

## SPACE

# A-Powered Satellite

The first nuclear-powered satellite, Transit IV-A, can be pinpointed at all times and will provide more information about the earth's gravitational field, Tove Neville reports.

► THE NEW TRANSIT IV-A satellite is the first navigation satellite up high enough for scientists to figure out exactly where it is and will be at all times.

Transit IV-A, which is the first nuclear-powered, three-in-one satellite package, is now circling the earth at 550 miles at the closest point and 629 miles when farthest away.

The position of Transit IV-A is much easier to calculate than that of earlier Transit satellites because there is no air drag at this high altitude. Transit will also supply more information about the earth's gravitational field. (Gravity is the pull on all objects towards the earth's center.)

The rocket was launched at a 66-degree angle from the equator, so that the Transit can be used twice a day from most of the earth's surface to determine position. The satellite takes 104 minutes for the trip around the globe.

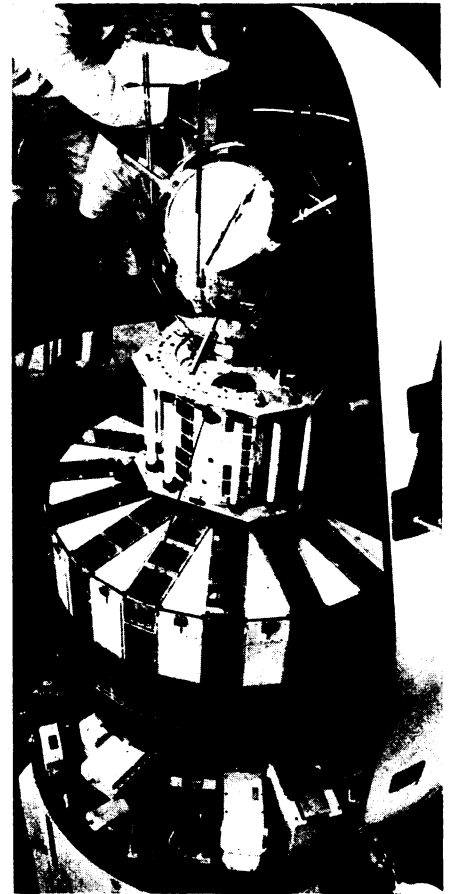
The future Transit system will consist of four satellites enabling ships and aircraft to find their position anywhere on earth every half hour. They are expected to have

nuclear batteries. Transits will also be important for defense since submarines carrying Polaris missiles can use the Transit to find their position for purposes of shooting missiles to target.

Transit IV-A is powered by a nuclear battery containing the radioisotope plutonium-238, expected to last many years. Greb III and Injun were launched with the Transit. The two companion satellites are designed to collect information for studying radiation effects, necessary for planning manned space travel.

The operational Transit system satellites are scheduled to go up sometime in 1962 after two or more test shots. The Transits sent up so far are experimental, designed to test the memory device that receives information from earth and sends it back when needed, to test time signals, and to improve techniques for calculating the orbits of satellites. Nuclear batteries are being tested because chemical batteries would not have a long enough "life."

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*THREE-IN-ONE—Transit IV-A and two companion satellites are being installed in the nose cone of the launch rocket, a Thor-Able-Star, at Cape Canaveral, Fla. Transit IV-A (bottom) is a forerunner for operational navigation satellites. The space probe Injun (center) was designed to study radiation of the Van Allen belts and aurora borealis, or Northern Lights. The sphere (top) is the Greb-III satellite that is measuring solar radiation.*

## ANTHROPOLOGY

# Space Men Predicted

► NOW THAT MAN has been put briefly into space and scientists are seriously planning to send men to the moon or nearby planets, anthropologists are speculating on what the first visitor to earth from space may be like.

Not much stock is placed in the comic books' picture of the visitor from space. It is of "little help," says Dr. William Howells, professor of anthropology at Harvard University. The comic books show only flying saucers manned by "flabby little web-footed goblins with knobs on their heads."

Dr. Howells has built up a scientific picture of the first men from space, based on the course of human evolution.

"I will lay a small bet," he said in *Discovery*, 22:237, 1961, "that the first men from Outer Space will be neither bipeds nor quadrupeds, but bimanous, quadrupedal hexapods" (two hands, four feet, six limbs).

Look for the space visitor to have one head and two sexes, Dr. Howell recommends.

"Two heads are not better than one; making up a single mind is more than most of us can do, as it is."

Look for plenty of fingers on the ends of two arms.

"Two arms; not three, because the creatures should be symmetrical like us; and

not four, because coordination would probably be too difficult for efficiency. Centipedes have to run their arms in teams."

"Five fingers seems like a good number, perhaps a minimum."

Perhaps, if our space visitor does have two hands with five fingers, we may expect that he will have developed a decimal system of numbers as we have.

We can surely expect hands and fingers on any intelligent being from space.

"If we can learn anything from our evolution," Dr. Howells explains, "it is that we had to be able to do things to become human. And our whole struggle was the getting and freeing of hands to do them with. Surely, we would not have had large brains without them."

After speculating what the intelligent being created by evolution on a distant world would have to be like, Dr. Howells wonders whether the chain of evolution that produced man could ever be repeated.

"Supposing, in a moment of idiot progress, we really killed ourselves off. Would *Homo* rise again?"

The ancient ancestors of man are all gone, "man has competed them into the grave."

There are still the apes, but they are probably too specialized to turn to freer use of the hands. Monkeys might do if

something made it worth while for the species to stand up. In this case, the new men might have tails. But, in fact, the monkeys have made no move to mimic human ancestors during about 35,000,000 years.

No other higher mammals of this earth will serve to start man's evolutionary line.

"Horses, dogs, elephants, all are deeply committed to being what they are." The next try, Dr. Howells concludes, would have to come from a tree shrew, laboriously repeating all of primate history. But, before the little tree shrew could start the evolutionary line now, the world would have to be swept clean of the kind of competition which might overwhelm the shrew's descendants. This means getting rid of most higher mammals, above all rats, cats, and monkeys.

"All in all, our hopes for repetition are not good, and we had better stay the hand that drops the bomb."

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