



the house that space built

The space center may be tied to space budgets,
but Huntsville is cutting the umbilical cord

by Jonathan Eberhart

Huntsville, Ala., is almost 200 miles from the state capital of Montgomery, and 340 miles from the port of Mobile. It's only spittin' distance, however, from Fannings Crossings, Laceys Spring and Peets Corner.

The average household income is more than \$10,000 a year. What's it doing out there that makes it so rich?

At first it was the Army's Redstone Arsenal which sent the town's fortune and population soaring. On July 1, 1960, the Army got company. Since so much missile and rocket talent was already concentrated in the area, the National Aeronautics and Space Administration decided to put its own

rocket center there—the George C. Marshall Space Flight Center.

As a result of both the money and the high average educational background that came along with Marshall, Huntsville prospered even more. Today it has a population of about 150,000, its own Civic Ballet, a symphony orchestra with more than 60 members and a planned multimillion-dollar cultural art center. The town is an island, almost completely different from the surrounding areas of the state.

What is now the main street of Huntsville was originally built as a bypass to let motorists get around the few small shops that used to cause

what traffic there was. Cotton is still grown within the city limits, sometimes among new apartment developments.

Marshall itself resembles a cross between a college campus and a munitions factory. At its peak a couple of years ago, almost 18,000 NASA and contractor personnel worked there; today's total, some 13,600. Since Marshall's big job is assembling and testing NASA's family of Saturn rockets, engineers and technicians predominate, but there are scientists as well. A few years ago, as much as 25 to 30 percent of the center's research was non-project-oriented, but Vietnam budget pressures have trimmed that down to

less than 10 percent. A certain amount of research—materials, electronics—is always necessary, however, simply to get on with the business of advancing rocketry. “These O-rings and gaskets are usually not available from the Sears catalogue,” a lab director quips.

Marshall has 147 buildings and 98 test stands and other structures, occupying some 1,800 acres. And there’s no question about who runs it all. The press lost little time in christening the nine-story, plate-glass headquarters building **The Von Braun Hilton**.

Dr. Wernher Von Braun is NASA’s biggest star, and certainly the only one who ever had a real Hollywood movie (“I Aim for the Stars”) made of his life. “He usually comes through the gate about 60 miles an hour, reading a speech,” comments a Marshall old-timer.

When Dr. Von Braun (who seems to be “Von B.” to everyone at Marshall, at least when he’s not around) came to the U.S. from Germany’s V-2 program following World War II, he did not come alone. “Dannenberg . . . Geissler . . . Hueter . . . Mrazek . . . Neubert . . .” read the reserved parking spaces outside the V.B. Hilton. Some 118 rocket experts had come with Von Braun; 60 of them are still at Marshall. Of the rest, 30 are with U.S. companies here and abroad, 16 have returned to Europe, 3 have retired and the remaining 9 are dead.

Von Braun has been in the territory for almost twice as long as Marshall Center. He began there in 1954 building Jupiter and Redstone missiles for the Army Ballistic Missile Agency. Today a forlorn, deserted cluster of dirty, rusted trailers is all that marks the site of those first early test firings. “I doubt if a third of the people here know what those are,” a NASA man muses.

The trailers could easily get lost altogether, surrounded by the giant towers of the rocket test stands. Marshall’s buildings and laboratories are grouped together like a small city in the northern half of the center’s acreage, while the test-firing area to the south is composed of widely spaced structures looming above wooded hills. The biggest object in sight is the S-1C stand, which holds the powerful first stage of the Saturn V booster that will send an Apollo spacecraft to the moon. This stand must be able to hold the stage in position while all five of its engines are blasting at once, producing 7.5 million pounds of thrust.

From the steel-mesh top of the stand, 360 feet above the ground, one can see for 30 miles on a clear day. Von Braun’s old trailers look no bigger than sugar cubes. Four other large stands are visible, plus several smaller

ones used for testing gas generators and other rocket engine components. At one complex, 13 locomotive diesel engines have been harnessed just to pump water to cool two stands. An S-1C firing requires some 320,000 gallons per minute to keep the stand from melting or at least being weakened by the engines’ intense heat. To brace them for their herculean task, the stands are anchored in as much as 70 feet of limestone bedrock.

Other odd towers dot the surroundings, some of them belonging to the Army missile test range, just to the south. This may be the shortest true missile range in captivity, barely two miles long. “They test the TOW missile there,” says a NASA official, referring to the Army’s Tube-launched Optically-tracked Wire-guided antitank weapon. “It comes from over there,” he says, pointing well in from the horizon, “and lands in that clump of trees.” The clump is only a few thousand feet away.

The most important towers, after the test stands themselves, are probably those used to keep track of the weather. Weather conditions are vitally important to the rocket test-firings, since a temperature inversion can bounce the noise of the blast a third of the way down the state. “We’ve broken windows in Decatur and had complaints from Birmingham,” the NASA official says. Decatur is 25 miles away, Birmingham four times as far.

One of Marshall’s most unusual areas is its waterfront, where the huge rocket stages are loaded onto barges for shipment to Cape Kennedy. The dock itself is a featureless, steel-reinforced gray span, but everything else is straight out of Huck Finn. The gnarled roots of low, twisted trees thrust out over the green water of the Tennessee River. Nothing could seem further removed from the Space Age hustle going on only a few miles away.

The covered barges themselves, however, bring everything back to NASA’s typical bigger-than-life scale. Shaped like giant loaves of corrugated-steel bread, the biggest of them are 264 feet long. The barge Poseidon, fitted to carry the big S-1C stage, has a deckhouse with an inside space 200 feet long, 50 feet wide and 43 feet high.

Each of the barges is equipped to provide controlled temperature and humidity for its delicate cargo during its journey. The barge trip from Huntsville to Cape Kennedy takes 10 days and is 2,200 miles long, even though the two points are little more than 700 miles apart. The river route takes the barge northwest on the Tennessee, due west across a little piece of the Ohio and down the Mississippi to the Gulf

of Mexico, thence across the Gulf and up the east coast of Florida to the Cape.

In recent months, many of Marshall’s test stands have been standing idle, and general activity has slowed down considerably. The reasons are three. The main one is that Marshall’s primary job for the past eight years—the development of the Saturn rockets—is practically over, except for the tests involved in readying each individual stage for flight.

Secondly, although the center now has a new mission, it is a small one: the development of the Apollo Applications Workshop, adapted from an empty S-IVB rocket stage. This payload work is a strange experience for Marshall, which is used to behaving more like a factory and proving ground. In addition, the center now finds itself for the first time working with the astronauts who must assemble and operate the workshop in space, though a few astronauts have in the past been assigned to various rocket development programs as liaisons with the Manned Space Flight office.

The other reason is money. Between the decline of Apollo spending and the non-decline of Vietnam, Marshall’s budget has dropped almost 27 percent in three years. Between 1963 and 1965, the budget rose from \$1.2 billion to \$1.7 billion; for fiscal 1968, it was back down to \$1.25 billion. “A few years ago we were going like hell,” a center official says. “Now there are a lot of people just waiting to go home.”

So important is Marshall to Huntsville that the fluctuation of the center’s fortunes has spread to the entire town. “It has very definitely affected our economy here,” says Huntsville’s Mayor Glenn Hearn, “and we expected it.” There has been an unusual side effect, however. As contractor work has tapered off, the resultant decline in the town’s salary average has attracted new industry which formerly, according to Hearn, “could not compete.” Much of the influx is not space-related, but this upsets the town not a whit. “We’re getting diversification,” Hearn says, “which we badly need.”

Besides what it has done for Huntsville, Marshall has brought rocketry a long way. At the center’s space museum recently, a group of Marshall employees were looking at Dr. Von Braun’s most famous project, the German V-2 missile engine, huddled against a wall in the shadow of a huge F-1 Saturn engine three times the height of a man. “Pretty crude workmanship,” mused one man. “Looks like a north Alabama whiskey still.”