

LIFE

June 18, 1965



The Astronauts had been cradled in their capsule (*right*) with all the tender care that expert hands could give. Once aloft, they still got constant attention from an earth-girdling complex of watchers. These watchers were concerned with such esoteric items as whether or not their orbiters dreamed, as well as with such homely matters as when the pair should take a drink of water. Every eventuality had been anticipated. Had there been trouble after White's space walk, word from a tracking station off Africa would have alerted the control center in Houston, whose decision to abort the flight and bring the capsule

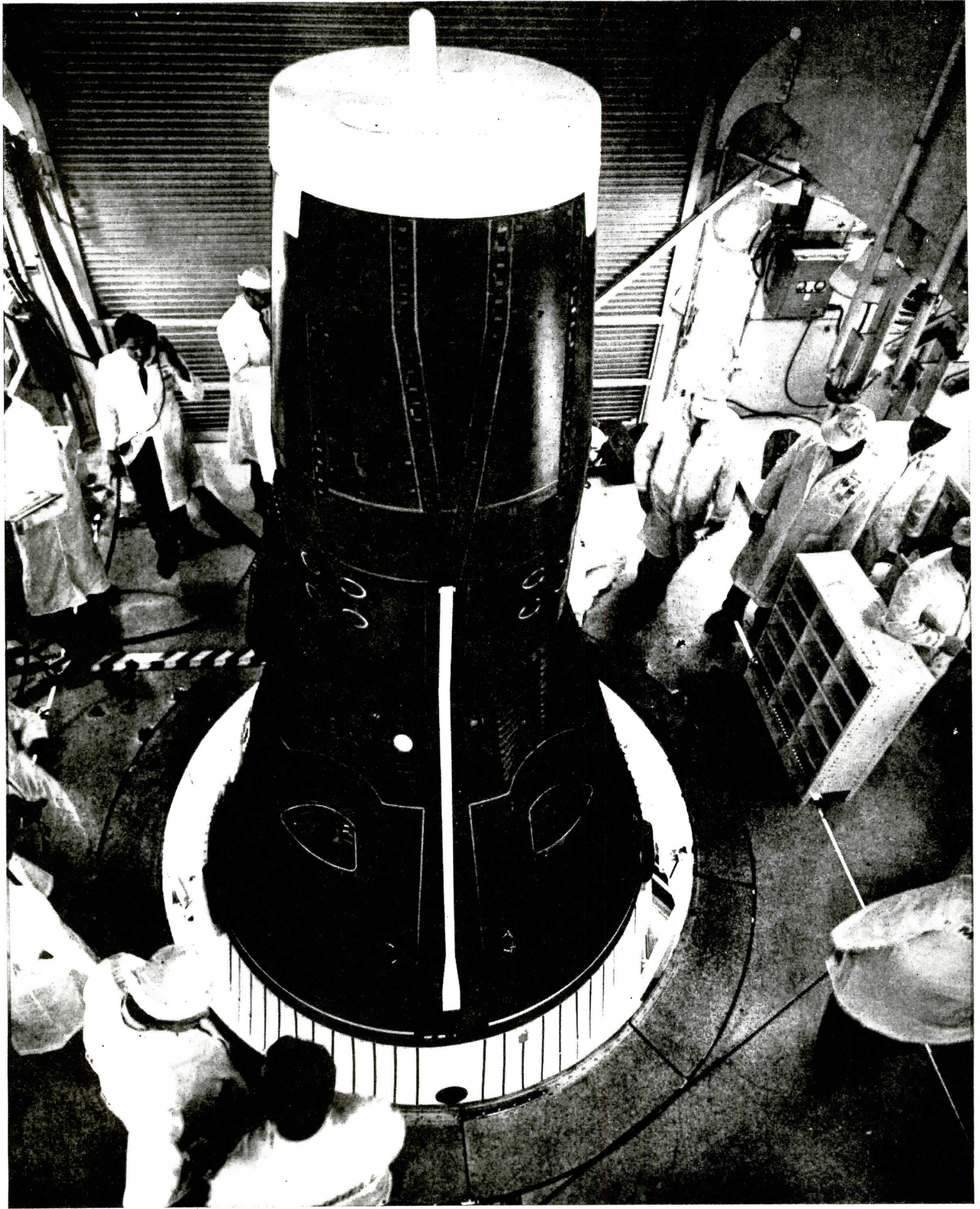
down in the Pacific would have sent planes and parachutists from Hawaii—guided to the exact spot by computers near Washington, D.C.—to secure the craft.

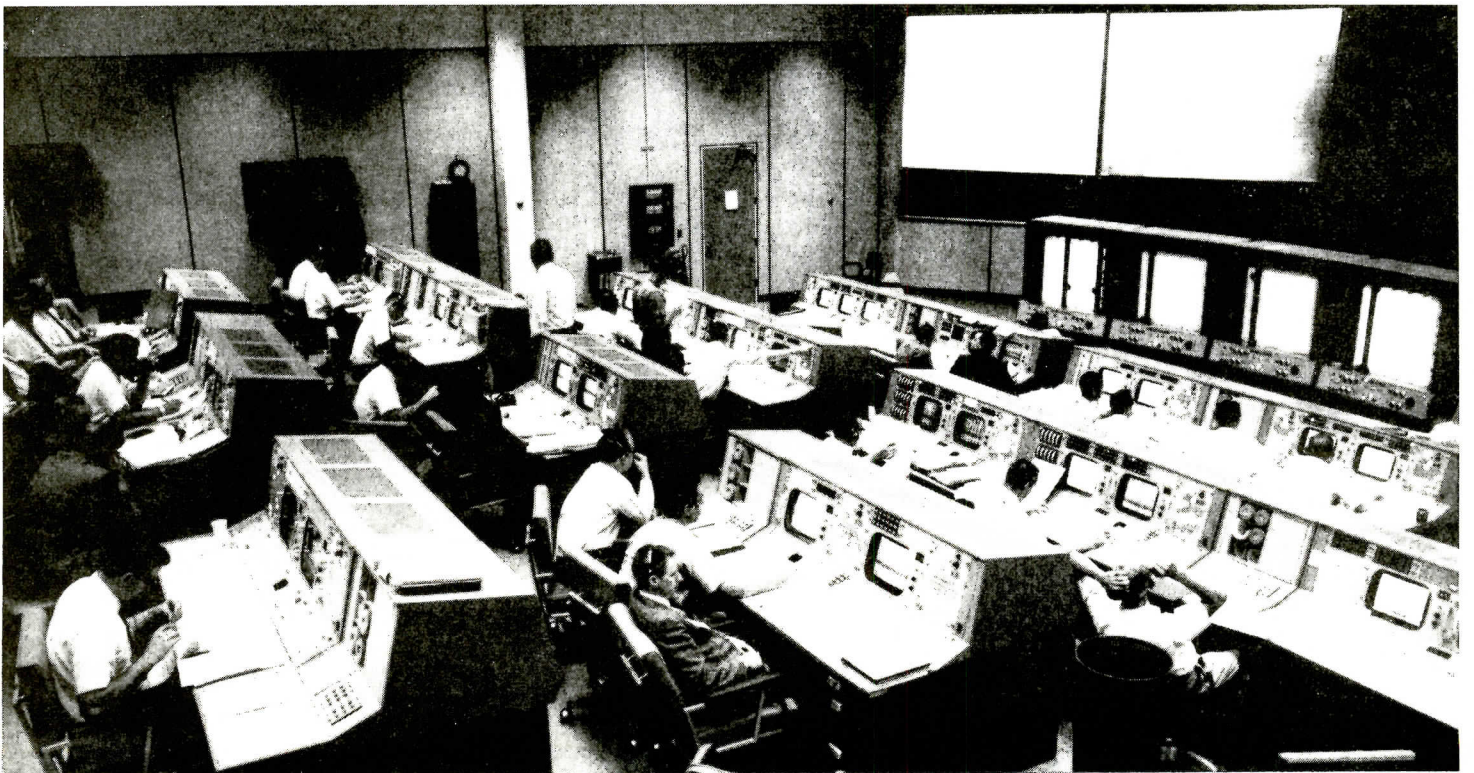
Calculating the eventualities of Gemini 4's flight took a whole complex of technological geniuses masterminded by Flight Director Christopher Columbus Kraft (*above*) at NASA's Manned Spacecraft Center in Houston. Kraft got incredible quantities of information—275 distinct types of data sent from Gemini 4 and relayed via the worldwide network mapped on pp. 78-79. In all, some 100,000 people took part in the immense vigil.

In NASA's Mission Control Center at Houston, Flight Director Christopher Kraft looks over the instrument-packed room where he spent virtually all the four days of the Gemini 4 flight.

Just before the countdown starts at Cape Kennedy, Astronauts Jim McDivitt and Ed White are sealed into the Gemini 4 capsule (*right*) by NASA and McDonnell Aircraft technicians.

GENIUS BEHIND GEMINI 4





THE MAN AT THE SWITCH WITH NO TIME TO ARGUE

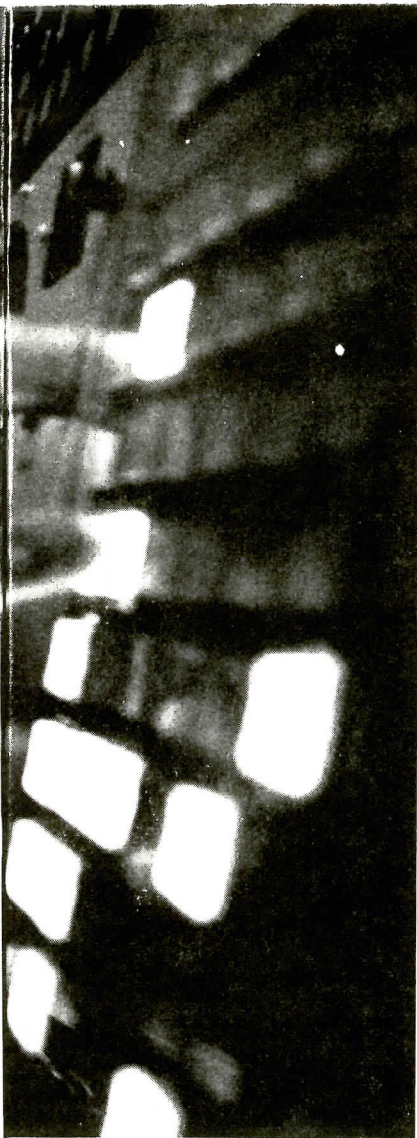
by MICHAEL DURHAM

HOUSTON

Flight director Chris Kraft is a soft-spoken engineer whose pulse rate normally registers an even 70. But at the Gemini blast-off it shot up to 135—higher than Ed White's, who at that point was taking 8 Gs of stress.

Kraft was personally responsible for every step of the flight. He decided whether or not to launch, or to abort, what orbital trajectory should be followed, what method of re-entry to use. It was Kraft who told McDivitt not to chase the booster any farther, who ordered a reluctant White to get back in the capsule after his space walk.

Kraft, an aeronautical engineer by training, acquired his vast authority—and the confidence to exercise it—through years of seasoning. At 41, he is NASA's pioneer flight director. He had directed every Mercury and Gemini mission to date, from empty capsules through chimpanzees to Astronauts. Because of his genius for manipulating and managing men, equipment and astonishing quantities of diverse information, he was given command responsibility very early in the Space Age. Slight of build and mild of manner, he is an unyielding taskmaster and a thoroughgoing planner, who can work unflappably around the clock under heavy pressure. He never permits an emergency to build into a crisis, and he has an exasperating way of looking coolest when things get hottest. The only time he looks fretful is when the pressure is off and everything is going smoothly. "I practically grew up in the job," he explains. "And there were no schools we could go to to learn this business. We just wrote our own textbooks as we went along." Kraft has had to refer frequently to his own textbook. There has been some sort of emergency on just about every flight so far. In each case, Kraft seeks all the advice he can get in a hurry—but doesn't necessarily follow it. "In an emergency," he explains, "there's no time to argue." During a mission Kraft is always caught between a desire to continue the orbiting and a great concern for the Astronaut's safety. During Wally Schirra's first orbit the cooling system quit working and the cabin temperature rose dangerously. But Kraft had a strong hunch the cooling system would



Kraft pushes buttons (above) to call up data on TV screen, holds control pack (right) which enables him to talk to various consoles, then stares (below) at board which shows orbit.



In Houston's Mission Control Center the array of computer consoles, a bank of TV screens and an illuminated wall map help NASA experts keep detailed track of Astronauts' progress.



DOCTOR WHO WORRIED ABOUT MUMPS IN SPACE

VIGIL CONTINUED

start up again. He asked the medics how risky it would be to keep Schirra up for another orbit. "They said he would be quite dehydrated when we picked him up," he recalls, "but they had no doubts he would survive. So I left him up." On the next orbit the cooling system got working again, and Schirra completed his mission brilliantly.

The one man whose advice Kraft would be least likely to overrule is Dr. Charles Berry. Chuck Berry is medical director of NASA's Manned Spacecraft Center and the personal physician for all the Astronauts. He monitors all medical data from the Astronauts in flight. He has a red button he can push to signal Kraft that an Astronaut is in serious trouble. So far, he has never pushed it.

There was only one time during the Gemini 4 flight that Berry's finger hovered nervously over the red button. When Ed White got back into the capsule, his pulse rate soared to 178 (his normal rate is a low 50). "I was worried," says Berry, "but I was convinced Ed could take it." As it turned out, he could.

During a flight Berry listens carefully to the sound of the Astronauts' voices for signs of unusual fatigue. He keeps close tabs, too, on each man's heartbeat, respiratory rate, temperature and blood pressure. On Gemini 4 he had an offbeat worry: both Astronauts had been exposed to the mumps, a disease neither had ever had. "It would have been perfectly possible," says Berry, "for one of those men to have come down with mumps in space."

But monitoring the Astronauts in flight, while vital, is not Berry's major job. "The first five days they're down are much more interesting to me." After the recovery, Berry flew from Houston to the carrier *Wasp*, where he examined and tested McDivitt and White and gathered the data recorded during flight. He will now keep close watch on them for post-orbital effects. After several weeks of study he hopes he will

be able to give what spacemen call a medical GO/NO-GO decision for the seven-day Gemini flight scheduled for August.

Berry, like Kraft, is 41 and a veteran of the space program. Like Kraft, he wouldn't trade his job for any other. He was a general practitioner before he became interested in aerospace medicine. He joined the Air Force, became a flight surgeon and did significant research in his field. "The purpose of aerospace medicine is preventive," he says. "A doctor's usual job is to take a sick person and put him back on his feet again. But for me, preventing disease—not treating it—is the epitome of medicine."

All the Astronauts are superior physical specimens. Berry and his staff are continually collecting data on each of them in a variety of unprecedented situations. The result is a massive volume of complete physiological data on every Astronaut. From this the doctors learn what is normal for each individual and how to spot any deviation from it.

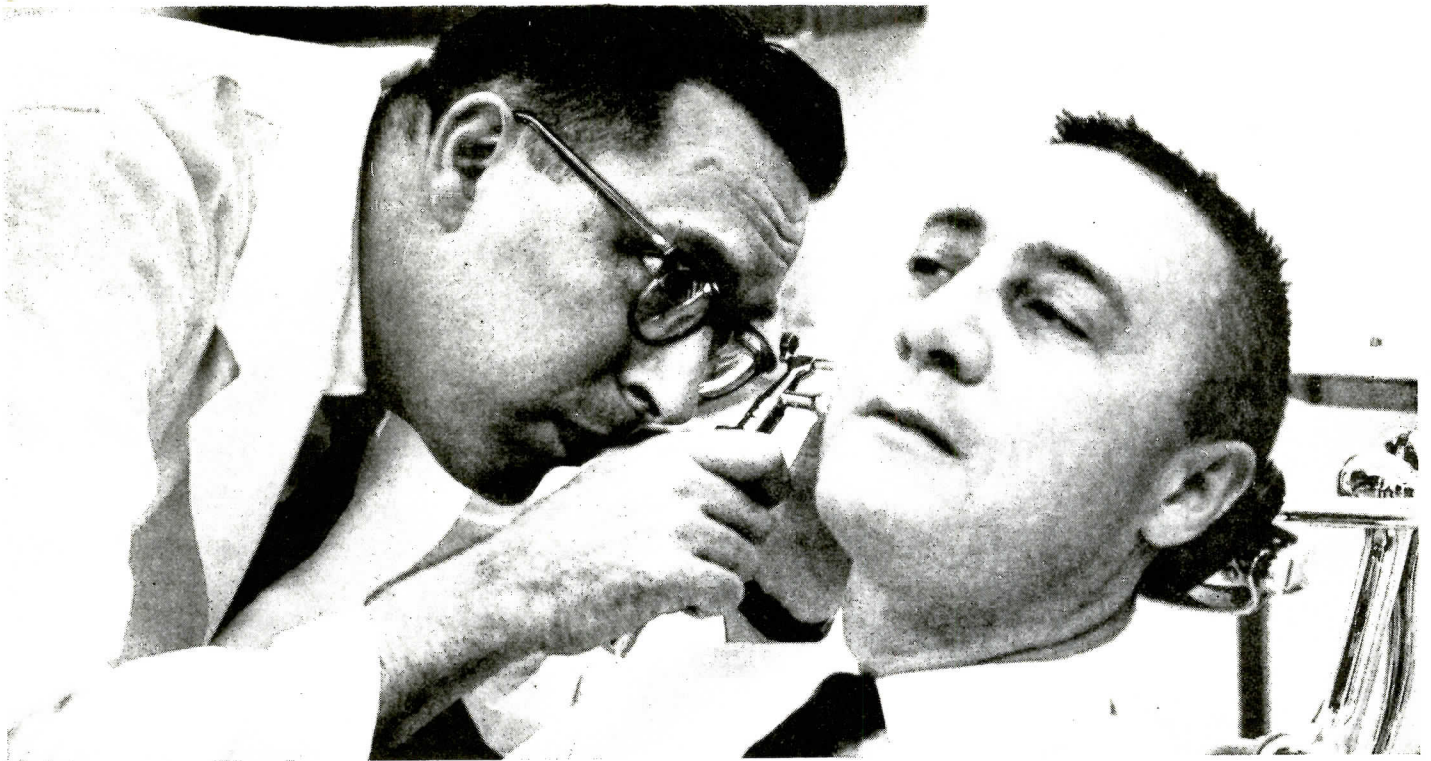
"When the average man walks into a doctor's office to have his blood pressure read," says Berry, "the reading doesn't really have much meaning because the doctor doesn't know what's normal for the patient." Berry hopes that some day family doctors will be able to rig each patient with a pocket-sized recorder to compile a body of meaningful data about himself. "When we start to learn more about normalcy," says Berry, "we will learn more about disease."

Though his easygoing, country-boy manner has won the confidence of the Astronauts, he does not always trust what they tell him. "These men are dedicated to flying," he explains. "They think the first thing a flight surgeon is going to do is ground them. To them, he's the enemy. You sometimes have to pry information out of them." That's why Berry counts himself very lucky to be doctor to the Astronauts' families as well. "There are an awful lot of things," he confides, "that Mom and the kids can tell me about Daddy."

Dr. Charles Berry, who sets a good example for his charges by frequently taking early morning workouts, runs along beach near Cape Kennedy at 6 a.m. the day before Gemini 4 launch.

During a preflight simulation at his console station in the Mission Control Center, Berry runs through the monitoring routine. He wears communications headset and microphone.





Inspecting medical facilities at Merritt Island, near Cape Kennedy, Berry climbs onto a tilt table similar to the

one on the carrier Wasp, on which Astronauts' circulatory systems were tested shortly after their recovery.

Berry examines veteran Astronaut Gus Grissom who was suffering from sinus condition. Grissom was sched-

uled to be the main speaking contact between Houston and Astronauts. He had to be in good voice—and was.

