

Travel to the Moon by the Year 2050

Astronautics

Princeton Astronomer Predicts Space Travel Surprisingly Soon

BY the year 2050, earth-dwellers will probably be able to travel to the moon, and to communicate with their terrestrial home by telephoning over a beam of light. They will get there by travelling in a rocket ship at a speed of some 50,000 miles an hour, but far sooner, probably 1950, it is likely that a speed of 1000 miles an hour will be possible.

This was the prediction made by Dr. John Q. Stewart, associate professor of astronomical physics at Princeton University and co-author of a leading astronomical text-book.

Speaking before the Brooklyn Institute of Arts and Sciences, Dr. Stewart made what he called an "educated guess" about the future of rocket travel through interplanetary space.

"The speed of a rocket-propelled space-navigating cruiser will presumably be of the order of 25,000 miles per hour," declared Dr. Stewart. "This is the speed at which, neglecting air resistance, a projectile would have to be fired upward in order to travel to a height indefinitely great.

"Study of the increase in speeds of passenger-carrying vehicles during the past century leads to a guess at the date when such a speed will be realized. The year 2050 is the indicated date. That is surprisingly soon.

"During the past hundred years, the maximum vehicular speed has increased every year, on the average, by about 2 per cent. It has been compounded at 2 per cent. per annum. In earlier times the increase was very slow. It may be that in the future the rate of increase will again be slow. The indications are, however, that it will be even more rapid. Assuming that speeds will be compounded during the next century at 3 per cent. per annum, a speed of 1000 miles per hour will be reached in 1950, and vehicular speeds above 50,000 miles per hour will be available by the year 2030."

At present, he stated, the best efficiency that can be obtained with any fuel is about one kilowatt-hour for every pound, but this will need to be greatly increased to make possible the navigation of space. In the

In a lonely corner of Camp Devens, Mass., Dr. Robert H. Goddard, Professor of Physics at Clark University, Worcester, Mass., is preparing for actual flights with rockets that he hopes to send up to high altitudes. Our cover picture shows a view up inside the steel tower through which the rocket will pass in the start of its epoch-marking trip. Such experiments are bringing closer the day described by Dr. Stewart in the article below, when men may actually be able to travel to the moon and other members of the solar system.

laboratory, however, very minute amounts of much more efficient stores of energy have been obtained—one is ionized hydrogen, which would yield about a hundred times as much energy as the same amount of coal and oxygen. But no way is known of obtaining such materials in large enough quantities.

Another possibility would be that energy might be supplied to the rocket ship by radio, but he held out the hope of a super-efficient fuel.

"Astrophysicists who study the source of solar and stellar energy speculate about the possibilities of a more efficacious process still—the complete breakdown of matter into energy," he said. "This process, it is supposed, would liberate 1,300,000 kilowatt years per pound—about ten billion times as much as coal and oxygen. Such breakdown of matter may be going on deep within the sun, supplying the huge power which the sun has been radiating for a billion years or more.

"Amazing practical results will follow if this 'constitutional energy' of matter ever is released by engineers.

"The constitutional energy of a bucket of sea-water would be sufficient to drive for more than a month the engines of the merchant fleet of the world."

"The constitutional energy of a breath of air would operate a powerful airplane for a year, continuously.

"The constitutional energy of a handful of snow would heat a large apartment house for a century.

"The constitutional energy of the pasteboard in a small railroad ticket would run a heavy passenger train several times around the globe."

Describing the possible vehicle for

such a flight, Dr. Stewart asked his audience to "imagine a 'ship' built in the form of a large metal sphere—say 110 feet in diameter with a total initial mass of 70,000 metric tons. A dozen or more cannon protrude slightly from the spherical surface of the hull, symmetrically arranged at various points. When a given one of these cannon is fired, the reaction drives the ship in the opposite direction.

"The material is supposed shot out at a speed of 300 kilometers, or nearly 200 miles, a second. In order for the ship to reach the moon and return again, 28,000 tons (of the whole initial mass of 70,000 tons) of stuff should be carried in the bunkers to be shot from the guns. Suppose for definiteness that the material is lead, and is fired in the form of powder.

"The vessel must be completely air-tight and provided with heating and cooling devices, and with all the necessities of life, including air and water, for a two months' cruise. A crew of about 60 men seems reasonable, with a passenger list of a dozen scientists.

"Because of the enormous power developed, the start would be made from a desert . . . The impact of the shot would tear and burn a great hole in the desert.

"The start would be made half an hour or so before noon, and about three days before new moon. The ship would be headed for the sun. She would rise perhaps 12 miles in the first six minutes and would soar roaring out of the atmosphere at 200 miles per hour."

Once at the moon, Dr. Stewart thinks that communication by telephone with the earth might be carried on over a beam of light, as the Kennelly-Heaviside layer might make radio impossible. To return, the ship would take off in the same way that she left the earth, coasting most of the way, because of the earth's greater gravitational attraction. But care would have to be taken in landing, for if the ship came down too fast over a city, and the rockets were fired to check the fall, it would be disastrous to the people below.

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