ASTRO-JET

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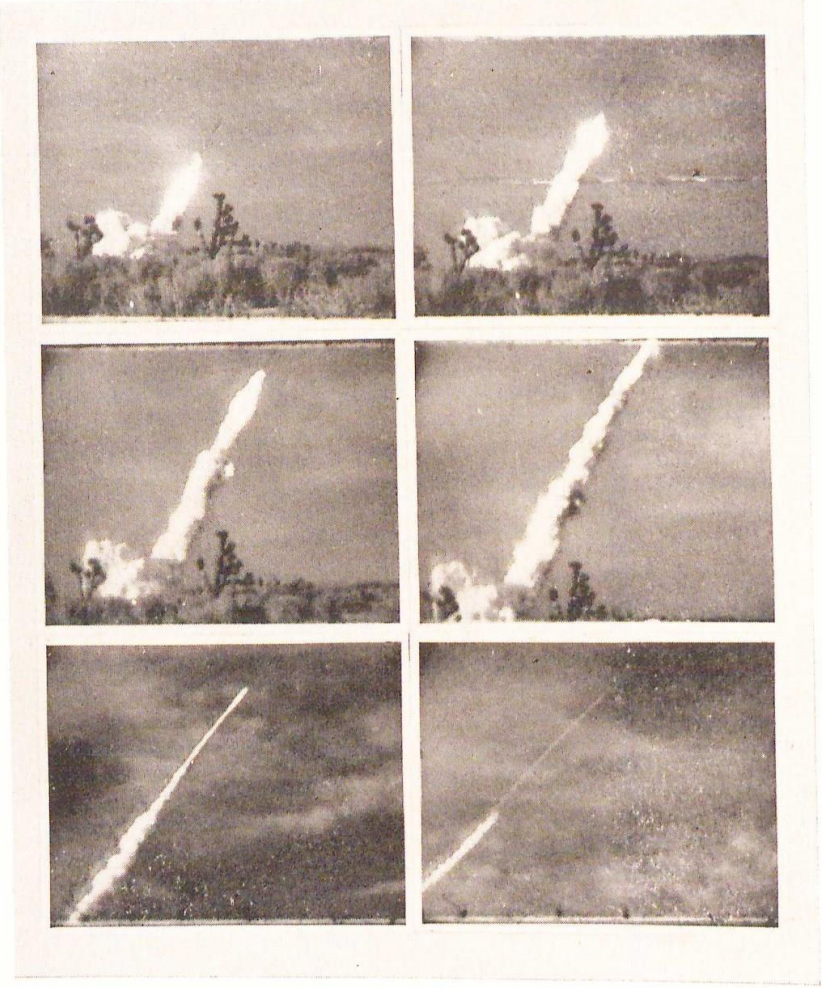
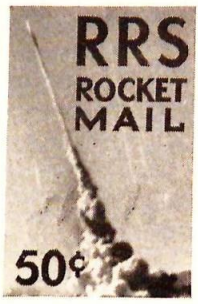


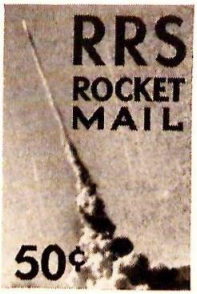
Photo by Matthew Jamgochian

These photographs of Miler II were taken at the June 1, 1947 desert testing. The photographs were taken at intervals of about one-third second, at exposures of approximately 1/145 of a second, with a 16 MM movie camera.

IN COMMEMORATION OF THE CENTENARY
OF THE UNITED STATES POSTAGE STAMP
1847—1947

REACTION RESEARCH SOCIETY





REACTION RESEARCH SOCIETY

Winterhaven, California
Across the Colorado River
To Yuma, Arizona
JUNE 28, 1947

NO.

SPECIAL ROCKET MAIL STAMPS, used on the flight. The actual sheets of stamps are maroon in color, and 2000 numbered sheets were printed, 1000 Perforated and 1000 Imperforated.

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SOCIETY FEATURED IN NEWSREEL

On Friday, July 11, 1947, the RKO-Pathe News Reel of the RRS Mail Rocket Flight was released in Los Angeles. This was a very good presentation of the flight showing both preliminary preapartions and the actual launching of the rockets. The narrative is very straight forward and factual, helping create the proper impression that the flight was a scientific experiment, not a crack-pot idea. The czmera men are certainly to be complimented for sticking it out with us on that terrifically hot and discouraging day of June 28, 1947.

HOW TO OBTAIN SHEETS OF RRS ROCKET MAIL STAMPS

Since many collectors were unable to obtain unused blocks of the RRS rocket mail stamps before the flight, the society announces with pleasure that some of the numbered blocks are still available. One of these blocks is illustratdd in this issue. These sheets are being sold at $2.50 each for either the perforated or imperforated sheet of four rocket stamps. Send all requests and inquiries to:

REACTION RESEARCH SOCIETY
3262 Castera Avenue
Glendale 8, California

A HISTORY OF THE RRS MAIL ROCKET PROJECT

A mail rocket is one of the earliest of the Reaction Research Society's projects.

On May 26, 1943, it was requested that all members turn in designs for mail rockets. By June 30, 1943, the best design has been chosen and it was decided to construct the rocket. The only thing that prevented the construction of a mail rocket at that time was the lack of a satisfactory solid-propellant rocket engine.

After sometime, due to other research commitments, the mail rocket project was all but forgotten.

The next mention of this project was in the December 1945 issue of ASTRO-JET, where an editorial stated that possibly research could again begin on the development of a mail rocket during the coming year, 1946.

About May 3, 1946, basic research on the micrograin type of rocket had definitely shown that if a mail rocket were built it would use this type of solid propellant engine instead of the black powder, semi-restricted type, originally called for.

By January, 1947, enough basic micrograin research had been done to allow the design and construction of the first experimental mail rocket, the SUBMILER. This rocket was designed to carry a dummy load of 75 letters a distance in excess of 2000 feet. The rocket was 7 feet long, 2 inches in diameter and weighed 16 pounds loaded. It was to be fired at a 45 degree angle from the launching tower.

On February 23, 1947, the SUBMILER was tested at the RRS desert test area. It traveled 2100 feet. One of the most important facts learned was that the SUBMILER type of mail compartment could stand the impact of landing.

With the information from the submiler testing

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DESERT TESTING NO. 2, FEBRUARY 23, 1947

This testing was held to determine the characteristics of the SUBMILER as a mail carrying distance rocket and to test the new ignition system using 250 feet of wire.

This 84" x 2" rocket was the largest micrograin rocket built to that time.

Although the rocket was originally designed for the testing of landing devices and also as the lower member of s Slim Jim-Submiler two-step combination, it was decided, because of its excellent characterisitics, to fire the Submiler in order to check basic distance calculations, mail compartment design, and the new large built-in Aero-Smoke unit.

The brass nozzle of the 15°-30° design was made in two sections to allow the flush mounting of the rupture disk which was placed on the exhuast side of the throat.

The four fins, of trapizoid shape, made of aluminum sheet were fitted to the rocket by means of clamps around the propellant chamber. The fins were painted with black stripes (2 fins vertical stripes, 2 fins horizontal stripes) to check rotation.

The propellant chamber was made of .036 stainless steel tubing and was 40 " long.

The section connecting the propellant chamber to the head was made of 24ST aluminum rod. The mail compartment portion of the connecting section contained four vent holes to allow the release of smoke from the enclosed flare.

The aero-smoke tracking flare was built right into the lower part of the mail compartment. This flare was designed to release a dense cloud of yellow smoke for 30 seconds.

The mail compartment, made of 24ST aluminum tubing, contained 75 dummy letters packed in cardboard tubing cartridges. At the head of the compartment was a wooded ogive nose.

The launching rack was the same as used on the Jaunuary 5th testing but was only raised to a 45° angle for this firing.

The tracking stations were located 2000 feet apart and equi-distant from the launching rack on a base line perpendicular to the line of flight.

The ignition system was the same as used on January 5th except that 250 feet of wire were used instead of the 175 feet used in January. This moving back of the ignition pit was deemed advisable because of the size of the rocket.

The size also necessitated the loading and placing of the rocket on the launching rack before the rack could be raised to its 45° angle.

After the electric circuits were checked out the launching area was cleared and all personel took their predetermined positions.

The five minute and one minute flares fired satisfactorially, however, when the switch was thrown for the rocket tracking flare, the flare would not ingnite. The circuit was again checked and found to be alright.

When the tracking flare was tried the second time it ignited properly but due again to electrical trouble, it was not possible to fire the rocket until 20 seconds later.

The rocket took off with about 10 seconds of smoke left so it was very visible in flight. The Submiler hit at approximately a 45° angle, 2138 feet away with sufficient velocity to imbed itself over three feet in the ground.

However, it was dug out intact and only needed the replacing of one screw to enable it to be launched again.

The photograph of the Submiler take-off, taken by George James, was used to illustrate the rocket mail stamps.

This flight proved the practicability of the mail compartment design and also the accruacy of our calculations, for the submiler was calculated

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RRS DESERT TESTING NO. 3, MARCH 23, 1947

The first of the Miler rockets, Miler I, was fired at the Palmdale test area on March 23, 1947.

The Miler I was a large step forward from the submiler fired but a month before.

The stainless steel propellant chamber was 2-3/8" in diameter and 9' 11-3/4" long.

In order to dave weight, the brass nozzle was of a 30°-60° design and used an external ring to hold the rupture disk to the nozzle exit.

The four aluminum trapizoid shaped fins were attached to the rocket in the same manner as the fins of the submiler ans also were painted with black stripes to check rotation. The body of the rocket also carried black bands for possible photo identification.

The brass connecting section contained four holes to allow the escape of the smoke from the tracking flare in the lower part of the payload compartment.

The flare located in the bottom of the 5'x5" stainless steel compartment was designed to produce dense yellow smoke for 40 seconds. The upper portion of the compartment carried 350 dummy letters packed in the same manner as on the submiler. At the front of the compartment was a wooded ogive nose.

The complete Miler I weighed 54.25 pounds of which 26.8 pounds were propellant.

The sighting devices were placed at the same positions they occupied on February 23rd. After the loaded rocket had been placed on it, the rack was raised to a 45° angle.

At 3:40 the five minute flare was ignited, followed at 3:45 by the tracking flare. Immediately after the flare had ignited the pripellant switch was pushed but no ignition resulted.

The tracking flare kept burning releasing a cloud of yellow smoke which drifted slowly across the desert.

While the circuits were being rechecked, two small Aero-Smoke units were attached to the body of the rocket. One of these flares was fused to be ignited by the rocket blast. The other flare was to be ignited manually and when it began to burn the rocket would be ignited (the long fuse allowed plenty of time for the operator to retire to safety). Soon after Dick Schenz ignited the fuse and returned to the control pit, he threw the propellant switch; thus firing the rocket.

The Miler I produced the most beautiful takeoff of any RRS rocket fired to that date. The firing time was sufficiently long to be observed. It appeared to many members that the rocket had a definite flame, the rear of which turned into a brilliant white trail. Other members reported that the combustion appeared uneven. It was impossible to confirm any of these observations until the color movies taken by Carroll Evans had been developed. These movies definitely showed that the combustion products were sufficiently incandescent to produce a flame a pearance which when it cooled down turned to white smoke. As was reported, the combustion proved to be definitely uneven.

Dispite their small size, the Aero-Smoke Flares were visible in flight, although not as visible as would have been the large flare. When the rocket hit one of the flares was torn off still firing. The Miler I hit 3500 feet from point of takeoff with sufficient force to burn itself over six feet in the ground, tear off the fins, slightly bend the propellant chamber, and push the wooden nose into the mail compartment.

The undesirability of using brass for nozzles in such large rockets was demonstrated by the fact that the nozzle and retainer ring were erroded. Of interest was the fact that the several steel screws in the retainer ring were hardly erroded as compared to the brass ones.

Although several fire predictions had been

made, the launching rack was not effected from the launching of such a large missile (large only by previous RRS standards).

Preliminary calculations indicated that the Miler, carrying a 10 pound payload, would travel about 3900 feet. The reason the rocket did not travel this distance can probably be attributed to the uneven combustion and a slight amount of tipping-off effect.

The results of this testing indicated that the mail rocket, with several minor modifications, would perform as expected and we could go ahead with the plans for the flight.

MILER I DATA

Weight of various components:

Nozzle and Retainer Ring	1.7 lbs
Propellant Chamber	12.2 lbs
Fins	1.0 lbs
Fin Clamps	.051lbs
Launching guides	.3 lbs
Connecting section	2.0 lbs
Payload Chamber	6.2 lbs
Smoke Flare	1.8 lbs
Mail (350 dummy letters)	2.0 lbs
Wooden Nose	.2 lbs
Total Weight Empty	27.45 lbs
Weight of propellant	26.8 lbs
Total Weight Loaded	54.25 lbs

Assumed Thrust	2066 lbs
Firing Time	1.875 sec
Length	184.75"
Diameter	2.375"
Propellant Space	115.75"

DESERT TESTING NO. 4 - JUNE 1, 1947

The main purpose of this testing was evaluation of the new features on Miler II and the testing of the new ignition system. In addition to these items several other things were tested. The complete list was as follows:

1. Miler II
2. Ignition System
3. Slim Jim II
4. Small Micrograin Rockets
5. Restricted Charge

MILER II

Although the range of Miler I was satisfactory, it was found that the brass nozzle erroded and the mail compartment did not afford sufficient protection to the mail.

Miler II was designed with improvements to help prevent the defects of the previous rocket. The nozzle, although of similar design, was made of steel. An aluminum plate was fastened in the front of the mail compartment to prevent the wooden nose crushing the mail upon impact. In order to save weight the 5'x 2" mail compartment was made of 24ST aluminum, cutting the weight (with the same payload as Miler I) from 10 to 6 pounds. The connecting section was also made of aluminum in order to lighten the rocket. To simplify the reloading of smoke flares, the two flares were attached to the fins. The propellant chamber from Miler I was straightened and used on this rocket. In an attempt to even out combustion a different type of propellant laod was used.

In order to make an estimate of the effect of launching angle on the range, the Miler II was fired at a 60° angle.

After the two white tracking flares were ignited, the rocket was fired. With a mighty blast the needle-like projectile rose skyward, trailing

two streamsof tracking smoke and landed over 4000 feet away (500 feet more than Miler I which was fired at a 45° angle). Because of the excellent operation of the flares, it was possible to follow the rocket through its entire flight trajectory. Upon impact the rocket buried itself about four feet in the ground, breaking off the mail compartment in the process. However, the dummy load and actual letters were recovered undamaged. Despite the force of impact, which caused the propellant chamber to bend, it was possible to straighten it for future use.

Due to the change in propellant load design, the combustion was much more even than Miler I. From the color movies it was possible to establish with a fair degree of accuracy the linear burning rate of micrograin propellant as 5 feet a second. This rapid burning rate is one of the highest, if not the highest, for solid-propellant rockets.

In firing the Miler II, the ignition system worked to perfection. The signals, tracking flares, and propellant ignitor went off without delay.

The signals consisted of one minute and ten second micrograin flares which released a large cloud of smoke from the top of a ten foot pole.

SLIM JIM II

This was the fourth flight for the dependable test rocket. The major midifications consisted of four fins instead of the previous three and an enlarged 2"x21" aluminum parachute compartment. The propellant chamber was the same 1"x51" stainless sttube and contained 1.2 pounds of propellant. The parachute release, designed by George James, was of the time flare type.

Six seconds after the tracking flare ignited Slim Jim II was fired. Photographs show that for some reason the rocket, when fired was actually

several feet to one side of the tower. Apparently the very thin metal launching clips had given way as the rocket started to fire. Two fins were torn off as the rocket hit one of the tower supporting wires. Despite this the rocket rose very straight to 425 feet where the parachute was ejected. The chute did not have time to open before the rocket hit the ground. Only two previous releases have worked better. To date more than twenty have been tried. However, the time flare type would only be practical where the flight time could be accurately determined before the flight.

SLIM JIM II DATA

Weight of various components:

Nozzle and retainer ring	.2 lbs
Propellant chamber	1.3 lbs
Fins, clamps, launching clips	.6 lbs
Connecting section	.4 lbs
Payload and compartment	1.0 lbs
Total Weight Empty	3.5 lbs
Weight of Propellant	1.2 lbs
Total Weight Loaded	4.7 lbs

Assumed thrust	170 lbs
Firing time	.8 sec
Length	72 "
Diameter	
Propellant chamber	1 "
Payload compartment	2 "
Propellant space	48 "

SMALL MICROGRAIN ROCKETS

Two small micrograin rockets, built by Dick Schenz were fired at this testing. These 1"x36" aluminum tube rockets were similar to a small micrograin rocket fired by Ray Paulson several years ago. At that time his rocket performed very well (rising over 800 feet) and acted as a stimulus for large scale RRS micrograin research. The purpose

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THE JUNE 28, 1947 MAIL ROCKET FLIGHT

On June 28, 1947, the Reaction Research Society fired two Miler Mail Rockets carrying a total of 650 covers from Winterhaven, C lifornia, across the Colorado River, to Yuma, Arizona, in commemoration of the centneary of the United States Postage Stamp.

After the successful testing of Miler I, on March 23, 1947, proving that an RRS rocket would carry a payload sufficient distance for a practical mail flight, actual planning a work for the proposedflight swung into high gear.

Due to a set back of about a month in the schedule, the original plan to hold the flight at the same time as the May Centenary Stamp Show (Cipex) in New York, had to be revised, resulting in June 28th being chosen as the flight date.

After spending much time looking at maps, it was concluded that Yuma, Arizona and Winterhaven, California must closely agreed to the specifications decided upon (must cross an obstacle, should be towns on both sides of the obstacle, and the location should not be too far away).

A letter to the Postmaster of Yuma, Arizona brought an excellent response and unexpected approval of the project. Mrs. Eleanor McCoy even took the trouble to send a map showing possible launching sites.

After receiving this reply, work began on the mail flight advertisements and stamps. Since no satisfactory photos resulted from the Miler I testing, a photo of the submiler take-off, by George James, was used . The use of a photo showing the take-off of an experimental mail rocket makes the stamp unique since previous stamps have used drawings of abstract rockets or designs.

After the advertisements and stamp proofs were completed, they were sent to Yuma for suggestions and approval. When word had been received that the designs were suitable, a total of 2000 numbered blocks of perforated (1000) and

imperforated (1000) maroon RRS mail rocket stamps were printed.

During the early part of June, news releases were sent to leading news agencies and in addition, to the Yuma Daily Sun.

Several days later, we were horrified to read in local papers that our flight had been banned by Yuma officials because our rockets were obviously firecrackers and it was illegal to set off firecrackers in Yuma. Other accounts stated that we had been stopped because we contemplated firing V-2's carrying tons of mail into the heart of Yuma.

W. hurriedly dispatched a letter to Yuma seeking an appointment with the city officials to clarify the situation.

On June 14th, Bob Seth, Dudley Neff, and George James arrived in Yuma armed with facts, arguments, and color movies of the January 5th, March 23rd, and June 1st testings. We found much to our surprise that no one had any serious objections to the flight and were quite willing to cooperate. The newspaper stories were the result of an error. In the account for the Yuma Daily Sun the reporter mentioned that one of the authorities stated that possibly we could not fire the rockets inside the city limits because of the fireworks law. Due to an oversight on our part we failed to mention, in our release, that we hoped to fire the rockets several miles below Yuma. When the story was condensed for reprinting in other papers, all that remained of the original article was that the authorities said we could not hold the flight because of the fireworks law.

While at Yuma, with the help of city officials, we located tentative launching and landing sites.

Up to the second week in June, the response from collectors had been very slow; consequently only one rocket was prepared. This was Miler III, Mail Rocket No. 1. The propellant chamber was exactly the same as that used on Miler I. The fins, launching clips, smoke flares, and connecting section were duplicates of those for Miler II. The major design

change was in the mail compartment. The new compartment was similar to that used on Miler II in every respect, save one---at the rear of the compartment was a row of 1/8" holes circuling the tube. It was hoped that when the rocket hit, the perforations would cause the compartment to break off--preventing serious damage to it. Over the holes was placed a layer of masking tape to seal the compartment.

Later in the month requests for covers began to pour in, requiring that another rocket be prepared. However, it was too late to construct a new rocket. The only alternative was to repair an old one. The Miler II tube and fins were straightened and the brass nozzle and connecting section of Miler I were placed inside. A stainless steel mail compartment similar to that for Mail Rocket I was made. However, its shorter length allowed for the carrying of 50 less letters than the other compartment.

The letters, in groups of 50, were rolled around wooden dowels at one of which was an aluminum disk, approximately the same diameter as the inside of the mail compartment.

Most of the covers carried were the United States Centenary Air Mail Envelopes. To these was applied, on the left, the RRS rocket mail cachet and in the lower right corner, one of the rocket mail stamps. This stamp was canceled with a rocket shaped cancellation. Both the cachet and stamps are illustrated in this issue of Astro-Jet. Due to the last minute rush of orders, about 200 of the covers had to use regular blank air mail envelopes. To these envelopes, in addition to the above, was attached a 3¢ Centenary stamp and a 2¢ stamp to cover United States air mail postage.

Several days before the flight, representatives of Pathe Newsreel came and took movies of the rockets and members at society headquarters. Later the same

day several representatives of Paramount Pictures and Joan Caulfield came to get some publicity photos for her then to be released movie "Dear Ruth". One of the Paramount men took movies for use in a news reel on the flight, however, since at the last minute he could not attend the launching, the shots were never used. Fortunately for the society, Arthur Joquel took 8mm movies of Miss Caulfield's visit.

For the trip to Yuma both rockets were disassembled as much as possible and loaded on Bob Seth's "Sethmobile". The propellant was carried in Sherwood Mayall's car as were the mail packets. About 6:30 PM, Friday June 27th, four cars left from society headquarters for Yuma carrying the following persons: Ernest Davis, Douglas Dryer, Mr. Carroll Evans, Carroll Evans, Mr. S.V. James, John James, George James, Art Joquel, Sherwood Mayall, Lee Rosenthal, Rodney Skager, Charles Whiting, Dudley Neff, Bob Seth, and Charles Seth.

All of the cars with the exception of the Sethmobile arrived shortly before sunrise at Winterhaven; Bob and vehicle arriving shortly thereafter.

After the newsreel men, Mr. Wisely, Yuma City Attorney, and John Fairweather, Secretary of the Chamber of Commerce had been contacted at the Winterhaven side of the Colorado River Bridge, the caravan set out for the tentative launching site. Almost immediately we were confronted with a typical desert phenonenom---cars sticking in the soft sand. After quite a bit of effort all the cars were gotten back on the highway. It was found that the Sethmobile was the only vehicle that could traverse the sand without difficulty, consequently, it was used extensively to help locate a new site (the tentative one would have allowed the rockets to land too near a farmer plowing his fields in blissful ignorance) and when located, transfer personel and equipment to it. Later another road was found which allowed all of the cars to come to the launching site.

The launching spot finally chosen was a clear area at one side of an irrigation dam. The launching

rack was set out about 75 feet from the base of a 50 foot cliff. The control box, equipment and most of the photographers were located on top of the cliff, where they had an unrestricted view of the launching site, rocket, and landing area.

As the sun rose higher in the sky we became increasingly aware of one detail not considered when Yuma was chosen for this venture. This was that it gets very hot down there. All of our testing in the Mojave desert was done at temperatures of less than 90°. We later found that the temperature where we were was over 120°.

As soon as Mail Rocket I, carrying 350 covers was loaded, it was placed on the launching rack and raised to a 45° position, allowing the photographers a chance for preliminary photos and to have a background for the movies of the loading of the second rocket. Mail Rocket No. 2 after it was loaded was placed under a clump of trees.

According to preliminary plans, we were to have the mail at the Yuma Post Office by noon (Yuma time-11:00 California time); however, it was not until then, because of all kinds of delays, that we were able to send the retrieving crew to the other side of the river. Upon arrival, the group became separated and the two (of the four) members that reached the launching site were not the ones that had to signalling flares. Consequently they (Mr. James and a newsreel man) had to fight their way through 3/4 mile of dense undergrowth that exists on both sides of the river to yell to us that they had located the site and were ready. By 12:45 (C.T.) they had returned to the site and were ready to receive the rocket. Later smoke flares far to one side of the landing area indicated the position of the other two retrievers.

At 12:45 a 10 second warning signal was fired--followed by ignition of the Mail Rocket No. 1 tracking flares. However, when the propellant switch was

thrown, the rocket did not fire. After the flares were done burning several members descended from the cliff and found that ween the flares ignited they had torn away the contacts on the propellant squib. The tracking flares were replaced and manually ignited fuse was attached. One of the members volunteered to ignite the long fuse. After the smoke flares had ignited, the rocket was to be fired electrically from the top of the cliff.

The red, yellow, and black Mail Rocket No. 1 was fired at 1:00 PM after having been on the rack in the 120° sun for more than 1½ hours. A quarter of a second (or sooner) after take-off the propellant chamber exploded high over the river dropping the mail compartment containing 350 letters into the Colorado river. Due to its sealed nature, the bright red mail compartment 2-3/8" x 5' was observed floating down the river. The lack of usalbe boats or swimmers prevented recovery of the head. Several of the members followed the head from the river bank, hoping it would come to shore, until it drifted into Mexico. The compartment, unless it stuck on a sandbar or absorbed enough water to sink, probably drifted into the Gulf of California.

A standing reward of $25.00 is being offered by the Reaction Research Society for the return of this compartment, intact, with mail load. The compartment may either be returned to the Yuma, Arizona Post Office or to the Reaction Research Society, 3262 Castera Avenue, Glendale 8, Calif.

The explosion of Rocket II was due to the excessive temperature at Winterhaven , California. This caused the propellant to produce far greater internal pressure than could be withstood by the stainless steel propellant chamber. The RRS is not alone in having its rockets explode at extreme temperatures, for the Army and Navy have also learned, the hard way, that their rockets will explode at temperatures in the neighborhood of 120 degrees.

After the explosion, Mr. James and the Photo-

grapher struggled back through the 3/4 mile of brush to the river bank to see if the compartment has landed on their side of the river. This trek was made all the harder by the fact that they did not have any water with them. When they reached the bank we were able to yell to them that the compartment had dropped in the river and for them to return in order to receive the second rocket. Before they returned they managed to lacate the exploded propellant chamber which had landed just at the edge of the water in some soft mud.

It was hoped that the movies would show the explosion so possibly we could determine exactly when the first two feet of the propellant chamber and the mail compartment were blown off. The rocket, however, took off so rapidly that it left all the cameras far behind. By the time they had advanced up the trail of smoke to the explosion, all that remained was a beautiful white plume of smoke.

After the explosion of the first rocket, it was realized that the explosion was due to the temperature. However, Rocket No. 2, stored under a clump of trees, had not been exposed as much as the first one. Consequently it was felt that it would perform in a satisfactory manner.

After the rocket had been placed on the rack and raised to the proper position, all persons left the area. After a warning flare, the rocket was fired at 1:30 (C.T.). With a mighty roar, Mail Rocket No. 2 took off making a successful, though wobbly flight carrying 300 covers to its landing site 5000 feet away. The uneveness of flight was due to accidentally bent fins. Only one fair still shot was obtained of the take-off. It was a 35mm color transparency, by John James, showing the rocket well on its way over the river.

Upon landing the propellant chamber was completely destroyed, bending up like a collapsible ruler. However, it can be excused for this action as this was its third and most successful flight. The brass nozzle was completely erroded; the 1-3/16"

diameter throat enlarged to over 1½" in diameter. Possibly the rrrosion served as a safety valve, preventing the explosion of the rocket. The mail compartment was also quite badly bent up.

Due to the time required for packing up and an unsuccessful search for a boat to regain the head of Rocket i, the mail compartment form Rocket 2 was not brought to the post office until 3:30 (C.T.) 4:30 Yuma Time. There the precious compartment was carefully cut apartwith a hack-saw and the mail extracted. All of the bonds in the compartment ocured between themail packets so the job was not too difficult.

After a short talk with the Postmaster and a representative of the Yuma Daily Sun, the James car, carrying the launching rack, other society equipment, and rocket remains (due to repairable desert damageto the Sethmobile which required it to remain inYuma for a while) started home with Mr. James, John James, George James, Douglas Dryer, and Charles Whiting. It arrived at society headquarters shortly after midnight; thus ending probably the most eventful 36 hour period in the lives of any of its occupants.

The satisfying of customers who had covers on the first rocket was quite a problem. Many people had ordered covers for others and failed to give their own names. A small supply of special covers was carried on the second rocket to be sold after the flight to collectors for $1.00 each. These were traded to as many collectors as possible on a special cover for two lost covers basis. The rest of the collectors we could contact wererefunded their money.

The RRS Mail Rocket Flight, dispite the loss of one rocket,was actually very successful. For the first time in mail rocket history, mail by rocket had been successfully carried over a river between two states. The flight also helped revive interest in practical long range rocket mail and many valuable lessons were learned that will improve procedure at our Mojave test area.

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to travel 2200 feet. With the information gained from this testing, it was possible to go ahead and complete the calculations and design of Miler I.

SUBMILER DATA

Weight of various components:

Nozzle	2.2 lbs
Propellant Chamber	2.4 lbs
Fins	.8 lbs
Connecting Section	.5 lbs
Payload Head	3.6 lbs
Launching clips	.3 lbs
Accessories	.4 lbs
Total Weight Empty	10.2 lbs
Weight of Propellant	6.3 lbs
Total Weight Loaded	16.5 lbs

Assumed thrust	890 lbs
Firing Time	.6 sec
Length	84 "
Diameter	2 "
Propellant Space	36.875"

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of testing these simple rockets was to check results obtained on that date. Unfortunately both displayed the discouraging characteristics of aluminum tubed micrograin rockets--as the propellant burned, the tubing melted causing very short eratic flights. It is interesting to speculate where our micrograin research would be if Ray Paulson's rocket had performed in a similar manner.

RESTRICTED ROCKET CHARGE

An experimental restricted solid propellant rocket charge made of 2" pipe and filled with an asphalt-perchlorate mixture was ground tested. Due to a faulty ignition pellet, the ignitor exploded allowing the charge to burn without sufficient pressure to make any thrust.

CONTINUED FROM PAGE 2**********

it was possible to go ahead and complete the pro-type mail rocket, MILER I. This rocket, largest to that date, in the history of the society, was 15 feet long, 2-3/8" outside diameter and weighed 54 pounds loaded. It was to carry a dummy load of 350 letters a distance of about a mile.

The MILER I was fired at the desert test area on March 23, 1947. It traveled a distance of 3500 feet. This range would have been greater if it had not been for the extra-heavy mail compartment.

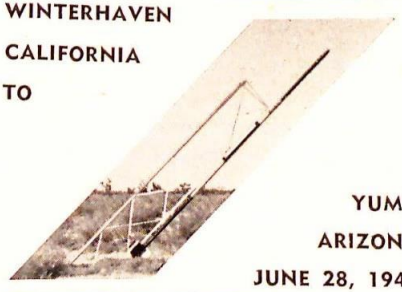
Thus almost four years after the mail project was started, the first pro-type mail rocket left the ground. This rocket, long and needle-like, certainly had lost all resemblance to the squat, collapsible winged rocket designed in 1943.

ACROSS THE COLORADO RIVER

WINTERHAVEN

CALIFORNIA

TO



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REACTION RESEARCH SOCIETY

PURPOSE

The REACTION RESEARCH SOCIETY is a non-profit organization whose purpose is to aid in the development of reaction propulsion, its applications, and to promote interest in this new science. This purpose is carried out by maintaining an active research program, encouraging other experimenters, and promoting interest in reaction propulsion by the publication of ASTRO-JET, Journal of the Reaction Research Society.

MEMBERSHIP

At the present time there are two forms of membership in the REACTION RESEARCH SOCIETY, Active and Associate. Active membership is for those who can engage in the activities of the society. They may come to all society meetings, all society testings, receive all society publications published during their membership, and are able to vote and hold office in the society. This form of membership is $5.00 per year. All applicants for active membership must also submit an article for ASTRO-JET or by some other means show a genuine interest in reaction propulsion. Associate membership is for those who find it inconvenient to become active members. They have all the privileges of active membership with the exception of holding office and voting. This form of membership is $3.00 per year. If you are interested in joining the society, please write to:

SECRETARY, REACTION RESEARCH SOCIETY
3262 Castera Ave., Glendale 8, California

OFFICERS

President and Editor ..... George James
Vice-President ..... James Hummel
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