

## Scientists Are Determined To Bare the Secrets of Mars

New York, Oct. 8.—Rocket, radio or camera—which will be the first to lay bare the secret of Mars?

Of course, it isn't at all certain that any one of the three will prove a successful Sherlock Holmes of the skies, but scientists, lured on by an age-old curiosity concerning our neighboring planet, are pressing along all three paths.

The latest development to set the scientific world again agog over the old question of whether there was life on Mars was the announcement from Paris of B. McAfee, American scientist, and Prof. David Todd, American astronomer, that they proposed to snap-shot the planet by using an abandoned mine shaft in Chile as the barrel for a telescope.

Only a short time before Signor Marconi, of wireless fame, had put a pick of interest in the most fantastic of scientific inquiries by suggesting that a radio signal of 150,000 meters which he had picked up might have come from some Martian armed with a mammoth sending set.

But it was left to Prof. Robert H. Goddard, of Clark college, in Worcester, Mass., to suggest making an investigation of the moon by means of a multiple-charge, high efficiency rocket, capable of carrying cameras or other recording apparatus needed to explore the unknown regions of the upper air. As the claim was made that a rocket could be constructed of unlimited crushing power, it has been suggested that it might be shot up to Mars instead of the moon, which many scientists affirm is uninhabited. One or two daring individuals even have volunteered to be shot up in place of a camera.

### Great Curiosity Excited.

The possibility that some folk might be wandering up and down the valleys of Mars has excited the curiosity of astronomers and laymen throughout all the ages, for Mars is the nearest planet to the earth and the easiest to observe.

Imaginative writers took their readers on trips to the moon and laid the scenes of their stories in the surroundings of Mars, Saturn and other planets, but there was little scientific knowledge to furnish a basis for such fiction.

The perfecting of the high-powered telescope and the adaption of photography to the use of the astronomers quickened their interest in the Mars, which was seen to have large areas of an ochre red, with patches of white at the poles, was believed by many astronomers to be capable of supporting life in some form.

Schiaparelli, an Italian astronomer, announced in 1871 that he had found the surface of one planet scarred by many lines, which were perfectly straight, and seemed to have some system like vast engineering works. He called the lines canals and said he believed they had been constructed and were not simply cracks in the surface of the planet.

### May Be Systems of Canals.

Prof. Percival Lowell erected an observatory in Flagstaff, Arizona, many years ago and commenced a systematic observation of Mars. More than ten years ago he startled the world by expressing his belief that Mars was inhabited by intelligent organisms living in a civilization much farther advanced than ours.

The canals, he said, were really big ditches bringing water from the poles to irrigate the rest of the planet. The ochre red areas on the surface of Mars, he asserted, were deserts of fallow fields, which became bluish green as the water flowed along the canals in the seasons.

Later he said that he had watched the bluish green area, denoting land springing to life with the coming of the water, spread down the northern hemisphere along the borders of the canals to be the equator of the planet and then gradually turn reddish brown with the waning of the season. The water, he claimed, was from ice melting on the polar caps of the planet.

Other scientists took the opposite point of view. Some said the canals were only cracks in the surface of the planet filled with sand, impregnated with salts of various kinds, which became dark or light to the observer according to its moisture content. The temperature on Mars, they said, was too cold to support life of any kind.

Lowell retorted that his observations showed that the average temperature of Mars is 48 degrees Fahrenheit. The regularity of the canals; their even spacing; the accuracy with which they made a great circle such as navigators employ on a curved surface thousands of miles in extent; the manner in which some of the canals were paralleled at certain points and the regularity of the spots at the intersection of canals all testified, he asserted, to the artificial nature of the canals and justified a

belief that they were made by sentient organisms of high intelligence.

More than 500 canals and oases, as Lowell claimed the spots to be, have been mapped out and their names are so well known that Harvard Observatory announced last April that snow had been observed falling at isidis in the district of Syrtis Major, Mars. It was held by some that the canals had been observed to signal the earth which must appear to the Martians as of immense size being nine times bigger than Mars.

### The Wireless is Used

With the development of wireless telegraphy several attempts have been made to get into communication with Mars with high powered apparatus. Signor Marconi gave encouragement to that field of research recently when he announced that in the course of experimenting he had picked up a signal with a wave length of 150,000 meters, about six times as long as any commercial apparatus in use today. Marconi said the letter V had been repeated several times in international code. He suggested that possibly the inhabitants of Mars were trying to get into communication with the earth.

The engineers of Omaha devoted two weeks of their time recently to listening for signals from Mars. They kept their apparatus tuned to catch such a message as Marconi described but they heard nothing.

Controversy has run high over the bold proposal of Messrs. B. McAfee and Todd. A mine shaft in the Chilean Andes, which will point directly at Mars in 1924, will provide the barrel of their telescope, they announced and a big pan of mercury revolving at high speed at the bottom will provide the mirror. The two Americans calculate that the surface of Mars will be magnified at least 25,000,000 times bringing it within a few miles of their cameras.

The mine shaft will be widened to 50 feet in diameter and sheathed. The pool of mercury at the bottom will be revolved at such high speed that it will assume a concave shape and become a mirror. The depth of the fortunately placed shaft is so great that there will be sufficient luminosity, the two scientists said, to enable them to take snapshots instead of time exposures.

The Goddard proposal for aerial investigation also includes use of cameras. To summarize his principle, the determining factor of the efficiency of a rocket is the velocity of the ejection of gases due to the explosion of propelling material. By increasing this velocity, through increasing the proportion of the projectile and through a greatly improved nozzle-shaped passage for the escape of gases, Professor Goddard claims to have raised the efficiency of the rocket to nearly 64 per cent.

Many investigators are convinced that life exists on Mars and expect to prove it with the novel telescope. What they will find on their photographic plates is the object of speculation by scientific men the world over.

Lowell has said that Mars is level and uninteresting with no mountains and only a few dried up beds of shallow seas to diversify its topography. More than one-half of it is desert land and the rest is only green when the canals are bringing water from the polar ice caps. Dust storms which blot out hundreds of square miles of the planet's surface from the view of the scientific observers sweep over its equatorial section.

The physical conditions of Mars are entirely different from those we know on earth. The force of gravity exerted by Mars is only three-eighths that of the earth while the atmospheric pressure, that is about fifteen pounds to the square inch at sea level on our world is less than four pounds on Mars. The air is very thin and no known animal could live on it. These conditions, however, make it possible for great weights to be lifted with little effort.

Lowell computed that the Martians could do seven times more work than human beings could accomplish, with the same amount of effort. A human observer on Mars, he said, would be impressed by the slowness and flatness of his surroundings.

An elephant could leap like a gazelle in such an atmosphere, he said; water would flow with a hesitant, lazy current and a stone thrown into the air would sink with graceful moderation to the ground. He made no attempt to describe how the Martians themselves might appear to worldliness but he said they would not resemble human beings.

The Martian day is twenty minutes longer than ours but the seasons are twice as long. Lowell asserted that Mars is slowly dying for want of water and the canals had been built in an epic struggle of the Martians to maintain life.

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