garden Grove, CA

Andy Cohen  
Chatsworth, CA

Paul Wilkin  
Holley, NY

Michael Borders  
Pueblo, CO

Bret Bahe  
Dexter, KS

Garren Alldredge  
Oak City, UT

George Misadoques  
Naugatuck, CT

John Dietrich  
Painesville, OH

Jeff Cooper  
New Oxford, PA

Kurt Bentz  
Calgary, AB, Canada

Steven Katz  
Laurel, MD

Richard Bookbinder  
Beechhurst, NY

Dale Brown  
Greybull, WY

Max Bauer  
El Cajon, CA

John Menk  
Brenham, TX

Eddie Richardson  
Laurel, MD

Don Kelly  
Oromocto, NB,  
Canada

Anthony Guarnieri  
Warren, MI

Owen Wallen  
Ft. Collins, CO

Ralph Wagner  
Escanaba, MI

Winning AstroCam 110 photos will be featured next issue.

## Help Us Publish The Model Rocket News

Got any good ideas, cartoons, technical articles, or contributions? Then why not submit them to us for possible publication? Our constant aim is to make MRN a better, more interesting magazine and yours may be just the contribution we need.

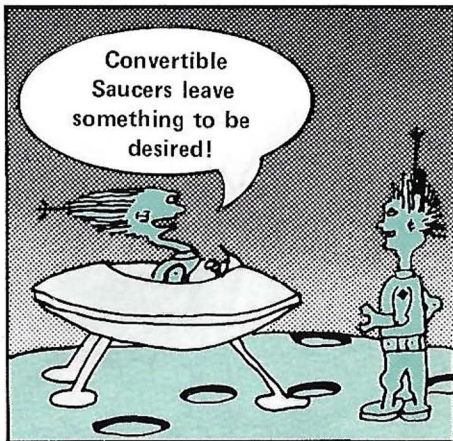
Illustrations of ideas for the Idea Box and cartoons should be drawn in ink and no smaller than 4 inches by 4 inches. Technical articles and contributions should be well written and photos accompanying the articles should be packed between cardboard sheets to avoid damage.

All contributions become the property of Estes Industries and cannot be returned. Address all material to: MRN Editor, Estes Industries, Penrose, CO 81240

Should your article, idea or cartoon

be used in MRN, we'll reward your efforts and talents with an Estes Merchandise Certificate, the amount of which will be determined by the MRN editorial staff.

Hope to hear from you soon!



Eric Anderson Ft. Collins, CO



# DESIGN OF THE MONTH WINNERS

Congratulations to another fine group of Estes Rocketeers for their outstanding DOM entries. First place winners will receive \$75.00 merchandise certificates and honorable mentions will be awarded \$10.00 certificates. Keep those entries coming, maybe you'll be our next winner!

**AUGUST 1979** — Winners: Scott Parsons, Lakewood, CO (Multiple Launch System). James E. Fesmire, Northport, AL (Strato Probe). James Ryser, Columbus, IN (Polaris). James Fox, Lubbock, TX (Fox Mach-One). Honorable Mentions: Craig Hyatt, Greenwood, IN (Launch Stand). Robert Chasin & Ronald Frank, Cliffside Park, NJ (Range Box & Launcher). Gordon Wells, Sedalia, CO (Comet). Po Eng, New York, NY (Marking Jig). Karna Lackey, Hutchinson, KS (Unicorn). Larry Sloan, West Chester, PA (No Name). Derek Bamonte, Palatine, IL (Eagle). Jeff Pelz, Davis, CA (Starfire). David Muslinger, Rochester, NY (Green Goblin). John Mucic, Parma Heights, OH (Jupiter II). Greg Hawkinson, Davenport, IA (Apocalypse). Alvin Jeong, San Leandro, CA (Skydrifter). James Merk, Aurora, IL (Mako Shark).

**SEPTEMBER 1979** — Winners: Michael Anecchini, Willingboro, NJ (Star Racer). Greg Hawkinson, Davenport, IA (Shiva). Mike Logan, Newton, IA (Newton Rack Launcher). Honorable Mentions: Gordon Bugg, Gadsden, AL ([2] Aleph Halcyon, Canth). Kirk Rowe, Glen Ellyn-IL (Blue Lightning). Warren Block, Chadron, NE (S-54 Marauder). Hans Michielsens, Watsonville, CA (Epsilon). James Jacobson, North Greece, NY (Galaxy I). Cal Crawford, Richland, WA (Terran Princess). Andy Hwang, Los Alamos, NM (Pioneer). Ragan Todd, Burlington, KS (Space Freighter II).

**OCTOBER 1979** — Winners: Torsten Duffy, Renton, WA (Equinox SOB). James Fierro, Longwood, FL (Maxi Tilt-A-Pad). Tom Piantek, Middletown, CT (Automatic Multi-Pad). Honorable Mentions: Tom Marron & Ray Kropke, Schaumburg, IL (Sky Demon). Kevin Kuczek, Detroit, MI (Scamp 6). Jim Riggle, St. Johns, MI (Super Launcher). James Cruise, Nassau, NY (F-27). Klay Gilbert, Whitesboro, TX (Panther). Daniel Robinson, Roanoke, VA (Martian Transport). Brian Drury, Crofton, MD (Star Blazer). Miles Conklin, Highland, MI (Phantom Regiment). Rick Silenzi, Sherman Oaks, CA (Comet).

**NOVEMBER 1979** — Winners: Mark Lavigne, Gainesville, FL (Automatic Countdown Launcher). Mark Sphe-

liski, Altadena, CA (Centaurus). Marc Rubin, Lexington, MA (Star Cruiser). Gary Bilek, Somonauk, IL (Piper II). David Malys, Holland, NY (Scorpion). Richard Osedacz, Cumberland, RI (Whirlwind). Honorable Mentions: Rick Boyette, St. Petersburg, FL (Helo-Demon). Larry Sloan, West Chester, PA (Thor). Joseph Zielinski, Jersey City, NJ (NICA-12). Klay Gilbert, Whitesboro, TX (Vulture). Rocketeer, North East, PA (Spindrift). Jens Proche, Calgary, AB, Canada (Meteorite). Keith Sherwood, Los Alamos, NM (Zeus). William Hughes, Redford, MI (Fireeye). Bernie Schwarz, Grinnell, KS (SkyRaider II). Eric White, Boulder City, NV (Tweeter Bug). Rick Kramer, Granville, ND (Exterminator).

## MRN and Free Goodies.. for You!!

Model Rocket News is now published four times a year - Winter, Spring, Summer, and Fall. We will, whenever possible, mail your MRN to you with our seasonal mailings in addition to including it with return mail-orders as long as our supplies last as an exclusive service for our mail-order customers.

To receive our seasonal mailings you must be an active Estes mail-order customer which requires you to have placed an order for Estes merchandise within the past four months.

Additional Bonuses . . . All orders received on even numbered months, (February, April, June, etc.), will be returned with a "free" plan to help increase your Estes fleet. These new plans feature a variety of designs from single-stage sport models to far-out exotic rockets you will be proud to display. All "free" plans can be constructed from the Estes hi-performance parts and accessories listed in our catalog.

All orders received on odd numbered months will be returned with a free iron-on decal for your t-shirt, windbreaker or range jacket. These iron-ons feature a variety of super-neat designs. You iron it on right at home to any surface containing 50% or more polyester.

Remember . . . these items are available only with return mail-orders!!!!