Mercury Redstone

History: From the mid 1950s the United States and the USSR competed to be the first to put a man into space. The German V-2 had shown that rockets worked and the development of the atomic bomb led to rapid advances in rocket technology. Both the US and USSR took over as much German technology as they could at the end of the war and both superpowers began their rocket developments from that base. Although the primary objective of both countries was to build fleets of nuclear armed ICBMs, the 'space race' was an interesting sideshow.

In the United States a bunch of Germans rocket scientists, led by Werner von Braun, were taken under the wing of the Army in the Army Ballistic Missile Agency at Redstone Arsenal in Alabama. Their most important development was the Redstone intermediate range ballistic missile, a direct descendant of the V-2. It had the same basic characteristics as the V-2 but was larger and more powerful with the ability to send a 1 or 3.75 megaton warhead up to 300 kilometres. The first Redstone was test fired in 1953, in August 1958 Redstones were used to launch two live atomic warheads during a nuclear test series and they were first deployed by the US Army in Germany in 1958, remaining in service until 1963.

The Redstone could have been used to launch the first artificial satellite as early as August 1956 if the US government had given its approval for the US Army to do so, but the administration wanted its satellite to be launched by a civilian agency. When that failed vonBraun was allowed to attempt the launch and succeeded in launching the first United States satellite in January 1958.

Project Mercury began in 1959, with the intention of putting a man into space. At that time nobody knew how the human body would react in space and so the first step was to send up a man in a largely automated space craft to see what would happen. Because of the limited size of potential launchers the Mercury capsule was made as small as possible with a diameter of 1.89 metres, a weight of 1935 kilograms at launch and an internal volume of 1.7 cubic metres. It was said that the Mercury capsule was not ridden, it was worn. The capsule shell was made of titanium to resist the heat of re-entry and protected by an ablative shield at the astronaut's back to absorb the heat. During the early stages of flight it had the red launch escape system that would pull the capsule away from the launcher if anything went wrong.

The Mercury capsule was designed by the NASA Space Task Force and 20 were manufactured by McDonnell Aircraft Corporation. Only 15 were flown, two were lost, three carried chimpanzees and only 6 were used in manned flights.

Redstone launchers did not have the power to lift the Mercury into orbit but they were used for a series of tests into the viability and safety of the system. The Redstones used in the Mercury program

were extended by 96 inches to increase their fuel capacity and give them an addition 20 seconds of burn time. They were also fitted with more advanced A-7 motors and given about 800 engineering changes to qualify them as a manned space launch vehicle.

The first Mercury-Redstone test flight occurred on 21 November 1960 and was probably the shortest and lowest rocket flight recorded, a duration of two seconds and a height of about four inches. Due to an electronic problem at launch the rocket engine closed a couple of seconds after lift-off and the rocket settled back onto its supports. The capsule electronics thought the mission was going ahead as normal and jettisoned the escape tower and then, sensing that the flight was over, popped out the main chute. Three further Redstone-Mercury test flights followed before the first manned flight on 5 May 1961.

The first manned Mercury-Redstone flight took place with Alan Shepard in the capsule he had named *Freedom 7*. It travelled a horizontal distance of 487.26 kilometres and reached an altitude of 187.42 kilometres in 15 minutes and 28 seconds. The acceleration during take-off was 6.3g and 11.g during re-entry. During the short flight Shepard had tested the controls and peered out the tiny porthole and used the periscope to observe the land and ocean below. The flight was considered a complete success and a second flight, *Liberty Bell 7*, with Gus Grissom tookplace on 21 July 1961. It was almost identical to the first flight but after the capsule landed it began to take on water and sank in 4.5km of water. It was retrieved 38 years later in good condition but Grissom died in the fire on board Apollo 1 in January 1967.

Two more Mercury-Redstone flights had been scheduled but the success of the first two made them unnecessary and they were cancelled. NASA then went on to the final phase of Project Mercury by conducting orbital flights using the Mercury-Atlas combination.

Data: *Engine* one Rocketdyne A-7 of 35,375kg (78,000lb) thrust. *Height* 23.5m (83ft). *Diamater* 1,77m (5.83ft). *Weight* 29,930kg (66,000lb).

The kit: New Ware 1/144

There must have been a time before resin kits, but it must have been fairly arid. I do remember the old vacform kits, and while they weren't too bad, only the very best had the kind of surface detail and crispness of injected kits, particularly in 1/144. (I see that even the venerable *Welsh Models* is starting to use resin parts for their 1/144 airliners). Resin has allowed small companies, generally one enthusiast, to make kits of all kinds of things. Some of these kits are fairly rough and need a lot of work but others are beautiful and it seems almost a pity to assemble them. *New Ware*, a little Czech company, offers a whole range of rocket kits, mostly in 1/144, and the quality is excellent. Putting them together is the kind of thing that any modeller who has fought against a Mach 2 kit could do in his sleep.

Like it's companion Mercury-Atlas kit, this one comes in a tiny box. However, the Redstone was such a tiny rocket that most of the space inside the box is empty. What you get is the Redstone, which is about the size of a pen, and the Mercury capsule to go at one end and the lower body and fins to go at the other end. There is also the escape tower in very fragile etched brass, the escape rocket and decals, and that's about it.

The most difficult part of making this kit is the painting and decaling. The decals include the upper black and white markings but the ones around the fins have to be masked. The decals themselves are almost too thin and part of one of the 'United States' running up the rocket side folded over and would not unfold, no matter how harshly I spoke to it. Fortunately I had bought a colour laser printer only days before and had scanned the decals before I began applying. It is impossible to tell the new decal from the old and the end result is a fine looking little model.