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LUNA!

"The heavens have become a part of Man's world."

Number Two
2009 February
Distributed Gratis

To the Reader

I am well aware that the first number of *Luna!* was full of infelicities, verbose in some places, laconic in others, and thoroughly lacking in polish. This and succeeding numbers are likely to exhibit the same faults, making any apology worthless, and so I can only beg your indulgence.

Especially when writing for a periodical or against a deadline, the need to stop revising and publish can lead to the retention of careless errors. Space and layout constraints affect the choice of words and phrases, as in print shape can be as important as sense. The most serious and pervasive defects, however, cannot be so readily excused.

Prolixity, diffuseness, asides and discursions which consume the main point, monotonous stock vocabulary, disorderly

Moon Phases

New	26 January 07:56 GMT
First Quarter	2 February 23:12 GMT
Full	9 February 14:49 GMT
Last Quarter	16 February 21:39 GMT
New	25 February 01:36 GMT
First Quarter	4 March 07:45 GMT

Memorials

27 January
Apollo 1 (1967)
Roger Chaffee, Virgil Grissom, Edward White

28 January
Challenger STS 51-L (1986)
Gregory Jarvis, Ellison Onizuka, Judith Resnik, Francis Scobee, Michael Smith, Christa McAuliffe, Ronald McNair

1 February
Columbia STS-107 (2003)
Michael Anderson, David Brown, Kalpana Chawla, Laurel Clark, Rick Husband, Willie McCool, Ilan Ramon

The Glorious Twentieth of July

A *World Space Week*, beginning on the fourth of October, has been established under the auspices of the United Nations, and space enthusiasts have taken to celebrating the twelfth of April. Shall we permit the third, and arguably most significant, great anniversary of the Space Age to pass unmarked?

We ought rather to celebrate, this year and every year so long as the memory of Man endures, with music, feasts, and dancing, with parades, oratory, and decoration, with all the marks of a solemn and joyous occasion. More than a commemoration of the past, this is the festival of our future. We celebrate, not because an American named Neil Armstrong set foot upon the Mare Tranquillitatis one day forty years ago, but because since his "one small step" we humans are inhabitants of the Universe, and no longer of Earth alone. On that day the bonds which for all our history had confined us to the globe of our birth were finally and definitively broken, and we would do well to remember, if we would retain that freedom.

There is a laudable, but perhaps otiose, proposal on foot in the United States to declare the twentieth of July a Federal holiday, under the name of *Space Exploration Day.* In a country where *Super Bowl Sunday* is observed with all the fervour of a religious festival, what need is there of such official sanction? Talk to your friends and neighbours, bring up the subject at club meetings, get in touch with convention organizers and party planners : this year of all years we must celebrate, and it is none too soon to prepare!

Effectiveness

Toward the end of February, the various space advocacy organizations in the United States descend upon the Capitol for a 'Legislative Blitz', with the intent of educating the members of Congress (or at least their staffs) about space issues, and convincing them that space activity is vitally important to the nation's future. Each organization has its own favourite tactics : the National Space Society, for example, mails out petitions for its members to sign and return, and volunteers hand-deliver them to show the Representatives and Senators their constituents' interest in space. Unfortunately, as the pro-space groups all have distinct agendas, they have difficulty presenting the sort of coherent message needed to obtain Congressional action.

Meanwhile, *Space Shuttle* is grounded until further notice due to a plumbing problem which apparently went undetected through ten dozen flights, and the **Lunar Reconnaisance Orbiter** is delayed yet again, this time by problems with an unrelated spacecraft occupying the one available processing facility. Funding issues aside, NASA and its contractors seem deficient in the institutional competence necessary to carry out even the missions they are already charged with. Even if the space societies were to develop a consensus program, and convince Congress to adopt it, there is no certainty that it could be implemented.

Luna City or Bust!

PART 2

We have called for immediate, permanent human settlement in Luna, and further called upon everyone interested in space development to support this goal as the best first step toward the realization of their ultimate aims. This message requires some justification, which we mean to present under this title.

Even when the advantage of position is admitted, the choice of Luna as the location of this first establishment is not incontestable. There is a strong argument that a planetary surface is not the best place for a growing technological civilization. A free-space platform could be located in any convenient orbit, and would not impose the need of overcoming the lunar escape velocity on arrival and departure.

The cause of the last-mentioned disadvantage is, however, a second great point in favour of lunar settlement : mass. Any type of orbital facility must be constructed and provisioned with matter brought from somewhere else, which at present means Terra. At the lunar surface, however, matter is readily obtainable, and if it could be used (however inefficiently) to support life or

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Teleology

Is it possible that the conquest of space is one of the ends of science-fiction fandom? This latter is usually understood to have the purposes of promoting the production of more and better literature in the genre, in part through the encouragement and formation of its writers ; advancing the appreciation of that literature, including the development of criticism ; and facilitating social intercourse among the readers of that literature. In common with other human institutions, however, fandom may tend to produce results beyond these intentions.

Certainly there are favourable indications. Space pioneers from Goddard to the **Apollo** astronauts admitted having been inspired by science fiction. Many of them also wrote it, beginning with Ziolkovsky, although the least didactic of these works are generally considered the best. Again, organized fandom brings together considerable numbers of intelligent, motivated people who are accustomed to processing new ideas and whose mental horizons are not limited by the curvature of the Earth. Such a confluence is clearly needed for the success of this enterprise, even if its existence is not proof of such a function.

The great desirability of the end to be gained is a temptation to misjudgement on both sides. If the tendency to bring about space development truly is latent within fandom, its expression is only right and proper, and there can be no question of hijacking. Without it, to treat fandom as a means to that end would be futile as well as churlish.

Magnitudes

In our first number, we observed that the ‘financial rescue’ and ‘economic stimulus’ measures now being implemented by governments around the world involve expenditures of several times what would be necessary for a complete programme of space development, made at a much greater rate. If these give no strong assurance of alleviating the present distress, not to speak of solving the fundamental problems, they are at least comprehensible as responses to panic.

What is far more remarkable is the scale of outright fraud. The Madoff pyramid scheme alone is alleged to have absorbed as much as fifty billion dollars, our high estimate of the cost of the Lunar Settlement Plan, and the Stanford fraud is not far behind. In our hands, that lost money would at least have accomplished something!

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industrial production, an establishment there would have a signal advantage. Rather than being dependent on importation for finished products and consumable supplies, as the present International Space Station is, or raw materials and industrial equipment, as contemplated for orbital manufacturing platforms, such a lunar settlement could provide much of its own needs. Beginning with a ‘seed culture’ of small pilot plants, the settlers would be able to build up a native productive capacity.

The “magnificent desolation” of the lunar surface hardly seems a promising source of anything, but investigation reveals significant possibilities. The bulk soil can furnish thermal insulation, and protection from radiation and micrometeorites ; as the **Apollo 11** quarantine procedures demonstrated, under suitable conditions it will also support plant life, potentially including food crops. Basalt, the principal rock type of the maria, can be cast into shapes such as pipes and paving blocks, or, like the volcanic and impact-melted glass found as particles in the soil, spun into fibres and woven into cloth suitable for various industrial purposes.

The rocks consist of oxide minerals, and methods have been proposed and tested (on substitute feedstocks) for separating the oxygen. This element is the vitalizing principle of air, the largest single constituent of biological material, and eight-ninths of the mass of the molecule H_2O. All but 11% of the water requirement, in other words, can be satisfied by the dry lunar rocks. Not even this much will have to be imported, as small quantities of water and hydrogen are found in the soil, and there are indications of richer sources.

Oxygen, for all its importance, may even be a by-product. Despite not having experienced the geological forces which form terrestrial ore bodies, Luna has its potential sources of metals. Ilmenite and anorthosite are rich enough in titanium and aluminum that terrestrial industry has developed means of using them in place of rutile and bauxite, and the tailings would be correspondingly enriched in smaller constituents such as magnesium. Iron smelting in a low-carbon environment is unpromising, but sufficient chromite and meteoric nickel-iron should be available to meet the need for alloy steel. Even uranium and thorium appear accessible enough to support a nuclear fuel cycle.

Considering all this, we confidently assert that Luna can indeed support both life and industry.

argumentation, and want of structure are not only grave flaws in writing, but characteristic of mine. So long as the words which fill these sheets proceed mostly from my pen, there will be little relief from these evils, bar what amendment practice may bring. For this reason, as much as from a desire for relief from a part of my self-imposed labour, I ask for your contributions : other hands can better express the ideas of the Luna Project, and even writing no better than my own may at least provide variety.

—Christopher Carson
(publius)

Events

ConDFW[12], Dallas, 20-22 February
All-Con, Dallas, 13-15 March
Lunacon[1], New York, 20-22 March
Space Access Conference†, Phoenix, 2-4 April
Conestoga†, Tulsa, 24-26 April
Anticipation (Worldcon)†, Montreal, 6-10 August

Completed
Definite
Under Consideration
[1]Table
[2]Advertisment
†Lodging not yet secured

This list would be much improved by the addition of events at which someone other than myself will represent the Project, and of Project-sponsored events.

—publius

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