

# Dr. Todd Revives Astronomers' Old Hope of Talking to Mars

## Amherst Professor Plans to Relay Wireless Message From Balloon Up 50,000 Feet or More—Airship Designed by Army Expert Is Scheduled for Flight Next March

FOR half a century certain famous astronomers have cherished the belief that people on this earth would some day communicate with, if they did not visit, other worlds than ours. The late Professor Percival Lowell of Harvard, that pioneer who never was a saner student of the heavens, frequently made this prognostication. And he has left astronomers as notable as himself who are concerned with ways and means to carry out this dream.

Many of them hesitated whether they should choose for this infinite extension of knowledge of the sidereal mysteries the surface of the moon or of Mars. Almost without exception they have now settled on the latter and in the twentieth century interest in the heavenly body that was mistakenly called our satellite has waned.

Reasons for this are plentiful: the moon is a dead planet, a world without life, a world without atmosphere, water, heat or the power to conserve and radiate the latter, conditions which preclude the possibility that any beings bearing the remotest resemblance to ourselves can be alive upon it.

**A Moon With Water.**

There are astronomers who still coquet with her and who contradict the assertions made above. Yet if the moon has an atmosphere it is one of excessive tenuity, unable to hold clouds or any appreciable quantity of aqueous vapor in suspension. Once there was water on the moon. It has dried up.

Mars, therefore, absorbs the interest of astronomers who, like Prof. David Todd, the astronomer of Amherst College, are progressive. It has been the dream of these progressivists to communicate with this planet and Dr. Todd voicing their desire has said:

"Mars in the future, as in the past, swings further and further away at each returning opposition, until, in 1924, mountain observatories, larger telescopes and keener photographic processes will all play their part in threading the labyrinthine mystery of the Martian world, and a perfected etherial telegraphy may, well within reason, permit intelligible speech from earth to Mars and from Mars to earth, across the cosmic void."

When a scientist writes and speaks like a poet, when he takes himself out of the class of men "old and dim, for whom the shadow of the earth eclipse judgment," it is time to wake up to who he is. Dr. Todd is an astronomical authority. His book "Stars and Telescopes" (to name but one) and his contributions to magazines written in a popular vein have made him widely heard of by people to whom astronomical names are strange. In 1878 he made his first astronomical expedition, being sent to Texas by the United States Navy Department to view a total eclipse of the sun. In 1881 he became a director of the observatory at Amherst and a year after he conducted an expedition to Mount Hamilton, where he had charge of the observations of the transit of Venus, chief among other notable astronomical expeditions led by him was that to the Andes in 1897, the object of which was a study of Mars in opposition. More than 12,000 photographs were then taken and much new material was gathered for further study of the ruddy planet.

**Dr. Todd's Societies.**

Dr. Todd is a member of many societies and clubs; fellow of the American Association for the Advancement of Science, member of the Philosophical Society of Washington, the Astronomical and Astrophysical Society, the Aero Club of America, the Boston Authors Club, the University Club of Boston, the Astronomische Gesellschaft of Germany, the Societe Nationale des Sciences Naturelles et Mathematiques of Cherbourg, the Geographical Society of Lima, the Royal Society of Arts and Sciences of London and others.

For several years this scientist has wished to make a great effort to communicate with Mars, and in 1916 he was making herculean efforts to do so, or at least to prepare to try. This experiment was to have been undertaken in conjunction with A. Leo Stevens, chief instructor in ballooning in the United States Army. The entrance of this country in the world war took Mr. Stevens out of the experiment, and it was not made.

Ballooning Stevens went to France with the A. E. F., but on his return Dr. Todd sought him out and their inter-continental plans were recommenced. As a result, in March, 1919, there will sail from the U. S. Government balloon, the largest in the history of aeronautics, steered by Leo Stevens and carrying Dr. Todd and a suite of scientists and helpers, with paraphernalia intended to send messages to Mars. When the balloon attains a height of approximately 50,000 feet wireless messages will be sent to it from the earth. These messages it is intended to pick up by instruments attached to the outside of the balloon. But their effect is not to stop there. They are to go on across millions of miles, travel in fact to the outer atmosphere enveloping neighboring planet, and arouse its inhabitants by these unfamiliar means to endeavor to make answer.

**Think Answer Will Come.**

Will there be an answer? Why not? Ask the astronomers who are convinced that the Martians are as eager to talk to us as we wish them. There is another set of astronomers who prophesy that communication can ever be set going between the two planets. These are the doubters who, with hand unlifted, cry out like Missus over a plan not so chimerical:

"It's a damned lie!"

In astronomy even more than in science the suggestion that doubling spirit elude soaring endeavor. Bug had it revealed when astronomers are still astrology, how little of the vast knowledge we now possess of the members of our celestial family would be

ours! The dreaming vein, as well as the unconquerable will of a Columbus of the skies, has been necessary to overcome the objectors and doubters. To increase our sidereal knowledge to what it is to-day. And the popular acceptance of the measures taken by the investigators who are not deterred by common sense will serve the latter well.

Dr. Todd will control from the inside of the basket attached to the monster balloon the signalling apparatus to be used in the experiment. The balloon itself will act as intensifier and relay station for wireless impulses sent from some point on the earth's surface, and it is the hope also of the scientists that the balloon will act as a receiver of radio messages sent from Mars. These now miss the earth because of the electrical forces of our globe. If, as the theory is, messengers are being sent from Mars to the earth, the latter's electric fluids divert it from the path, describing an arc, which dissipates it in the void. By rising above interfering forces Dr. Todd hopes to

be transparent, soft and pliable as silk, at the earth's surface, but once arrived in the higher altitudes it will become stiff and brittle so that a blow will shatter it and give the passengers a chance to leap for life.

**Some Doubt Success.**

The effort to communicate with Mars which these daring men will make is one that commands the sympathy of certain astronomers who, however, believe that it will prove fruitless. All experiment was sympathy of the scientists who know what difficulty what we already know about our planetary neighbors was wrested from the skies. There are, however, famous scientists who see in such efforts only misdirected toil. A representative man of this sort is Charles Lane Ponce, distinguished lecturer and investigator, who said: "I am not interested in such foolhardiness. Any man who has more imagination than science." But a dictum of this kind does not summarily dispose of the subject. In

far interest in the plan of signalling to Mars. And this interest grows as that planet approaches a more favorable position for our observation. At the time selected by Dr. Todd the ruddy planet will be favorably placed. What is strange in this curious sympathy between the peoples of two planets? Or why should the desire of each to talk to the other appear to any mind to be a gorgeous absurdity?

great changes of temperature from day to night." The same astronomer goes on to say that speculation regarding the possibility of organic life upon the ruddy planet really hangs upon the selective absorption of the Martian atmosphere, and whether this atmosphere aids the planet, as our atmosphere does, in storing heat by preventing its radiation.



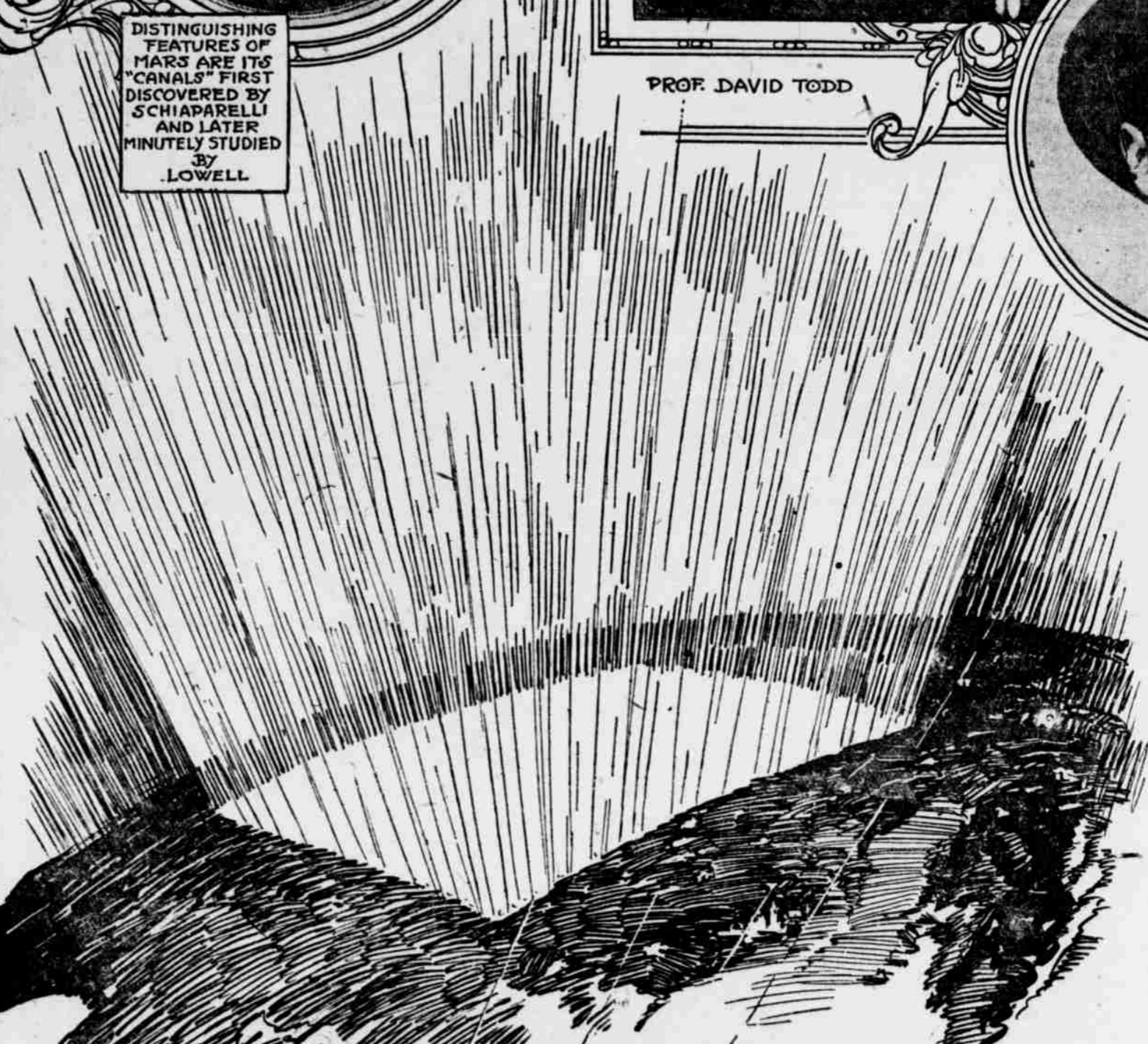
**DISTINGUISHING FEATURES OF MARS ARE ITS CANALS FIRST DISCOVERED BY SCHIAPARELLI AND LATER MINUTELY STUDIED BY LOWELL**



**PROF. DAVID TODD**



**LEFT TO RIGHT MAJOR JACOB WUEST MISS RUTH LAW AND LEO STEVENS**



This authority suggests that the atmosphere of Mars consist mainly of nitrogen, argon and carbon dioxide. This analysis of the atmosphere of Mars was not acceptable to Lowell and Pickering and the theory generally held is that the dissipation of water on Mars, while constantly progressing through countless ages is not yet complete. The original store already exhibits marked signs of approaching exhaustion.

The Martians fearfully see this exhaustion approaching and the end of life on their planet. They are ready to emigrate to a planet where they may continue the race. From their observations of their nearest neighbor they see that the comparatively youthful earth offers them refuge from certain annihilation. Is it wonderful if they are desperately striving to reach us and to bridge the void by our help? What theory could be more plausible?

Therefore Mars must be more anxious to signal the earth than the latter to signal Mars. Unfortunately for a conjunction of efforts which may be made next spring, at that time when Mars is advantageously placed for our observation, we are invisible to Mars. The earth then lies between Mars and the sun and is lost to

them. Under more favorable placing, the earth appears to the inhabitants of Mars as a brilliant star attended by a fainter star, our moon. To them we are alternately evening and morning star just as Venus is to us. Assuming that the Martians have telescopes, our planet is seen from Mars as a brilliant crescent moon, with light and dark markings and irregular flecks of color, white, green and red, representing floating clouds, snow, vegetation and other features of the earth's atmosphere and surface. It has been suggested that a high tower painted black and built on an alkaline plain, and a gigantic white screen arranged so that it might periodically conceal and reveal the tower and produce a winking effect, could be seen by Martian astronomers. This suggestion was made ten years ago by Professor R. W. Wood, but it never has got beyond the suggestive phase.

**The People on Mars.**

Interest in speculations on life as it may be lived on Mars is not confined to the astronomical, but extends to persons who know and care little about that science except so far as it may bring support to their wildest imaginations. It has been indulged in by adventurous intellects almost if not quite from Chaldean days, and Mars has, both in astronomy and philosophy, absorbed more attention than any other planet. The beings on Mars are not necessarily judged to be souls, that is men like earth men endowed with spirit in the sense of self-consciousness. A meeting between men and Martians was judged by the ancients as one sure to take place, and when it did to be attended by the most ludicrous absurdities if not with clashes that would result in the annihilation of one or the other.

It was, perhaps, the dilution of this ancient fear that set the mind of H. G. Wells to work on the book "War of the Worlds," in which Martians contended with earth men in their work of the imagination the Martians are supposed to exist as insensitive, essentially intellectual beings, far removed from beasts, but not self-knowing, or in other words, not endowed with soul and its restraining conscience. To say that this race is essentially might be grossly exaggerated, but to mix with them, whether in peace or war, should seem a danger to be avoided. A race without conscience could not but spread a deadly miasma, for who shall dare measure what spiritual influences might not arise out of the collective evil wills of wrecked beings?

Dr. Todd, then, in his titanic effort to bring about a meeting between Martians and men, were it but a long, delicate conversation, may be inviting disaster on his fellow men. This thought might deter him or it might raise up fanatic persecutors, who, upon phenomena without brains to investigate them) who would wreck his balloon in order to stop him. It is scarcely reasonable to suppose either the danger of the mad attempt to avert it, for to most of us these investigations are interesting merely as intellectual excursions. The associations which must have given rise to such conceptions as lead the astronomer across the cosmogony are the sources of interest which they inspire. They exhibit, through what the imagination will urge man to do, as in this instance to build a balloon and defy gravitation or any other natural law, the idea of power in the will.

As mortals we like this exhibition of grandiose imagination; it draws us, we think, a little nearer to immortals. In that striving to be other than poor, weak denizens of earth we like to know all things, and we particularly prefer to be told of the knowledge we possess rather than of the ignorance we suffer.

As members of one isolated family bound together by common ties which cannot be ruptured in the case of one without an ensuing shock to the others, what should be more natural than the wish to grow closer in acquaintance?

For there are many reasons to adduce that Mars is inhabited and if these grow out of distant observation they are of sufficient permanency, as well as sufficient changeability, almost to compel the conviction that Mars's inhabitants are, if not supermen, at least super-agriculturists. The great telescopes have revealed evidences of a fruitful cultivation on Mars that is far and away beyond the skill and power of the farmers on this earth. Vegetation on a planet where water must be carried to everything that grows, apparently reaches a luxuriance surpassing by a thousand times that of the jungles of the earth. Fields of grain of some kind unknown, stretching across a belt 300 miles wide, appear at the beginning of each Martian summer and disappear in what is supposed to be the proper harvest time.

The climate of Mars as it has been diagnosed by astronomical observations since 1896, when the polar caps received particular attention telegraphically, must be severe on the inhabitants. In its northern hemisphere the cold season lasts 81 days and the hot season 306 days. The polar caps showing snow on the summits of the low mountains afford a strong argument for a Martian atmosphere with heat and storage properties similar to the earth's. Its climate would seem likely to resemble that of a clear season on a very high terrestrial mountain and in Dr. Todd's judgment this climate is one of extremes with

clouds. These and other characteristics of our neighbor were discussed by Mr. Lowell in his volume on Mars and were drawn from his observations through the 24-inch Clark telescope during the opposition of the planet in 1896-1897.

While fully one-third of the surface of Mars is supposed to be water, it never very deep, and much of what is thought to be ocean now is considered as marshy land. With the melting of the snows of winter streams start, water falls are observed, and lakes appear. These are not permanent reservoirs, like our lakes, and sometimes they disappear entirely. Mr. Lowell regards them as oases in a vast area of desert and their instability as due to the growth of vegetation with the advance of spring.

Twenty-seven canals, artificially constructed and 50 of these lakes or oases are marked on the chart of Mars. The former constitute a veritable hydrographic system for distributing the liquid mass of melting snows and many observers believe that these canals have been designed and executed with a definite end in view.

"Extensive irrigation and agricultural operations on a large scale," remarks Dr. Todd, "would seem the likeliest explanation, especially when it is reflected that upon Mars, doubtless a world farther advanced in its life history than our own, erosion may have worn the continents down to a minimum elevation, making waterways easy to construct, also with its vanishing atmosphere and absence of rain, the necessity of water for producing the support of animal and vegetable life could only be met by conducting water from one part of the planet to another in channels artificial or partly so."

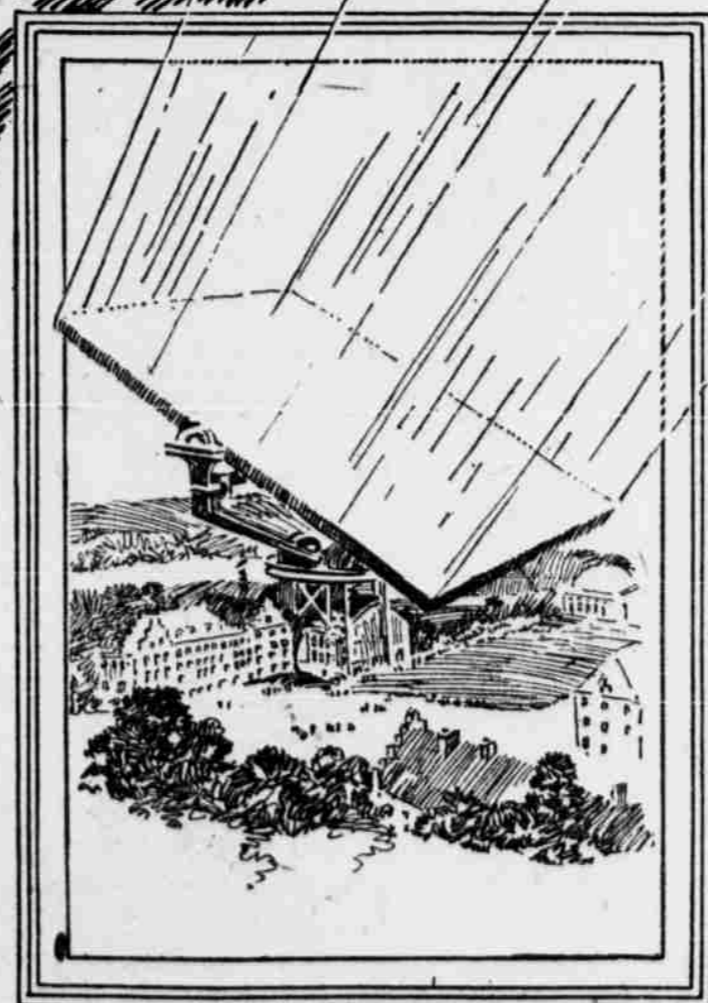
**Mars Waterless?**

Dr. Stoney of Dublin by a method based on the kinetic theory of gases, accounts for the practically entire absence of atmosphere from the moon and of free hydrogen and helium from the earth and then carries the same theory to Mars. By it he is led to infer "that water cannot in any of its forms remain upon Mars; without water no vegetable life that we know possess rather than of the ignorance we suffer.

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**PROF. PICKERING, OF HARVARD SUGGESTED THAT A HUGE MIRROR BE MOUNTED TO SWING SO THAT IT CAN REFLECT THE SUN'S RAYS TO MARS**

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