

FLIGHT TO MOON AGAIN PROPOSED

Young Austrian Pilot, Who Is Also an Astronomer, Plans to Use a Rocket Similar To That Designed by Professor Goddard of Clark University

HAVING flown during the war, Max Valier, a young Munich astronomer, has been captivated by the idea of traveling to the moon and other celestial bodies. He hopes to be the first to make the attempt. Some of the results of his scientific study of the prospect are given below, with comment by Professor R. H. Goddard of Clark University, whose experiments pointed the way for Valier.

By HERMAN G. SCHEFFAUER.

BERLIN. MAN'S dream of setting foot upon the moon is as old as the man's first sight of the moon. Writer after writer, in every land and every age, has given free rein to his dream. This planetary desire is one which draws men's fancies as irresistibly as the object of it draws the seas. A cosmic awe, an unfathomable thrill, a poignant spell overcomes us as we follow vicariously the terrific adventures of "men in the moon"—knowing them to be lunar lies invented by some timid, bald-headed romancer hoisted comfortably in a suburban villa. But what if it were possible to reach the moon? What if it were possible to penetrate even beyond the moon into interplanetary space? What if not only small rockets of steel, but large passenger-carrying rocket-ships could be launched into the void beyond the zone of the earth's downward pull? What if physicists, mathematicians and astronomers, and not mere fiction-writers, were to give their attention to the problem? What, finally, if the practicability of a rocket reaching the moon were proved?

At Work on "Space Ship."

Max Valier is a young astronomer who lives in Munich. During the war he was an officer in the airplane service of the Austrian Army. In 1918 while trying out a new motor, he fell more than 4,000 yards in a burning plane at Aspern, near Vienna, but fully recovered. This experience merely increased his passion for flight through the air, through the invisible zone of the earth's attraction, through the black space that lies beyond. He supplemented his astronomical learning by a study of technical and ballistic. He devoured the treatises of Professor Robert H. Goddard of Clark University and of Professor Hermann Oberth, a German scientist. His own astronomical and philosophical publications embrace eight or nine volumes.

Valier has one great essential quality—the cosmic sense, saved, or at least separate, from the cold, hard abstractions of astronomy. He has the live planetary passion, which is as necessary to lift the moon-explorer above the levels of doubt and despair as the explosives and gases are necessary to the telescoping rocket that is to be Earth's first assault upon her satellite. Step by step Max Valier has built up his plans for the invasion of extra-terrestrial space, and the storming of the moon. But before the regions beyond the atmosphere are conquered and the grand foray into outer space begins, Valier must conquer terrestrial space. He is now engaged, there-

fore, in developing his "space-ship" out of the modern airplane. The first machines will have bearing planes, but will resemble a projectile more than an airplane. These machines, if Valier's plans work out, will mount into the air almost vertically, like rockets, until they have attained a maximum speed of some 1,500 meters per second; they will then climb to a height of forty or fifty kilometers in a ballistic parabola, and then in a gliding flight sweep toward their destinations. This would make it possible to cover distances of hundreds of miles (Paris to Berlin, New York to Washington) in thirty to fifty minutes, by utilizing the potential energy of altitude and the kinetic energy of speed. If the speed can be increased later on to 2,000 or 2,500 meters per second, a height of sixty to eighty kilometers can be achieved, which would enable the passenger rocket to fly from Europe to America in two to two and a half hours.

If the speed be still further increased to 6,000 or 8,000 meters per second—gravity will be overcome. A speed of 12,000 meters, or 12,000 miles, per second, would, it is estimated, carry the "space-ship" to the moon. Modern artillery is capable even now of firing a shell a distance of 100 kilometers into the air—striking an object 120 to 150 kilometers from the cannon itself—like the mysterious gun the Germans brought to bear upon Paris in 1918.

Much of this, as Valier is aware, is still problematical. Physical laws, apparently insurmountable, raise their heads and convert the most plausible figures and theories into zeros. But the human spirit has solved many such problems by making use of other physical laws. Who shall say that distances astronomically as negligible as that between the earth and the moon may not some day be crossed? What will there be left, for example, after Mount Everest is opened to tourists and there are regular excursions to the Poles? The moon will become the most immediate, the most fascinating target for man's tireless ambitions.

The Moon Rocket.

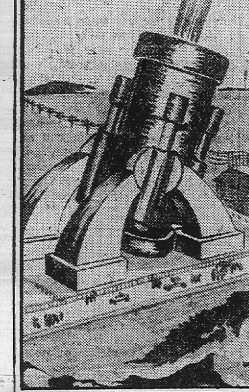
Valier, like Goddard and Oberth, discards the principle of the projectile fired from a cannon. This idea has haunted the world because of the popularity of Jules Verne's famous romance. But the enormous "Columbiad" or cannon of his "Trip to the Moon," could be sunk or built only upon some granite mountain. And the hollow aluminum projectile in which Verne's imaginary flight would be crushed like a paper bag even before it left the mouth of the enormous tube—crushed against the superincumbent column of air. The solid or electric cannon has also been suggested as a possibility—it would merely be a question of size—but this, like the question itself, is doubtful.

The only feasible method, apparently, for penetrating the atmosphere and escaping from the influence of gravity, is by means of a rocket. Professor Oberth has made calculations based upon the higher mathematics, chemistry and dynamics. The first rocket to seek the moon would be experimental. Great sacrific-

ices of money, time and labor would be necessary, but there need be no sacrifice of life—at first.

The moon-rocket will be a rocket in three parts, each telescoping into the other, shell within shell. Theoretically, any number of shells might be employed, but technically even a five-fold rocket presents almost insuperable difficulties. Professor Oberth's calculations have convinced him that a triple rocket, consisting of a nether alcohol rocket and two upper hydrogen rockets, is capable of being built and of attaining a final speed of 12,000 meters per second. The speed would be increased still further through the dropping-off of the empty husks of the two propelling tail rockets, the head then rushing on by itself. But the heat engendered by the exploding and out-rushing gases would be so terrific that new problems are present-

ing. The possibility of reaching our moon or the planets of the solar system is believed to be merely a matter of moderate power. Professor Goddard has estimated that in order to carry a pound beyond the power of gravity of the earth an expenditure of some 802 pounds of motive fuel are required. Once the experimental rocket, following an elongated S-curve in its flight to the moon, had reached the barren lunar plains, its arrival would be signalled to us by the ignition of, say, fourteen pounds of magnesium powder. This flare on the darkened face of the

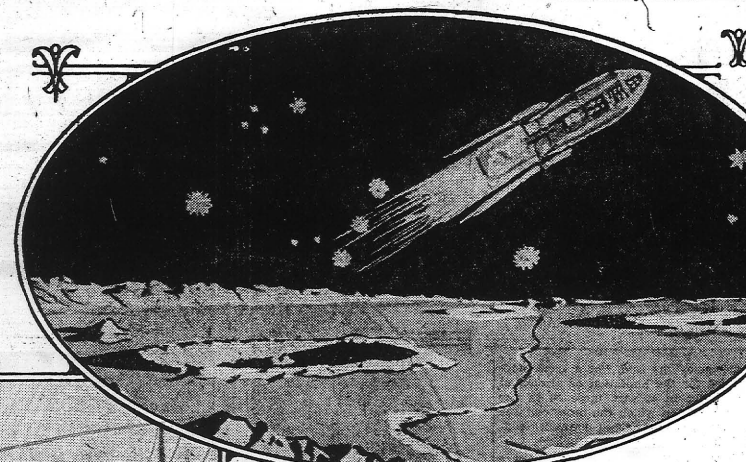


"A Gigantic Electric Cannon Would Be Required to Fire a Projectile Beyond the Zone of the Earth's Gravity."

new moon would, it is said, be visible through telescopes.

Once the inanimate rocket has achieved the moon, the question of sending a manned rocket may be considered. Great difficulties appear—the blank face of space, the whole hostile front of creation rises like pitiless walls, cold, dark, forbidding.

But Valier, with an unshakable faith in modern science and technique, has thought out his campaign to the end—and his end is not even the moon, but the confines of the solar system; that congeries of revolving spheres of which our earth is but one. The man-carrying rocket capable of



A Vision of the Future: "A Great Rocket Space-Ship Sweeping Over the Lunar Landscape."

reaching the moon will attain the dimensions of a four or five-story house. It will be to a certain extent under control of the men in the peak of the rocket. The speed and volume of the gases to be shot from the vents can be regulated. This complicated rocket-machine has been thought out in detail by Professor Oberth, though new specters will surely arise to confute or daunt him.

Inter-Planetary Regions.

Let us assume that a moon rocket with two men in its observation chamber has been fired-off, and the speed automatically increased until the zone of gravity is passed. The men descend from their spring hammocks—if the term descend may be used, for up and down will now have lost all significance. They will float like spirits in mid air, and pull themselves about by the leather straps attached to the walls, and even to the floor of their steel cell.

Jules Verne depicted his passengers as opening a bottle of wine to celebrate the passing of the zone of earth's gravity. But in these regions liquids will no longer obey earthly laws. No wine would flow, even from a tilted bottle. If the bottle be swung the wine would rush out in a mass, or dash itself against the walls of the cell and disintegrate into particles which would fill the air like a mist.

The passengers on the rocket-ship will be forced to suck their liquids through rubber nipples like babies. The human body will be provided artificially with its necessary elements. But what powers of adaptation will become necessary!

The landing upon the moon seems to present the greatest difficulties, and Valier is somewhat hazy upon this point. But once a landing has been effected, shelters built upon the

principle of a thermos bottle, and "diving" suits upon a similar principle, might enable human beings to live, move and even work upon the moon. Ice probably will be found there. Relay rockets would carry materials to the moon. A power station, based upon the principle of great solar reflectors, might in time be erected.

The moon, according to Valier, would be utilized subsequently as a mere transfer station or springboard for the space-ships that would undertake to invade Mars or Venus and even some of the larger planets, landing upon them or circumnavigating them. The ships could, he thinks, even smother upon Deimos or Phobos, the lesser moons of Mars, and allow themselves to be carried several times around the red planet.

But human audacity, having once obtained a foothold beyond the earth, will go still further. In those regions where weight does not exist and bodies remain poised in their orbits, artificial moons may be constructed, landing stations which will circle perpetually about the earth like new-satellites.

Might Land by Parachute.

The return of a space-ship to earth would seem to present insurmountable obstacles. What is to prevent this rocket-machine of Wolfram steel or other metal from being consumed like any tiny meteorite upon contact with the thick envelope of the atmosphere? Provision, however, has been made for this, and the possibility of landing accepted—in theory. The peak of the torpedo-like space cruiser would contain an enormous double or triple parachute with ropes attached to the nose of the vessel. This parachute would be unfolded as soon as the earth was approached. It would spread out and draw the nose of the vessel upward so that it would ap-

proach the earth bottom first. At the same time the powerful vents would discharge their fiery gases and serve as brakes upon the speed of the ship. Once the requisite funds have been supplied and the first experiments made, Valier says he will enter the first man-carrying rocket to be aimed at the moon. He hopes to take with him some young women who shall have proved by response to his call that her courage is equal to his.

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OLD CLIPPER A MUSEUM

The Benjamin F. Packard Will Be Preserved for the Public By Her New Owner, Theodore R. Pell

THE last of America's great clipper fleet is soon to become a museum. Long and slender, this graceful greyhound of the sea lies beside the pier at the foot of West 120th Street, where, after years of wanderings, she has found safety from the fury of the gales.

The Benjamin F. Packard is no crumpled seeking shelter. She is still seaworthy and able to breast the ocean swells with the best of ships. But the day of her end is close. The white winged vessels have served their time and the swift pace of modern trade has all but banished the wooden ship from the high seas.

The Packard completed her final voyage a little more than a month ago. Heavily laden with a cargo of 2,000,000 feet of lumber, she made her way from the Pacific Coast through the Panama Canal and northward.

Her owners arranged to have her towed on her last journey "to make better time," they explained. No such humiliation for the last of the clippers. Proudly she spread her sails until they swelled like white balloons and for a large part of the way she led her tug, deigning only to let them hover about her sides like troublesome flies.

Outsailed Her Tugs.

When she rounded Cape Hatteras she met with the sort of gale that had worsted many another ship, but under the cautious guidance of Captain D. J. Martin she weathered the storm and made port none the worse for wear. "Nor was there any necessity of pumping her bilges on the way," say those who brought her into harbor for the last time.

Her cargo was discharged. Then followed anxious days for the Packard. She was to be sold. The last of the clippers was to go to the highest bidder. For weeks her fate lay in the balance. Lovers of America's past shipping glory feared lest she be shipped—and returned into a common

barge to carry oil and coal in coastwise trade. Some talked of turning her into a restaurant, a sort of floating cabaret, in which the decks, which had once vibrated to the rhythms of the hornpipe, would be converted into smooth floors upon which the Charles-ton would be danced. Some of her former crew and those who had sailed her on her last voyage sadly watched Captain Martin as he crumpled the balyards and pulled down her ensign.

Theodore Roosevelt Pell bought the Packard and saved her from an unworthy doom. Within her are to be preserved mementos of her own past glories, and of the great days of her first ships and her forerunners, the first clippers, which in the decade preceding the Civil War helped to put American commerce on the map.

Mr. Pell told of his early interest in American shipping, of his collection of 250 ship models, of which the smallest is the product of his own hands, and of other trophies such as the steering wheel of the Revenge (first battle ship built in the United States), the starboard lamp of the Flying Cloud, and figureheads of many vessels, a large number of which will be placed on exhibition in the Packard Museum.

How He Got the Ship.

"I had heard that the fine old clipper was on the market," he said, "and it seemed to me a splendid opportunity. For twenty-five years I had been collecting models; why not get a ship? Others talked of buying her—I put down the cash. That's how I got her."

The price paid to Nider & Hanson of Seattle, her former owners, was less than \$10,000. The Commissioner of Docks has given Mr. Pell permission to keep the Packard at the 129th Street pier until next May, when she may have to seek her home in other waters. "Perhaps in Hazard Bay," said her owner. Meanwhile New Yorkers will have the privilege of visiting her and studying the collection, which

will be housed on her lower deck after Jan. 1.

"Before we can allow the public on board she must be dolled up," said Mr. Pell. "Dolling up means giving her a fresh coat of paint, getting her ready for dress parade. The best herself is as shipshape as she ever was; her staid and her running gear are intact. To be sure, she has been stripped of her main top gallant yards and her royal yards, but that was merely because they soared so high that she could not pass under the Brooklyn Bridge. They are resting on the main deck waiting to be put back into place."

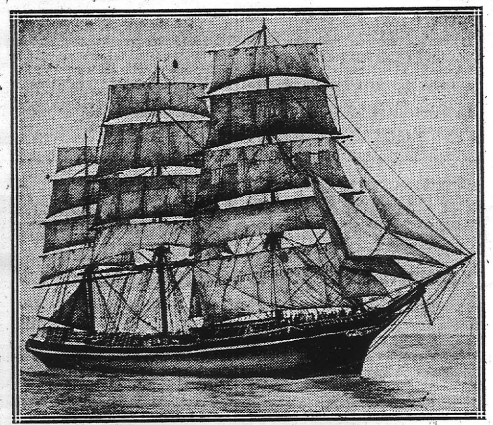
Max Williams, whose maritime collection is well known, will cooperate with Mr. Pell in completing and installing the museum. Every day the new master of the ship may be seen aboard her giving orders to his crew, consisting of Captain Hansen and two assistants. The vernacular of the sea slips from the owner's tongue as though he had been a clipper captain himself. "These main file rails must be painted," he says; "see to it that the monkey poop is swept."

Offers to Use the Vessel.

Since he purchased the Packard many strange offers have come to Mr. Pell. Several moving picture concerns have applied for permission to use the vessel; a syndicate made an offer for the purpose of making a floating hotel to be anchored off Florida's shores, while the Naval Reserve has asked to be allowed to use her for drills.

The Benjamin F. Packard is well able to hold her own among the ships that lie at the docks in the Hudson. Though she may not be as long or as wide—she measures 244 feet and has a 43-foot beam—she has had greater adventures than many another which boasts of its size. She was built in 1833 by Goss, Sawyer & Packard of Bath, Me., for use in the California trade which followed in the wake of the gold rush. Her first cargo and her last were of the same kind. On her

THE PACKARD UNDER SAIL



maiden trip from the West to the East she brought a load of lumber to Philadelphia.

Her steering wheel is studded with fifty brass nails, each one supposedly representing a trip around the Horn. The sturdy old craft plowed her way into the waters of the other hemisphere also. She made many a voyage with the Australian woolen and the China tea clippers, and returned with other cargoes to the United States and England. According to Mr. Pell, she held the record for boats of her class from San Francisco to Liverpool, which voyage she made in eighty-six days.

Then she changed hands. No longer did she sail the Chinese seas or the Bay of Bengal. Becoming the property of the Booth Fisheries Company of Seattle, she was sent to the Alaskan coast. She is still girdled with iron at her water line, placed there to enable her to cut her way through the ice. In the early days of the salmon fishing industry she was used as a prison for refractory seamen.

The captain's quarters are finished in the best of the latter-day Victorian style. The saloon walls are paneled in solid, beautifully grained mahog-

any. Two old-fashioned sofas, adorn either side. In the centre is a table over which hangs an oil lamp that sheds its gentle rays into the darkest corners. Adjoining is a bedroom. It could scarcely be called a cabin, for it is furnished with a heavy mahogany bed—a dresser and a cupboard of the same wood. This was used, one is told, by the captain's wife when she was aboard.

In the dining saloon has a table that might easily have accommodated ten. From it opens the pantry, the most delightful portion of the suite, constructed to take care of all the dining room needs. Built into the walls are drawers and compartments especially designed to hold china and glassware. Not a corner has been wasted.

In the glowing when the sun's last rays have vanished behind the purpling mass of the Palisades, when the black skeleton of the Benjamin F. Packard's masts is delicately etched against a faintly iridescent sky, it is not difficult to imagine dark figures stirring about on the deck and to hear the pulsating rhythm of their chantey: Champagne is good, and so is rum, Whisky for my Johnny, And beer is good enough for some, But whisky for my Johnny,

BEAUTY IS CARD-INDEXED

Charms of the Professional Model Are Carefully Catalogued For Our Artists and Our Advertising Men

IF Trilby lived in New York today the good points of her figure would be practically recorded in a card index drawer. Professional models are now counted by the thousands and their charms are accurately appraised and classified. The beauty market has been standardized. A unique industry has thus grown up—the handling of feminine loveliness efficiently.

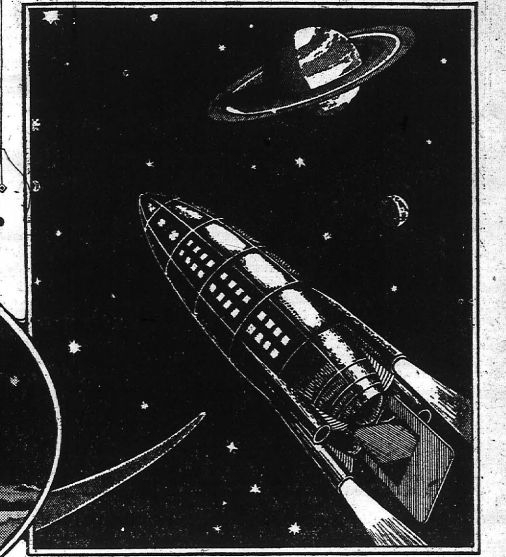
The illustrated advertisement and commercial photography in general are responsible for the change. Professional models in bewildering variety are in constant demand. They are indispensable, for instance, in humanizing the modern advertisement. Daily the artist must look about him for suitable models for displaying an endless variety of articles of personal use. With the growth of a more sophisticated taste in such matters, the choice must be expertly eclectic.

In the old, pre-efficiency-days a painter or sculptor in need of a model lost much valuable time in making his selection. He must burden his memory with the details of many figures. It might be the work of days to secure just the right type of the properly proportioned torso or the arm or limb of the desired modeling.

It should be explained, for the benefit of the layman in such matters, that in painting or modeling a single nude or draped figure, several models may be required. It is extremely difficult, often impossible, to find a figure that combines all the requisite features. One model will supply the shoulders, another the neck, still another the torso, and so on.

Modern Efficiency.

To assist them in their work artists may collect photographs of many models. Some of these photographs may show the full figure taken from various points of view. Pictures of details, such as arms, legs, the shoulder, the neck, will also be secured. The photographs are prepared with the same of the model, the address, and any other information worth record-



The Rocket Space-Ship Pictured Flying Through the Planet World.

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