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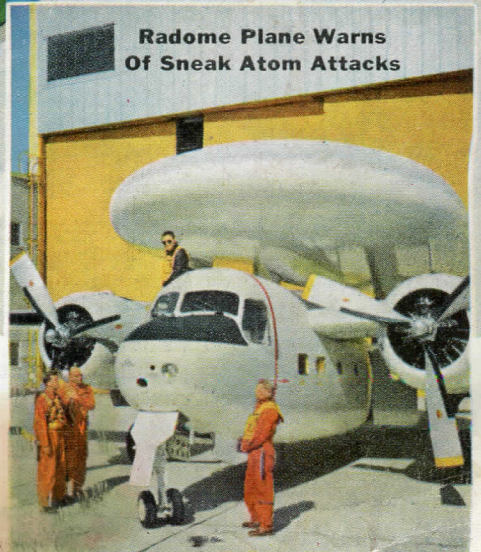
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Spaceship That

.....



Conquers Gravity

By Michael Gladych

*It will fly at the speed of light—making
a round-trip to Venus in about 30 minutes!*

THE spherical craft squatting on a concrete strip emitted a faint hum. A ghostly glow surrounded its shell. The strange craft rose and hovered momentarily while its landing gear retracted. Then the hum increased and the craft shot eastward and vanished beyond the horizon before the witnessing scientists could click their stop watches.

Jet-powered missile? No. Made weightless and propelled by its anti-gravity engine the round ship was a research vehicle able to travel at almost the speed of light—600,000,000 mph.

How soon will such a revolutionary craft take to the skies? Since 1953 the Canadian government's Project Magnet has been working on a gravity-defying vehicle powered by electromagnetic forces. At least 14 United States universities and other research centers are hard at work cracking the gravity barrier. And backing the basic research with multi-million dollar secret projects is our aircraft industry. Convair on the west coast, Glenn L. Martin Aircraft Co. of Baltimore, Md., Bell Aircraft Co. of Buffalo, N. Y. and Sperry Gyroscope Co. of Great Neck, L. I. maintain teams of researchers and engineers prying into Nature's most jealously guarded secret—gravity. "Aviation is on the threshold of amazing new concepts," said the late Lawrence D. Bell, level-headed builder of the Bell rocket research planes. "We are already working with nuclear fuels and equipment to cancel out gravity instead of fighting it."

Even before the famous apple fell on Isaac Newton's head, men were trying to solve the gravity problem. But from the simple pre-historic lever to the most intricate modern machinery, the best we could do was to win a temporary victory.

"What goes up must come down," said the biggest scientific brains, helpless before the mysterious gravity pull. Newton and other great physicists formulated the gravity laws, measured gravity pull and passed their findings to posterity.

But their gravity "laws" had several exceptions that bothered inquiring minds. Take the strange behavior of liquids, for example. Move your fingertip slowly toward the surface of water and watch the water jump up to hug your finger. Or put a soda straw into the water and see the water level inside creep above the outside level in defiance of the earth's gravity pull. To get an even more striking contradiction of the gravity laws, drape a towel over the edge of a basin half-filled with water. After a time the water will climb up the towel and over the side. These and other strange anti-gravity tricks were considered freaks of molecular attraction—phenomena quite apart from gravity—until Albert Einstein came up with his Theory of Relativity.

Einstein said that molecular attraction is really no different from the gravity pull of the planets and stars. He theorized that this attraction works on the same principle as electromagnetism. A molecule, a planet or a star all have gravitational fields just as magnets or electromagnets have their magnetic fields. To illustrate the similarity, Einstein said that a gravitational field would attract and bend light rays just as a magnetic field bends cathode rays in your TV picture tube.

Dr. Stanley Deser and Dr. Richard Arnowitz of the Princeton Institute for Advanced Study have recently discovered new sub-nuclear particles of the atom. Bombarded by powerful electro-

ANTI-G SPACESHIP heads for the stars using ion rocket to control direction. The outer shell is transparent in drawing to reveal the inner artificial gravity wheel for crew.

magnetic accelerators such as the Cosmotron and Betatron, atomic structure yielded strange particles which may be the answer to the gravitational field problem. "Until recently, gravitation could be only observed but not experimented on in a controlled fashion," Drs. Deser and Arnowitt wrote in their scientific paper. "But the new particles of atom which have been linked with the gravitational field can now be examined and worked with at will."

The new discovery means that before long we shall be able to switch gravity on and off as we do electricity and electromagnetism. The next logical step is a matter of engineering.

Let's take an ordinary fly-wheel suspended on roller bearings and coupled with a powerful electric generator. One side of that wheel would be "under fire" of our de-gravitating apparatus. The particles responsible for the gravitational attraction would be neutralized, a portion of the wheel would be

made weightless. But once out of the anti-gravity field, the same part of the wheel would gain weight and be pulled down by earth's gravity, thus giving us a powerful rotating motor.

Another idea for an anti-gravity device comes from Dr. George Rideout, president of the Gravity Research Foundation of New Boston, N. H. "To make a gravity motor," said Dr. Rideout, "we need a differential of gravity forces and the way we can get it is through a gravity insulator or absorber." To see how this device might work, let's turn to gravity's twin brother—electromagnetism.

For years we've had trouble with watches that get magnetized. You made a phone call or tinkered with your car's

generator and presto—the delicate balance wheel of your watch, exposed to an electromagnetic field, became a little magnet. Now your watch was no longer a reliable timepiece. To protect a watch from magnetic influence, we put the inner works in a soft iron casing that absorbs the magnetic force and shields the balance wheel. In other words, within the soft iron casing we have a space free from the outside magnetic pull—we have a differential of magnetic forces.

A gravity absorber or shield would do the same for the anti-gravity spaceship. The shielded interior would be free from the earth's gravity attraction. The inner structure, equipment and crew would be weightless in relation to the earth. Thus, we would have a differential of gravity forces and our ship would take off instantly like a super-balloon.

For ease of calculation, suppose we take our G-ship to the equator

where the rotational speed of the earth is about 1,000 mph. With our anti-gravity shield completely shut, the G-ship would be hurled into space just as a particle of mud shoots off a spinning tire. We would scoot along a more or less straight line unless we had some way of controlling direction and speed.

The weightlessness of the G-ship could be easily controlled by letting some of the earth's gravity force act upon the ship's interior. An arrangement of shutters like venetian blinds would do the trick. To control our direction, we would need thrust. A rocket would limit us to the amount of fuel, so let's try something else.

We could have an ion rocket proposed by Dr. Ernst [Continued on page 174]

"Aviation is on the threshold of amazing new concepts. Teams of scientists, researchers and engineers are already at work. Preliminary designs are on the drawing board. You may see the amazing triumph over the force of gravity in your lifetime!"

Conquers Gravity

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Stuhlinger or another similar nuclear rocket where sub-atomic particles are accelerated by a powerful electromagnetic gun and ejected into space. We could also utilize electromagnetic repulsion.

We know that two like magnetic poles repel each other, just as under certain conditions an electromagnetic field repels the so-called diamagnetic metals. Take a flat aluminum ring, put it over a strong electromagnet and switch on the current. The disk will fly off the solenoid with quite a speed. Starting with this principle of diamagnetic repulsion, a group of Canadian scientists of Project Magnet proposes to harness the magnetic fields of the earth and other celestial bodies for propulsion of the G-ship.

The earth's magnetic field is too weak to repel or propel a G-ship made of ordinary metal. However, current studies in the nature of magnetism point to a possible solution. Scientists believe that the answer lies in the structure of atoms. By re-arranging the atomic structure we could greatly increase the diamagnetic properties of the G-ship and make it travel along the magnetic lines of force like the aluminum ring shooting off the solenoid.

According to Einstein's theories, there is no end to the electromagnetic and gravitational fields of the planets and stars. Those fields intertwine in a most complex pattern but they are ever present. Proper selection of the fields and the controlled exposure to their forces would let us navigate our G-ship in space as well as within the earth's boundaries. And the use of electromagnetic propulsion would eliminate the problem of fuel.

Now, let's take a closer look at the G-ship. Its spherical shape is dictated by the internal pressurization necessary for high altitude and space travel. From the viewpoint of engineering, a sphere is ideal for coping with the pressure differential. Also, it gives the maximum volume for its dimensions. An interior artificial gravity ring would solve the problems of living in a weightless void.

The anti-gravity shield would completely conceal the crew and passenger compartment. This would eliminate visual

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Conquers Gravity

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observation. However, even our present radar and TV would give the crew excellent electronic vision. Apart from the cabin, there would be an engine room for the anti-gravity motor and the auxiliary power to run the electronic apparatus. Since the ship would take off and land in the atmosphere, there would be two problems to overcome—the heat caused by air friction and the question of air drag of the spherical shape.

To take the sting out of the friction heat, Canadian scientists headed by Wilbur B. Smith contemplate an ingenious electromagnetic device. Switched on before take-off, the device would attract and hold fast a large portion of air around the ship. This captured "boundary cushion" would move with the ship. Therefore the air friction would take place at a distance from the ship's structure and the heat would be dissipated before it could warm up the ship's anti-gravity shield. The mass of captive air would be shaped into the most advantageous aerodynamic form. A tear-drop for moderate speeds, a sharp-ended spindle for supersonics and a concave, cup-like shape for aiding deceleration for landing.

Even for space travel, the stores and provisions would be small. Once outside the earth's atmosphere, the G-ship would be capable of traveling at near the speed of light—roughly 600,000,000 mph. At that speed, a 322,000,000 mile round-trip to Venus would take about 30 minutes!

Make no mistake about it, anti-gravity motors and G-ships are coming. Remember, a year before the Wright brothers took off at Kitty Hawk some of our top scientists "proved" that a heavier-than-air craft could not possibly fly. And in 1935 the British Air Ministry nixed Frank Whittle's jet engine as "interesting but not practical."

But the best answer to the disbelievers is that some of these anti-gravity ideas are already on the drawing boards of the United States aircraft industry. With their brain power and technological know-how, our engineers will soon send Newton's apple back up where it came from! •

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