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Latest Hobby—

**SHOOT-YOUR-OWN ROCKET FLIES 1,000
FEET IN AIR, COMES DOWN BY PARACHUTE**

See Page 68

SHOOT-YOUR-OWN

By G. Harry Stine



AEROBEE scale model being loaded in tower by author Stine is powered by basic Rock-A-Chute motor.

MISSILE MAN Orville Carlisle puts motor in one of his rockets. He spent four years developing idea.

AMATEUR rocketeers who have been waiting for a chance to shoot their own rockets skyward may be just a step away from lighting the fuse.

The man who made this possible is Orville Carlisle of Norfolk, Neb., a largely self-educated man whose hobbies are chemistry and rockets. He has perfected the Rock-A-Chute, a small, easy-to-shoot rocket about 11 inches long and one-inch in diameter.

Powered by a solid propellant motor of his own design, Carlisle's Rock-A-Chute will zoom 1,000 feet into the sky, eject a parachute and lower itself safely to earth. Once recovered, its parachute is merely repacked and a new rocket motor installed. It is ready for flight again in less than five minutes.

Carlisle began the development of his Rock-A-Chute in 1953. As a result of reading *Conquest Of Space* in MI, he sent half a dozen Rock-A-Chutes and 50 rocket motors to me at the White Sands Proving Ground. We fired them before an audience of delighted rocket men. All of us were amazed, for over 200 of these little missiles were fired—and the Rock-A-Chute did not fail once! This is an unheard of performance in the rocket field.

We subjected the Rock-A-Chute motors to every conceivable test. We rigged up the "World's Smallest Static Test Stand"—a rig where we tied the rocket motors down for testing in a man-



ROCKETS

ner identical to that used for the big ones. We dropped one, stepped on it and fired it; it worked. We froze one, fired it cold and it worked. We gave it shake tests to see if we could jar something loose; we couldn't, and the motor worked as well as before. We tried to make it explode, and it wouldn't.

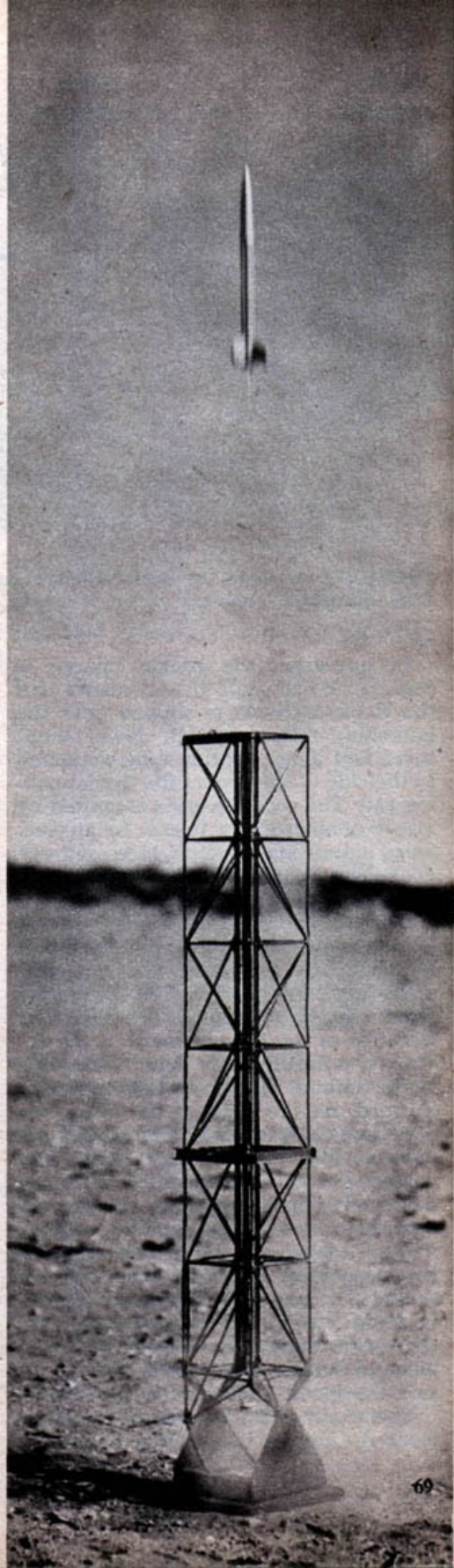
So I think I can say in all honesty that Rock-A-Chute as developed by Carlisle is the safest and most reliable rocket I have ever seen. The instructions for operating it are so simple that a boy can follow them.

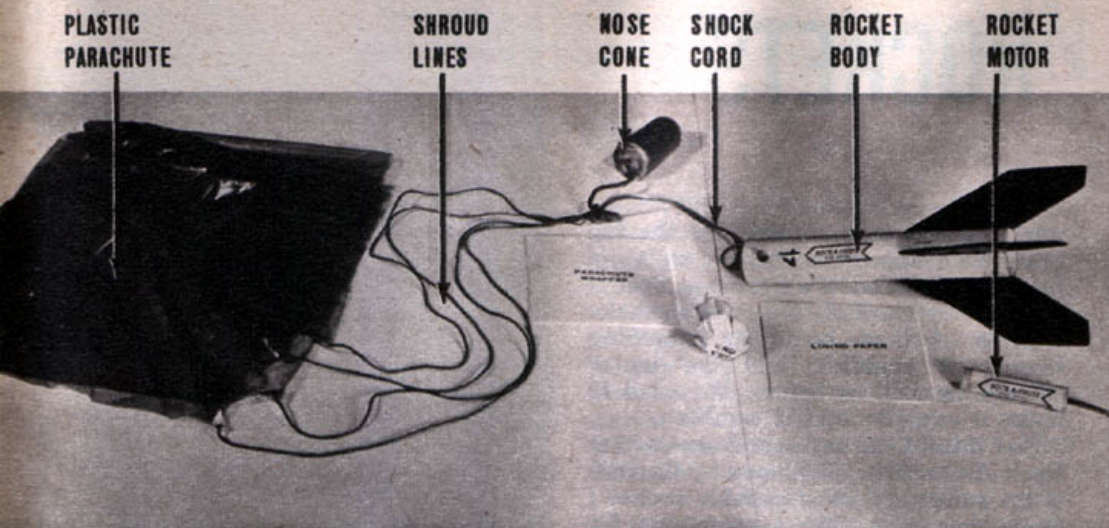
As far as performance is concerned, the Rock-A-Chute is *not* in the category of a mere toy. The rocket engine, a cylinder 2¼ inches long and ½-inch in diameter, uses a solid fuel and puts out about a pound of thrust for about two seconds.

Since the body itself must be as light as possible as well as extremely rugged, the Rock-A-Chute is made from ordinary paper rolled to form a one-inch tube. Three balsa fins are cemented to the tail; the nose cone is plastic. The rocket engine is merely pushed into a ring-shaped socket in the tail. The parachute is an 18-inch square of thin red plastic which is folded and rolled into a cylinder, then wrapped with paper and inserted into the body of the rocket.

The rocket engine charge is simplicity itself. The case is made of a flame-resistant paper tube with walls ⅛-inch thick, while the rocket nozzle is a small hole located in the center of a ceramic plug that closes one end of the engine. The motor has three parts: 1. The propellant which provides the thrust; 2. The time element which is activated by the propellant; 3. The expelling charge which is activated in turn by the time element. Carlisle loads various amounts of propellant into the case, depending upon how long he wants the engine to provide power.

BLAST OFF. Rock-A-Chute-powered missiles have hit 150 mph and 1,000-foot altitudes.





SIMPLICITY is secret of Rock-A-Chute's success. Its components are displayed above. After parachute recovery rocket is easily repacked and ready to fire with new motor.

In operation the rocket charge is pushed into the tail of the missile and the Rock-A-Chute is slipped onto the launching rail, a $\frac{3}{8}$ -inch dowel about three feet long. A guide tube cemented to the side of the rocket fits the launching rail. The rocket engine is ignited by means of an ordinary fuse or by an electrical igniter made from a piece of Jetex wick. The Rock-A-Chute then takes off vertically with a loud *whoosh*.

Once all the propellant in the rocket engine is used up, the time element is automatically activated. The time element functions slowly while the missile coasts up to maximum altitude. The duration of the time element in the engine is carefully calculated according to the amount of time the rocket coasts upward. At the peak of the flight, the expelling charge is fired. The parachute, packed into the rocket body and wrapped in paper to keep it from being damaged when expelled, is pushed sharply forward by the expelling charge, kicking the nose cone off and allowing the parachute to come clear of the rocket. The nose cone is attached directly to the parachute shroud lines, but the rocket body is on the end of a long piece of rubber band which acts to absorb the opening shock of the parachute.

The secret of the success of Carlisle's Rock-A-Chute is its absolute simplicity.

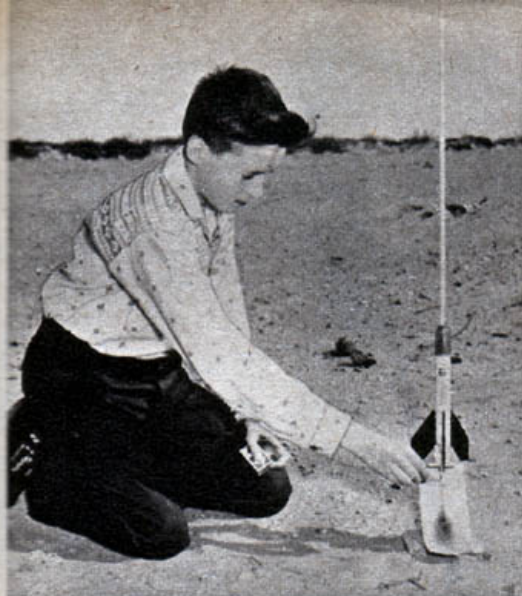
There is nothing that can go wrong.

You are probably asking by this time, "Where can I get one of these Rock-A-Chute rockets?"

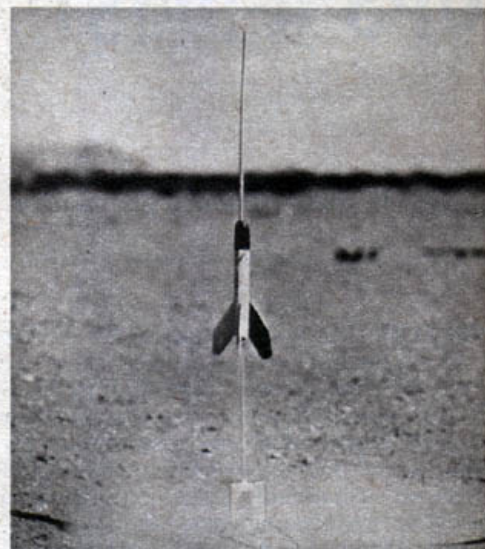
Forty-two states have laws prohibiting fireworks. But nobody is quite sure whether or not the Rock-A-Chute rocket motor can be classed as a firework or not. Those of us who have seen it and watched it in action know that it is not a firework; it is a model rocket engine, as safe and reliable as a model gasoline engine. It ejects no visible flame and we have pictures to prove this. It takes a temperature in excess of 550°F . to ignite the rocket fuel and it is safe from the hazards of spontaneous combustion.

However, as it stands now, Rock-A-Chute can be openly purchased and shipped to anyone in the United States who will get the proper permit from his local fire marshal, fire chief, or local office which issues such permits. Organized rocket clubs, science groups, schools and other such organizations generally should have no trouble in obtaining permits.

Since the Rock-A-Chute is strictly a handmade item at present, the complete kit with a dozen rocket motors costs \$7.95. Standard rocket motors are \$1.25 a dozen while the high-powered super motors are \$2.50 per dozen. Car-



MISSILE AWAY! Total absence of flame is indication of highly efficient rocket motor.



ZERO HOUR. Young rocketeer ignites missile. While not a toy, device is perfectly safe.

lisle at his store at 420 Norfolk Avenue, Norfolk, Neb., says he can supply a very limited number of Rock-A-Chutes to people—provided they obtain the proper local permits in advance.

At White Sands we have designed and flown model guided missiles powered by the Rock-A-Chute charge. These have been true scale models of such rockets as the Aerobee, the ASP, the Pogo, the Honest John and the Viking. A standard Rock-A-Chute charge will fly a model Aerobee completely out of sight! One just looks where the rocket disappeared and soon the little red parachute comes into sight again. Speeds of 150 mph or more have actually been achieved by Rock-A-Chute and the little missile models!

Furthermore, the parachute recovery system works every time. In flight, the missiles are not dangerous because there are no heavy falling pieces. The launching rail system provides a positive and safe direction of the flight path. On fairly calm days they can be flown from any athletic field or open area; on windy days the parachutes can drift a long way but the flights are still safe.

The Rock-A-Chute not only offers long-yearning enthusiasts a complete missile system in miniature to experiment with, it also stimulates youngsters on the threshold of an exciting and fascinating new era in space travel to



PARACHUTE is ejected by expelling charge and brings rocket safely back to ground.

use their imaginations. They can design, build and fly rockets of their own, using the basic Rock-A-Chute motor and parachute recovery system. You can't learn everything about rocket aerodynamics in books—but knowledge is quickly acquired by flying your own.

Model rocketry, which has always been fun, has now become safe. And the rocket, prime power plant for the conquest of space, will soon be available to anyone thanks to Orville Carlisle and his Rock-A-Chute! •