ASTRO-JET

JOURNAL OF THE GLENDALE ROCKET SOCIETY

Number 9 September, 1944

Society model in flight—This action shot of G.R.S. No. 46 was obtained at the July 16th society testing by Mr. John Arnold.

TABLE OF CONTENTS

ASTRO-JET

No. 9

TO THE READER

This issue of ASTRO-JET is possibly the most expensive publication the society has ever published. True, it has only eight pages but it has cost as much as our Year Book of forty-five pages. This is without a doubt the best form of duplication we have come across and we would like to continue with this method for all future issues of ASTRO-JET. This will be possible only with your cooperation. If you are a subscriber show this to anyone else you think would be interested in rockets. If we obtain enough subscriptions we can promise an even larger and better issue of ASTRO-JET. However, if the subscriptions do not come in we will have to go back to our old, hard to read type of publication.

SOCIETY WILL REPRINT PUBLICATIONS

Due to the large number of requests for copies of the Glendale Rocket Society Year Book and copies of our early bulletins, the society will reprint these publications. According to present plans they will be ready for sale by November 1st or sooner. The prices will be as follows:

Glendale Rocket Society Bulletins 1 to 8 each.....10¢
Glendale Rocket Society Year Book.....50¢
Astro-Jet No. 9 each.....35¢

ARMY USES TAKE OFF ASSISTERS

It was revealed recently that the Army Air Forces have developed rocket take off assisters to help heavily loaded aircraft into the air. These rocket units are attached under the wings of the plane and can be dropped when the plane is in the air. They can be recovered and used again. From this it seems that they possibly use liquid fuels since it would be a simple matter to reload the fuel tanks. It was also stated that work has been conducted with permanently affixed rocket units for fighter planes.

THE TESTING OF JULY 16

On July 16th the Society held its first rocket contest. The purpose of this event was to establish some altitude, distance and landing device records. These were three awards of one dollar each for the person whose model performed best in each of the above classes. If everything had gone as planned, we would have had the best testing in our history. We now have two sighting instruments--ours and the one loaned us by the California Rocket Society, so we could have obtained accurate measurements of the heights attained by the models.

We started for the testing ground in the early afternoon. By late afternoon we had returned to George James's home and decided to shoot the models there, since we had been refused admission to our testing ground. George's yard was too uneven to obtain anything accurate from the instruments.

G.R.S. No. 48 was the first model fired. After the end plug blew out, the model rose about 100 feet.

G.R.S. 38 was tested next. It used a large quantity of type F powder which had been toned down. Either the powder had been toned down too much or the jet opening was too large for when the model started to fire, it slowly rose to the top of the launching rack and then gradually slid back down. It fired for a long time and made a great deal of noise. It was built by John Cipperly.

G.R.S. 41 was the next model tested. It performed similar to G.R.S. 48 except it rose about 200 feet, blowing out its end plug in the process. Both G.R.S 48 and G.R.S 41 were built by Bert Anderson.

Next G.R.S 40, built by Lee Rosenthal, was tried. This model rose about 200 feet after blowing its end plug.

The first landing device model, G.R.S 45 built by Bert Anderson, was tested next. After the model had reached its maximum height, it was supposed to descend tail first. This action would cause the gyro-blades, which were folded against the body of the model, to open allowing the model to twirl to the ground. We could not tell whether or not the idea was practical since after blowing its end plug it rose only about 20 feet.

The altitude winner, G.R.S 49 built by Bert Anderson, was the next model tested. This model made a beautiful flight. After rising 300-400 feet it leveled off and flew several hundred feet over. The exact distance is not known since the model was never found.

G.R.S. 44, built by George James, was tested next. This model had been equipped with a parachute device similar to the one described on page 38 of the G.R.S. Year Book. After blowing its end plug the model rose only about 20 feet which did not allow time for the parachute to open.

G.R.S. 42, built by Bert Andersen, was the largest model tested. It made a very respectable flight for its size, rising about 100 feet and plunging straight down still firing.

G.R.S. 39, built by George James, was a two-step model. When the end plug of the main charge blew out, the model rose about 20. At this point the second step exploded.

The landing device winner, G.R.S. 43 built by Bob Schubert, was tested next. The details to Bob's device are on page 37 of the G.R.S. Year Book. Blowing out its end plug the model rose about 100 feet, then the explosive charge in the nose blew open the blades and the model twirled down nose first. It was supposed to come down tail first.

The next model tested was G.R.S. 46, built by David Passel. This is the model on the cover of this issue of ASTRO-JET. The picture was taken when the model was about 100 feet up. Soon after this the model drifted down still firing.

The distance winner, G.R.S. 47 built by Lee Rosenthal, was the last model tested. This model, after blowing its end plug, rose about 100 feet and landed about 400 feet away.

Our guests at this testing were: Miss Gwendolyn Steelburg, Mr. John Arnold, Mr. Chad Dauwalter, all from the California Rocket Society; Mrs. McMillian, Mrs. Cipperly, John Miller and Calvin Rankin. John and Cal brought one of their rockets loaded with a special powder made of equal parts of Barium Peroxide and powdered Aluminum. However, they left before we decided to shoot the rockets at my house. Cal later told me that the rocket, when it was tried, blew out the top plug.

Lloyd Miller obtained some excellent movies, catching many of the models in flight.

The fact that many of the models blew out their end plugs or came down while they were still firing shows that we need to conduct more test stand work.

GERMANS HAVE TWO BAZOOKAS

The Germans have two bazooka type guns. One of these looks similar to the American model except that it is larger and fires a more powerful projectile.

The other type is called a fist bazooka. It is loaded from the muzzle, cocked by hand and fired by pounding it with the fist. It has the appearance of a piece of water pipe. The rocket grenade it fires has a range of about fifty yards and hits with terrific force.

ROCKETEERING
-George James

The testing of July 16th revealed many things. One of these was that we need a definite testing ground where we can get into every time. We also need an improved ignition rack. If we had not had to wait forty-five minutes for the ignition system to be repaired we could have used one of the testing grounds we were at. By the time the rack was repaired an officer of the law came down and told us to get out.

The most obvious fact of the testing was that we need to conduct more test stand work. If more test stand work had been done many models would not have come down to the ground still firing. This was due to the fact that there was too much solidly packed powder above the hollow cut out part. John Cipperly could have figured out exactly how much to tone down his powder instead of guessing. The main reason that so many models blew out their jet plugs is, in my opinion, because of the rough handling they received. This definitely shows that we have to be more careful with them.

The new test stand the society is planning to build is a hydraulic one. The rocket charge, firing horizontally, will push an oil filled copper bellows inward. A glass tube will be attached to the back of the bellows and will curve up vertically. An electric clock will be at one side of the partly oil filled glass tube and on the other side will be markers to indicate the pounds of thrust(I remember when we used to get only ounces of thrust). A motion picture camera will record both the movement of the sweep second hand of the clock and the rise and fall of the liquid in the tube. In this way an extremely accurate record will be made. One of the things that we will be able to learn from this test stand that we could not learn from the other is the jet velocity of the various powders. After the jet velocity of a powder is known it is a simple manner to tell for what size rocket it is intended--the faster the powder the smaller the rocket. Also with this new test stand it will be possible to tell how much to tone down powders and how large the hollow cut-out part of the charge should be.

The purpose of our experimental program is to develop a satisfactory powder charge with which to test stabilization and to obtain some definite data on thrust augmenters, nozzles and similar devices. We would also like to develop a light weight, positive operation, adaptable to any size rocket landing device.

At present we need some means of automatic timing--so when the charge starts to fire the clock and movie camera start and when the charge stops they stop. Please send in any suggestions you may have.

ROCKET WEAPONS

-Bob Schubert-

German Robot Bomb

At the present time there are two main types of robot bombs. The most common is the square winged type which has an average speed of 350 miles per hour. The other type is larger and has curved and swept back wings. It has a speed of about 385 to 415 miles per hour. This type makes long silent glides after the motor stops.

The square winged type is approximately 21 feet, 10 inches long; 2 feet, 8½ inches wide; has an overall length including the motor tube of 25 feet, 4½ inches and a wing-span of 16 feet. It has a range of 130 to 150 miles and the nose is filled with 2240 pounds of TNT. It is colored with the usual type of German camouflage--dark green on top; light blue underneath and is constructed entirely of steel.

The jet motor by which it is powered is extremely simple. At the front of the motor tube are two shutters. These are fixed to open when a certain air compression is reached. When they open, letting a quantity of air rush in, the fuel valves open allowing gasoline under high pressure to mix with the air. A spark ignites the mixture and the resulting explosion closes the shutters and forces the gases out the rear of the motor. The robot bomb carries 130 gallons of gasoline under high pressure and consumes about a gallon per mile. The robots are launched off concrete ramps by compressed air. Some of the bombs crash a few hundred feet from the ramps, others circle around and some back and some explode while being launched causing heavy casualties at the launching stations.

The bombs are controlled in flight by three air driven gyroscopes and an automatic pilot which includes height and range setting controls. At the end of the flight the bomb is automatically put in a steep dive.

Some of the robot bombs have been found with radio transmitters so that the Germans will know where they hit. Other models carry an incendiary charge instead of the regular explosive warhead. Others carry about twenty incendiaries in front of the explosive charge so when the bomb explodes the incendiaries are scattered over a wide area.

The official German name for the robot bomb is Vergeltungswaffe 1 (V-1) standing for reprisal weapon No. 1.

The defenses against these bombs are almost entirely visual. Fighters patrol at the height normally taken by the robot bombs---under 6000 feet. If a bomb is sighted the fighters close in and fire incendiary bullets at it. This is very dangerous for if they are too close they will be destroyed by the blast. Anti-aircraft batteries also

shoot down some of the projectiles. The Germans now send most of the bombs at night or when it is foggy. They also send them over in batches so the best the fighters can do is knock down one or two out of each batch.

While the German Robot bomb has been called a "Brainless nuisance" it cannot be lightly overlooked. Designed as a terror and revenge weapon they might have changed the course of the war if they had been put out in greater numbers. As it is they are diverting a certain number of Allied fighters which otherwise could be strafing enemy troops. It is keeping the people of the London area under a constant series of alerts, imposing fatigue and strain which will have a cumulative effect. Also it is claiming the attention of many bombers that are attacking the launching stations. The Germans have developed a new type of portable launching rack which can be quickly taken apart and moved to another location.

The robot bombs can be mass-produced cheaply and can be fired in great numbers. A launching station, under favorable conditions, can launch a bomb every forty minutes. They are comparable to artillery and bombing attacks but since the Germans have no control over them once they are launched, wind currents and air pockets can easily change their course. From this we come to the conclusion that they have no real military values at present and can be used only to harrass many people over a wide area. The robot bomb has tremendous possibilities but these will probably not develop in this war.

German Rocket Propelled Fighter Plane

The Germans have been using a new type of fighter against Allied bombers. This is the rocket propelled ME-163 "Flying Wing". This plnae is a single seater having a stubby fuselage only two-thirds as long as the broad tapering wings. Bird shaped ME-163's swished by Flying Fortresses so swiftly that the crews did not realize what they were. They have been nicknamed "Jetties" because they are propelled only by rocket power. They glide when the power is turned off. When given short bursts of speed in a row, condensation trails dot the sky like Morse code. These fighters are fairly easy to spot because they leave a dense white cloud of smoke about a mile behind them. Since the ME-163's speed is so great, the only way any Allied fighters have downed some of the craft is by out manouvering them.

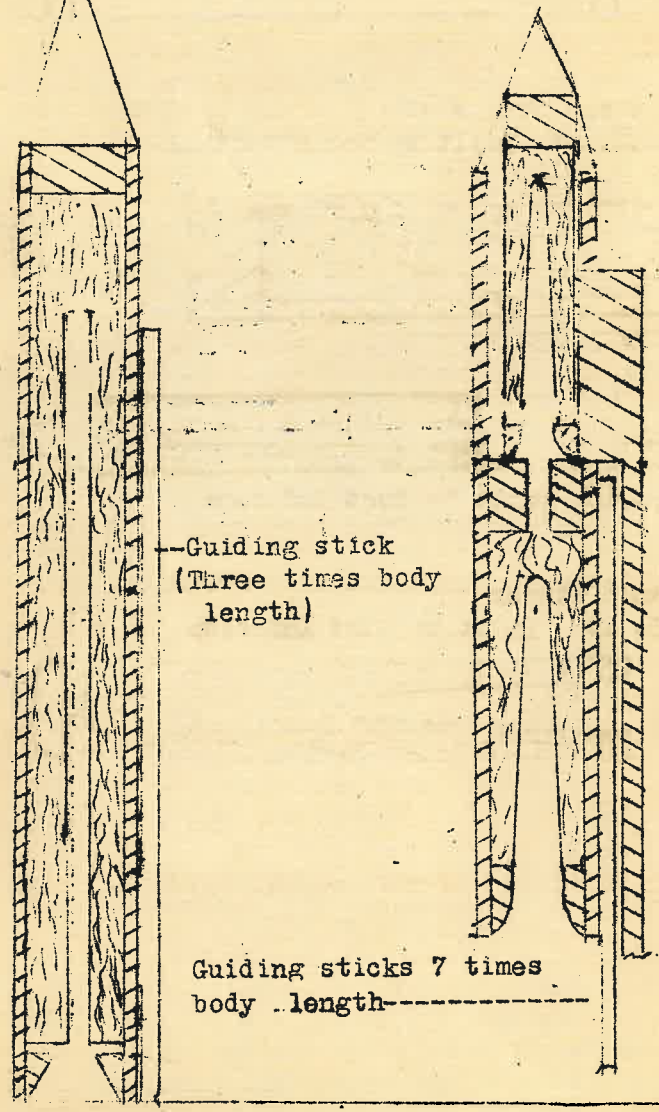
U.S. Rockets Use New Powder

It was revealed recently that all American ordinance rockets use a new super propellent by the name of Pentolite. This explosive is said to be 20% more powerful than TNT.

Altitude Rockets

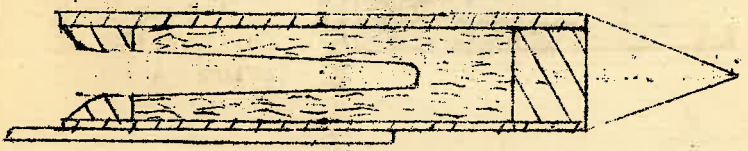
G.R.S. 38
Built by John Cipperly

G.R.S. 39
Built by George James

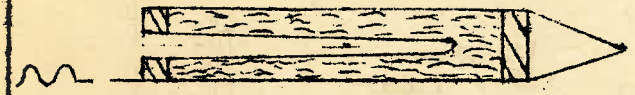


Altitude Rockets

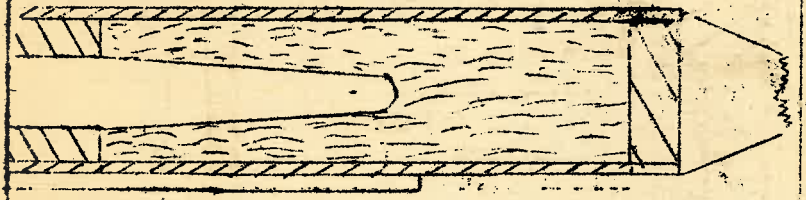
G.R.S. No. 40 Built by Lee Rosenthal



G.R.S. No. 41 Built by Bert Anderson



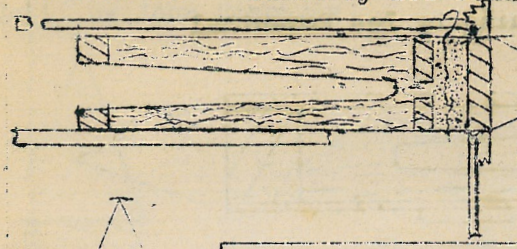
G.R.S. No. 42 Built by Bert Anderson



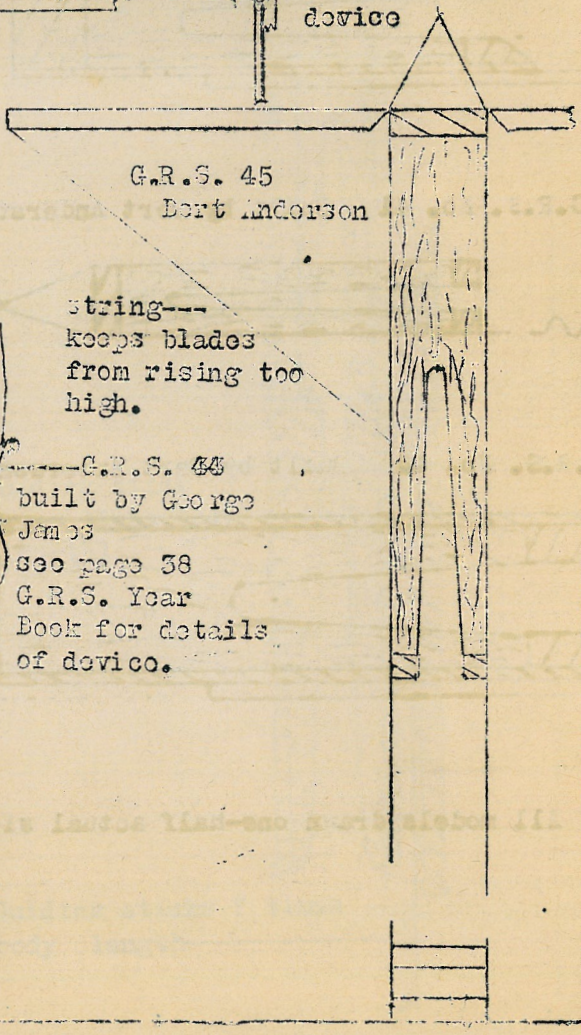
All models drawn one-half actual size

Landing Device Rockets

Landing Device winner
G.R.S. 43 Built by Bob Schubert.



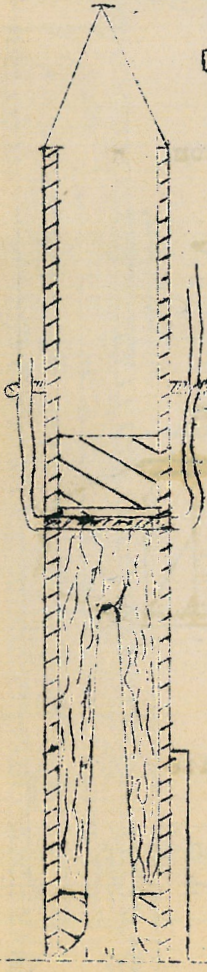
See page 37 of G.R.S. Year Book for details of device



G.R.S. 45
Bert Anderson

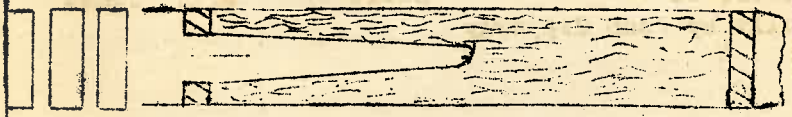
string--- keeps blades from rising too high.

----G.R.S. 44 built by George James see page 38 G.R.S. Year Book for details of device.

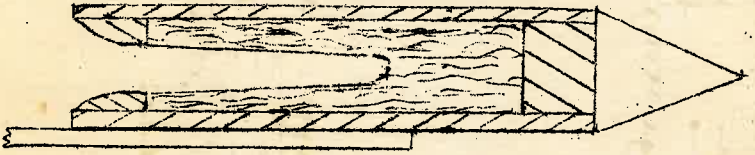


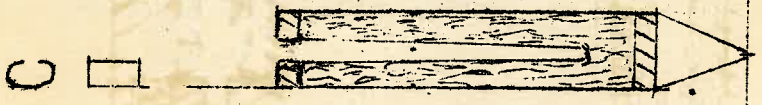
Distance Rockets

G.R.S. 46 Built by David Passel



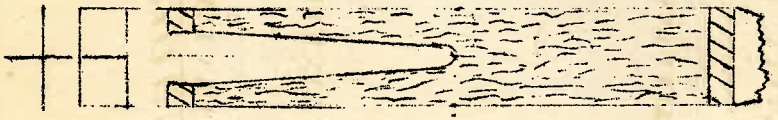
Distance Winner
G.R.S. 47 Built By Loo Rosenthal





G.R.S. 48 Built by Bert Anderson

Altitude Winner
G.R.S. 49 Built by Bert Anderson



MEMBERSHIP IN THE GLENDALE ROCKET SOCIETY

At the present time there are two forms of membership in the Glendale Rocket Society, active and associate. Active membership is for people who can actively engage in the activities of the society. They may come to all society meetings, attend all society testings, receive all society publications published during their membership, and will be able to vote and hold office in the society. This form of membership is $3.00 per year. All applicants for active membership must also submit a paper on rockets, a plan for a rocket model or by some other means show a genuine interest. Associate membership is for people who find it inconvenient to become active members. They have all the privileges of active members with the exception of voting and holding office in the society. This form of membership is $2.00 per year. If you are interested in joining the Glendale Rocket Society please write to the Secretary, Glendale Rocket Society, 3262 Castera Ave., Glendale 8, Calif.

ASTRO-JET replaces the Glendale Rocket Society Bulletin as the official publication of the Glendale Rocket Society, 3262 Castera Ave., Glendale 8, Calif. It will be published three times a year--January, May, and September. Subscriptions are $1.00 per year. Editor-George James.
