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ASTRONAUTICS -- THE HISTORICAL PERSPECTIVE*

by

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This brief introduction of mine is not an attempt to give a detailed history of astronautics. Even if I had the time, there would be no point in repeating what Willy Ley has done so well in his book, Rockets, Missiles and Space Travel. And here I would, incidentally, like to pay a tribute to Mr. Ley, my precursor on this platform, for the work he did in organizing the first two Symposia held here at the Planetarium.

My object is not to give a factual history of rocket propulsion and space-flight, but to discuss what might be called the climate of opinion on these subjects. This has shown some remarkable changes in the last few years. If you doubt that, imagine what your feelings would have been only ten years ago had you seen headlines announcing that the U. S. armed forces were seriously studying the possibility of building an Earth Satellite Vehicle!

There is a common, and quite incorrect, impression that the idea of space-flight is pretty new -- a product of this century, if not of the past few decades. Sometimes it is granted a slightly greater antiquity: it is amusing to come across writers who, with an air of erudition, state that the whole thing started with Jules Verne. They are only out by seventeen hundred years.

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At least one Greek author, in the second century A.D., had speculated about the possibility of flight to other worlds. How many other writers in the lost literature of classical times may have done the same we can only guess. But we must remember that the ancients did not know that there were any other worlds besides this Earth. Some of their philosophers, such as Pythagoras, had guessed so (often for the wrong reasons) but it was not proved and was still less generally accepted.

After this early flowering of imagination, astronautics had no history for more than a thousand years, for men's minds were blinkered and they lived in a tiny, closed universe, bounded by the crystalline spheres of Medieval cosmology. The invention of the telescope shattered that poetic myth and gave mankind the endless horizons it possesses today. The modern picture of the Universe began to emerge -- the vista of worlds beyond worlds, stretching forever through limitless space.

The writers of the post-Renaissance era responded to the challenge. Adventurous heroes, surpassing the voyages which were now occurring in reality on the globe below, set sail for the Sun and Moon. Men of science, intoxicated by the glimpses they were catching through their new telescopes, decided quite seriously that it would soon be possible to reach these worlds in the sky. They were just a trifle premature ...

The dream faded when it was realised what obstacles lay between Man and the planets. The distances were sufficiently staggering, but more fundamental was the fact that space was totally empty. Beyond the atmosphere, which petered out at a trivial distance from the Earth's surface, was an almost perfect vacuum. Men could not breathe here, nor, it seemed, could any conceivable flying-machine operate. All but a few fanciful writers, who relied on magic rather than sound science, abandoned the theme of space-travel. The invention of the balloon, at the close of the Eighteenth Century, only served to underline the apparent impossibility of flight beyond the atmosphere.

The third, and final, revival of the dream occurred just about a century ago. The technological triumphs of the Victorian era turned men's minds once more to the challenge of outer space. Jules Verne deserves credit as the first writer to state the problem in clear scientific terms -- and to outline some of its solutions. He was also, to the best of my knowledge, one of the first writers to point out explicitly that the rocket could provide propulsion in the vacuum of space.

A considerable literature of space-flight, most of it as ephemeral as it deserved to be, grew up during the days when such men as Maxim and Langley were attempting the conquest of the air. Perhaps it was realized -- if only subconsciously -- that a new element was about to be mastered, and that it was time for the imagination to move on to fresh territories.

And so, in the closing years of the last century, a few men of science began to think seriously about the problems of space-flight. It is a very interesting fact that the first rocket motor was built in Peru at about the same time as Ziolkovsky in Russia was writing the first mathematical analysis of space-travel. That was just before the beginning of this century.

What has happened during the past fifty years is that the ideas of a few enthusiasts have slowly spread throughout the world, and sparked off practical achievements in an age which was at last ripe for them. Half a century ago a man of genius could have outlined most of the requirements for a spaceship: on the purely mechanical side, for example, there was little in the V.2 rocket which would not have been understood at once by a good engineer of the year 1900. But all the special skills, materials and techniques which go into the modern rocket simply did not exist at an earlier date. Not until our own age could the power and the dream come together and create the reality.

That the world now realises this is continually demonstrated on TV, in the comic strips, on the sides of cereal boxes, in countless toy-shops. The generation now growing up has taken space-travel for granted for almost all its life. When one reflects upon it, that is quite an astonishing thought. Nothing like it happened before the coming of flight. Indeed, I often feel that one of the greatest obstacles to space-flight today is not skepticism but over-credulity. Too many people, not realising the difficulties still to be overcome, are wondering what all the delay is about.

This Symposium, in which experts will present their views in non-technical language, should help to clarify the present situation. It is important that the public realise that space-flight is inevitable, and that eventually it will change our world even more profoundly than the conquest of sea or air.

I am not saying anything very original when I point out that the release of atomic energy has given us -- though still in uncontrolled form -- the power to reach the planets. The energy liberated by a single H-bomb could carry ten ships the size of the "Queen Elizabeth" to the Moon and bring them back to Earth. Contemplating this almost unbelievable fact, who can deny that atomic energy has made space-travel not only possible -- but imperative?