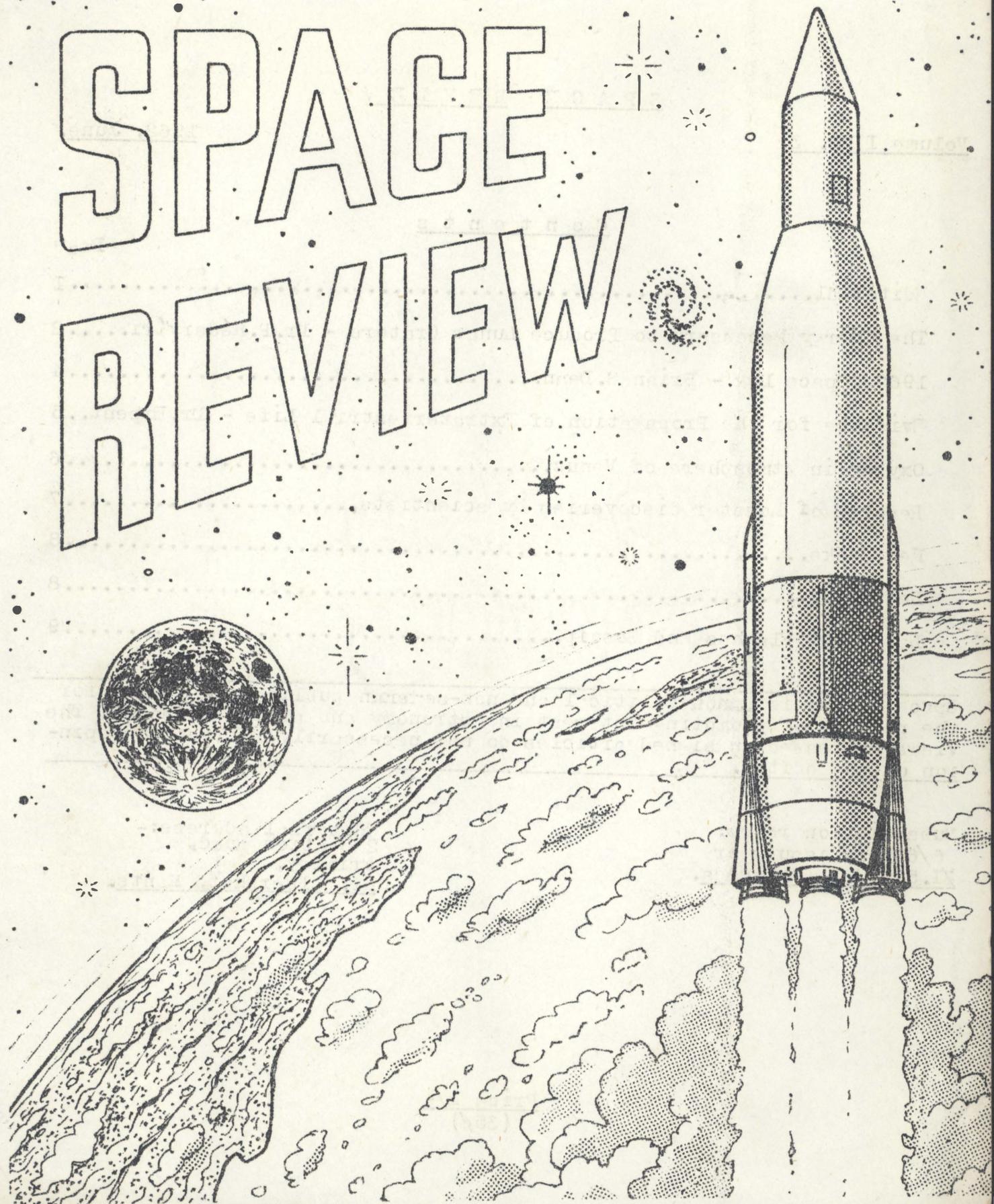


# SPACE REVIEW



S P A C E   R E V I E W

Volume I No. 3.

1962, June.

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## Editorial

As we have a number of astronomical enthusiasts among our readers who are broad-minded enough to consider the existence of life outside our earth, I've decided to include the following news item as part of this month's editorial:-

"A secret meeting of scientists and industrialists last November to discuss the possibility of communicating with other worlds has been revealed by Walter Sullivan in the New York Times (Feb. 4th). A number of scientists present were reported to believe that signals from other worlds are probably reaching the earth right now, and that the main problem was how to detect them. The meeting, sponsored by the National Academy of Sciences, was held at Green Bank, W. Va., site of the Project Ozma space signals search.

Dr. Philip Morrison, Cornell University scientist responsible for some of the theoretical work leading to Project Ozma, stated that we would have to search for some unique communication channel via which other civilisations might be trying to contact us. Because of time lag in transmissions from distant stars, he said, a message probably would contain an encyclopaedic amount of information. This would follow some signal to attract our attention and a "language lesson" to help us decide the message. A question and answer session with extraterrestrials would be impractical due to time-lag.

(Reversing the situation, in a talk last November at Nashville, Tenn., Ernest H. Wells of Redstone Arsenal, Alabama, suggested one way that attention could be called to a message-carrying device. One of our future space projects, he said, would be to send a probe to a planet of a nearby star, to circle the planet and jam the radio transmissions of any intelligent creatures living there. If we jam their broadcasts, he explained, they will investigate the space probe and find material we have put there for them.)

Two manufacturer's representatives attended the Green Bank meeting to gather information on the type of equipment needed in an accelerated program to detect space life. A first step would be to prove that some nearby stars actually have planets. Other scientists present included Dr. Melvin Calvin, Nobel Prize winning chemist, University of California, and Dr. John C. Lilly of the Communication Research Institute. Dr. Lilly is noted for his research on porpoises which has revealed their remarkable intelligence. His recent experiments have been designed to determine whether porpoises have a language of their own, and whether it would be possible for man to communicate with them. If successful, his techniques would shed light on the problem of communication with alien intelligences. In his work on porpoises, Dr. Lilly has been motivated partly by desire to pave the way for communication with extra-terrestrial beings." (Credit: National Investigations Committee on Aerial Phenomena, Washington D. C., U. S. A.).

Because of high costs of postages, printing and stationery, we are forced to increase the price of SPACE REVIEW as follows:- single copies, 1/- plus postage; subscription of 6 issues, 6/6d. The dollar rate is 35¢ single copies or \$1.50 for the complete subscription.

To make up for this increase in price, the size of following issues will slightly increase in number of pages, according to material, etc.

The Energy Necessary to Produce Lunar Craters  
and Ring-Mountains

by Dr. Peter Hédervári, F. I. L. S., F. A. H. G.  
(Geophysical Institute, Budapest)

The ring-mountains in the basins' region of the Moon's surface, as e.g., the Aristoteles or the Aristillus, often have wide sockles, like the terrestrial volcanic islands (e.g. Hawaii). However, the lunar craters undoubtedly differ morphologically from the terrestrial volcanoes. The volcanism of the Moon may probably be the central peaks of the ring-mountains and perhaps the domes also. This is justified by the observations of Drs. Kozirev and Wilkins relating to Alphonsus. It is certain that the energy having role in the production of the lunar craters originated from the interior of the Moon. Only the small craterlets might have their origin by the impact of meteors.

In the present dissertation we used the method of the Japanese volcanologist, Dr. I. Yokoyama. According to Yokoyama, the most important energy in the case of volcanic eruptions and the arising of terrestrial volcanoes is the thermal one. His formulæ relating to the thermal energy in the case of a volcanic island is as follows,  $E = VbTJ$ ; where  $E$  is the released thermal energy,  $V$  the volume of the respective island,  $b$  the density of the island's rock,  $J$  the equivalent work of heat and  $T$  is a constant, the value of which is 300 calories. This mathematical expression can be adapted for the case of the lunar craters and ring-mountains also, when  $V$  means the volume of the ring-mountains' wall. In our calculations we neglected the volume of the central peaks. The density given by our calculations was 2.7.

To estimate the volume of the craterwalls, we used the data of Dr. R. B. Baldwin. TABLE I: diameter of the ring-mountain - the degree of the average slope of the inner walls. We used  $3^\circ$  for the slope of the outer walls. - The energy necessary to produce lunar craters in accordance with the theory of meteor-impacts was estimated by Baldwin. TABLE II. Diameter - energy. - Our results for the mass of the walls may be found in TABLE III: diameter - height of the walls - mass, in grams.

Using the formulæ of Yokoyama, mentioned above, the necessary energy for the formation of the ring-mountains is in TABLE IV: diameter - mass - thermal energy in ergs.

Yokoyama calculated the thermal energy in the case of some terrestrial volcanic islands. TABLE V: mass - thermal energy - denomination of the island. Using this expression, we calculated the energy in the case of the formation of Etna and Mauna Loa. TABLE VI. mass - thermal energy - denomination. It is very interesting that the energy in the case of the largest ring-mountains/e.g. Clavius/ is in the same order of magnitude as the largest volcanic islands on the Earth/e.g. Hawaii/.

What was the source of energy in the Moon? Our calculations/expressions I - 18/ show that the source was the expansion of the Moon. We have discussed this problem on other occasions in our earlier papers. The base of this hypothesis is Professor L. Eged's theory about the Earth's expansion. According to Professors Ramsey and Eged, the core of the Earth is in a metallic state. In accordance with the cosmology of Dirac and Gilbert, the gravity is decreasing as the function of time. The metallic phase is the function of gravity. Hence when the

gravity decreased, simultaneously the pressure of the Earth decreased also. The consequence of this process is the transformation of the material along the boundary of the Earth's core from the metallic state into the normal one. A further consequence is the increase of the volume of the transformed material and the expansion of the Earth. We proved in our calculations in our earlier papers that the Moon had also a metallic core, many millions of years ago when the gravity was much stronger than at present. By the transformation of the metallic core, the Moon had to expand during the first part of its history.

In our present calculations the used symbols are the following: The transformation of the atoms during  $\Delta t$  time along the boundary of the Moon's metallic core had taken place in a layer the thickness of which was  $\Delta r$ . The number of the transformed atoms was  $N = \frac{1}{\Delta r} \int_{dv} dv$ , where  $n$  is the number of the transformed atoms in the elementary volume of  $dv = \frac{4}{3} \pi r^2 \Delta r$  and  $r$  is the radius of the metallic core. The released energy during the transformation in the case of the molecule is about 18 eV. In a molecule the number of the atoms is  $k$ . Therefore, during  $\Delta t$  time the released energy is  $E \Delta t = \frac{1}{\Delta r} \int_{dv} dv$  electronvolts. The  $dv$  volume is situated in the core and the  $dw$  elementary volume is in the mantle of the Moon. The elementary masses are:  $\rho dv$  and  $\rho' dw$  respectively where  $\rho$  is the density of the metallic core in the distance  $r$  from the center and  $\rho'$  is the density of the mantle in distance  $r'$  from the centre. The potential energy of  $dw$  in the  $r'$  is:  $U_1 = \frac{1}{2} \rho' dw r'^2$ . In the  $t_1$  epoch the potential energy of the mantle is  $U/t_1 = \frac{1}{2} \rho' w r'^2$ . Here  $w$  is the volume of the mantle. The potential energy of  $dw$  at the  $t_2$  epoch in the distance  $r' + \Delta r'$  is  $U_2 = \frac{1}{2} \rho' dw (r' + \Delta r')^2$ . Supposing that:  $\frac{U_2}{U_1} = \frac{1}{9}$ . The potential energy of the mantle in the  $t_2$  epoch:  $U/t_2 = \frac{1}{9} U/t_1$ . From the expression  $\frac{U_2}{U_1} = \frac{1}{9}$ :  $\frac{r' + \Delta r'}{r'} = \frac{1}{3}$  and therefore  $U/t_2 = \frac{1}{9} U/t_1$ , from where  $\frac{r' + \Delta r'}{r'} = \frac{1}{3}$ . See in the expression  $\frac{U_2}{U_1} = \frac{1}{9}$ .

Practically:  $f t = \frac{1}{17}$ , where  $f$  is the value of the gravitational co-efficient in the  $t$  epoch,  $\rho' t$  is the mass of the Moon's mantle at the same epoch,  $M$  is the Moon's total mass and  $\Delta R$  is the increase of the Moon's radius in cm/year. Approximately:  $f t = \frac{1}{18}$ .

We calculated the energy necessary to produce all craters and ring-mountains, too. TABLE VII: diameter - number of craters and ring-mountains respectively/after Baldwin/ - maximal thermal energy. Altogether:  $6,82 \cdot 10^{31}$  ergs. Supposing that the number of the ring-mountains and craters on the other side of the Moon is about the same as that on the visible side, the thermal energy was about  $1,364 \cdot 10^{32}$  ergs.

Let us suppose that the formation of all craters and ring-mountains lasted about  $2 \times 10^7$  years. During this time, the energy necessary to lift the mantle, that is to enlarge the Moon, was about  $1,34 \cdot 10^{36}$  ergs. This energy is  $9824 \approx 10^4$  times greater than the energy necessary to produce all crater and ring-mountains. We calculated the energy which might have produced the mountain-range on the Moon, also. This energy was the maximum of  $10^{30}$  ergs.

According to our results, the transformation of the metallic core of the Moon supplied essentially more energy than that which was necessary to produce tectonic processes on the Moon.

#### Figures

1. The height of the rampart  $H$  as the function of the diameter  $D$ .
  2. The mass of the craterwalls  $M$  as the function of the diameter  $D$ .
- The two coordinate axis are logarithmical.

3. The  $E_t$  thermal energy necessary to produce ring-mountains, craters and volcanic islands as the function of the mass  $M$ . The coordinate axis are logarithmical. B: according to Baldwin/in accordance with the meteorological theory/, - Y: using Yokoyama's formulæ. The numbers mean the diameter of the craters in km, the letters mean the volcanic islands/ see TABLE V/. E: Etna, H: Hawaii /Mauna Loa and Mauna Kea volcanoes/.

4. The situation of the  $d_v$  and  $d_w$  elementary volumes in the interior of the Moon.

N.B. The tables mentioned in the above article appeared originally in "Magyar Fizikai Folyóirat"/Hungarian Physical Review of the Academy of Sciences, 1961/4. The English translation was by the author who presented a summary for publication in SPACE REVIEW.

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## 1962 S P A C E L O G

by Brian S. Dean

(This is a regular feature to keep our readers up-to-date with recent occurrences in astronautics and space research. Our contributor is a research engineer at a missile industry in Manchester.--Ed.)

JANUARY 13th:- U.S. Air Force attempted to orbit a discoverer satellite. The satellite, however, failed to orbit. It was designed to return a capsule to earth after several orbits...15th:- National Aeronautics & Space Administration (NASA) conducted a sub-orbital test with their Echo balloon communications satellite. The satellite burst apart after 25 minutes, shortly after leaving its Thor booster....23rd:- U.S. Navy's Composite 1, containing five small satellites, failed to orbit when the second stage of its Thor-Able Star Booster failed. Composite 1 consisted of (1) 58 lb. Solar Radiation IV to measure X-ray emissions, (2) 58 lb. Tofti II to study radio wave propagation (3) Surcal I to provide precise calibration for the Navy's space surveillance and tracking system (4) 59 lb. Injun II to investigate auroral phenomena (5) 36 lb. Army Engineers' satellite to give range calibration data...26th:- NASA launched its Ranger III, intended to hard-land a package on the moon. However, the vehicle missed the moon by 22,862 miles and is now orbiting the sun...FEBRUARY 8th:- Tiros IV weather satellite was launched by its Thor-Delta booster from Cape Canaveral. The 285 lb. satellite was reported to be transmitting excellent cloud cover pictures and infra-red heat balance data...20th:- The long-delayed Mercury/Atlas show finally occurred. Col. John Glenn became the first American to orbit the earth. He returned safely after three orbits...21st:- U.S. Air Force launched a secret satellite from Vandenberg. No other information was revealed... 27th:- U.S. Air Force launched Discover 38. The capsule was recovered after four days in orbit - the eighth capsule to be recovered in the Discoverer series. It contained samples of various metals to determine the effects of radiation on metals...MARCH 7th:- NASA orbited its first orbiting Solar Observatory, boosted by a Thor-Delta from Cape Canaveral. The 458 lb., satellite carried 13 experiments to give the first undistorted data from the sun. It is hoped to launch a number of such satellites over the next eleven years - one complete sun spot cycle...16th:- Russia launched its latest sputnik. They later announced that the satellite was transmitting data on the ionosphere.

## Evidence for the Propagation of Extraterrestrial Life

by Dr. Erpent, M.A.

The problem of possible extraterrestrial life has caused much discussion among scientists. Life exists on Earth; probably some kind of living organism is indicated by the dark areas on Mars; why then should it not be more widespread?

Recently, analytical studies of the Orgueil Meteorite, which fell in France as long ago as 1863, have shown that there are traces of organic matter, and Urey and others have maintained that the meteorite once formed part of a planet which possessed atmosphere and water. This planet is supposed to be the same as that which disintegrated some  $2 \times 10^9$  years ago to form the cosmical debris now known as asteroids, comets and meteorites.

The present writer, together with his colleagues at Harvard, has formulated a different theory to explain the organic traces in the Orgueil and other meteorites. It is tentative at present, but seems to fit the mathematical requirements. A technical report is being prepared for publication, but some details of the analysis remain to be cleared up.

Briefly, it is suggested that the organic matter comes not from a disrupted planet, but from a familiar one - Jupiter. It is significant that Jupiter was near opposition when the Orgueil Meteorite fell (making allowance, of course, for the time taken in transit) and the angle of fall, if the reports are to be relied upon, agreed with what would have been expected from a transfer-orbit between Jupiter and the Earth.

Briggs and Firsoff have recently, and independently, made comments about possible ammonia-based life; their accounts have appeared in technical and semi-technical journals. My own research, conducted with my Harvard colleagues and in particular with R. Unwin Hall-Wright, Associate Research Fellow at the observatory, has led to similar conclusions. We have also made spectroscopic analysis of the Jovian atmosphere. In 1932, Adams and Dunham, at Mount Wilson, identified the main absorption bands in the spectrum with carbon dioxide ( $\text{CO}_2$ ) and this we confirm, but we have also, by using wide-dispersion spectrograms obtained with a 10-inch photoelectric refractor, proved that the Fraunhofer lines in the H or hydrogen region of the spectrum may also be accounted for on the hypothesis of molecular nitrogen, similar to that detected in the spectrum of Venus by N. Kozyrev at the Crimean Astrophysical Observatory. If so, the Ramsey and Wildt patterns for Jupiter, according to which the globe is entirely non-homogeneous, must be drastically modified.

It is possible, then, that below the outer mantle, Jupiter has a solid surface, where a primeval-type atmosphere, similar to that of the Earth during the Cambrian period, may obtain. In this case there may be violent volcanic outbreaks. Indications of one of these is shown by the presence of the variable Great Red Spot, and many years ago, R. A. Proctor maintained that many comets were formed by ejection from Jovian volcanoes and eruptions - a theory which has fallen into disfavour but which may yet be valid.

The type of organic matter in the Orgueil and other meteorites is consistent with this idea. Despite the high escape velocity of Jupiter (37 miles per second) ejection would be plausible. If the theory is sound, life still flourishes below the obscuring mantle. Jupiter

may be a world of amphibians, great reptiles and even mammals; the surface cold will be mitigated by interior heat, and the carbon-rich atmosphere will act as a most efficient blanket. It is not impossible that Jupiter is inhabited by advanced beings, but this is speculation, and may prove to be wildly in error.

Meanwhile, it is worth while to study the trajectories of any meteorites seen to fall, since if they are recovered, and are found to contain organic traces, their descent paths can be correlated with hypothetical transfer orbits from Jupiter. This is a programme which will, it is hoped, be initiated on an extensive scale before the Perseid shower of 1964.

Saturn cannot be ruled out as the origin of meteorites, but it seems that the atmosphere is too rich in dimolecular polystyrenes. It seems hardly worth while to institute a similar programme for saturnian transfer orbits of meteorites, at least until some positive results have been obtained with Jupiter, but this may be considered in the future. Meanwhile, we must become used to the new concept of an inhabited Solar System, since the meteorite analyses have at last given definite proof that life is not confined to Earth.

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Editor's Note: Astronomer, Dr. Carl Sagan, of the University of California has also advanced a similar idea with regard to the atmosphere of Jupiter. He believes that the Jovian clouds behave like a giant greenhouse, trapping and storing heat. The surface temperature is estimated at a comfortable 75°F. In the August 1961 issue of "Radiation Research", Dr. Sagan says "The possibility of life on Jupiter seems somewhat better than the possibility of life on Venus; the latter now seems remote because the same greenhouse effect that may warm Jupiter has heated Venus to a soaring 600°F."

It is a well-known fact that the Earth as well as Venus has a heat zone which encircles the planet at an altitude of approximately 1,000 miles. One layer reaches the high temperature of over 1,000 F. Therefore, if our planet was examined from the outside, it would record a temperature in which life, as we know it, could not exist.

The recent news report from the U.S.S.R., to the effect that molecular oxygen has been detected in the outer layers of the Venusian atmosphere may also have a strong bearing on the above discussion. The report, in full, is published below:-

#### Oxygen in Atmosphere of Venus

"Molecular oxygen, without which life as we know it is impossible, has been discovered in the upper layers of the atmosphere of Venus. This discovery has been made by Vladimir Prokofyev, of the Crimean Astrophysical Observatory.

Prokofyev has obtained and studied unique spectra of Venus with the help of a big turret solar telescope and a special spectrograph. Each of these spectra is about four metres (13ft) long--between 20 and 25 times longer than those normally obtained.

The spectra, which were obtained when Venus was at its closest to the Earth and also at various times when the planet was receding, have made it possible to study the fine details of radiation and to detect even the slightest absorption in the Sun's light by the oxygen in the Venusian atmosphere.

The discovery of molecular oxygen in the upper layers of the atmosphere of Venus is a big step towards penetrating the secrets of this

mysterious planet.

It is already known that its atmosphere contains carbon dioxide (CO<sub>2</sub>). So far there has only been one spectrum pointing to the existence of nitrogen in the atmosphere of Venus. This was obtained by the Pulkova astronomer Nikolai Kozyrev. (And checked by B. Warner of the University of London Observatory--Ed.)

Venus is now again approaching the Earth and the scientists at the Crimean Observatory are planning to continue their comprehensive study of the planet. (Ref: "Soviet News" 23/3/62.No. 4642.)

A lot of advances have recently been made by spectroscopic and photometric studies of the Venusian atmosphere. The United States Navy released a number of stratospheric balloons into the upper fringes of our atmosphere and detected an abundance of H<sub>2</sub>O. This was in 1959, but Dr. A. Dollfus, Director of the Paris Observatory in Meudon, recently attempted a similar experiment the details of which may later reach SPACE REVIEW.

Gordon Newkirk (U. S. A.) and N. A. Kozyrev (U. S. S. R.) have obtained spectrums of the Ashen Light of Venus which were submitted to Brian Warner of the Un., London Obs., as mentioned above. Molecular nitrogen and atomic oxygen were the main gases identified at the time, but several 'bands' and 'lines' still remained unknown.

Mr. V. A. Firsoff, M. A., F. R. A. S., gathered together the available evidence for and against this hypothesis, but has come to the conclusion that our neighbour world could be very earth-like under the obscuring cloud mantle.

With the additional discovery of oxygen in molecular form, Firsoff's theory is enhanced to a much greater extent. As oxygen is such an active element, it would have to be continually replaced by a photosynthesis source which is present in vegetation. The presence of H<sub>2</sub>O, O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub> & N<sub>2</sub><sup>+</sup> on Venus is incontrovertibly the most important criteria yet available in support of a planet fit for habitation.

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**UNKNOWN MONSTER PUZZLES SCIENTISTS** carcass. Samples will be sent to specialists for chemical analysis.

**HOBART, Tasmania (AP)--** An Australian scientist, Mr. B. C. Mollison, of the Commonwealth Scientific and Industrial Research Organisation, has made a second inspection of the carcass of a monster on a remote beach on the west coast of Tasmania.

The 'body' is 20-ft long, 18-ft wide and 4½-ft thick and resembles no known creature. It is circular in shape, has no eyes, no head and no bone structure. Its skin is of cramy rubbery flesh about 12-inches thick covered with woolley hair. It cannot be called fish, fowl or fruit. Heat makes no impression on it.

Dr. J. R. Simons, a lecturer in zoology at Sydney University, agrees it might be a rayfish or a mollusc without its shell. A further group of scientists will probably fly by helicopter to re-examine the

**MONSTERS SEEN BY RUSSIANS** London (Reuters)---The Soviet Union claimed to have seen not one, but two "Loch Ness Monsters."

Moscow Radio said the first monster was seen by Soviet geologists in a lake 3,500 feet above sea level in eastern Siberia. They first thought it was a barrel in the water, but as it drew nearer they saw it was a monster with a head more than 6-ft in size and with a 30-ft long body that had something like a fin on it.

The geologists Moscow Radio said, described how the monster approached in spurts, submerging after every spurt. Near the shore it halted, dived and was not seen again. The 2nd monster was seen by a party of geographers in a

lake in the mountains on the border of Soviet Central Asia and China.  
(Ref: The Woodstock Sentinel-Review, Feb. 15th 1962: Gene Duplantier.)

NEW BOOKS

The Earth, the Planets and the Stars

by Lieut-Col. K. T. Edgeworth, D.S.O., M.C., F.R.A.S., M.I.E.E.

London, 1961, Chapman & Hall Ltd., Net Price 25s.

This book is very unorthodox in its dealings with planetary and stellar evolution. Convincing arguments are submitted against some of the widely accepted theories.

The coverage is nearly complete of astronomy and geophysics in all their aspects - and non-technical readers will be able to follow the text throughout with little difficulty. However, the appendix at the end should satisfy the doubts in the minds of those who are technically trained.

I personally found the discussion on planetary instability of great interest as here indeed may be the answer to the unstable effects in our planet's meteorological conditions. Are we headed for the "galactic spring" with its overall changes? Perhaps even Atlantis of mythology is about to rise out of the ocean bed! Subsidence in the area does support this contention and it may well be that our future is in for a "big jolt". This applies in a variety of aspects, and chapter (I), I believe, provides at least part of the answer. --Editor.

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LETTERS

May I congratulate you on an excellent first issue of your "Space Review"? It will usefully fill a gap in British space literature.  
Yours etc.,  
Brian S. Dean, Manchester, Lancs.

.....mation submitted might be "vetted" a little more carefully before inclusion. An unqualified statement such as "the Moon is redder than the Sun but would appear orange to a Moon traveller" rings a little oddly in the ears of a scientist, and surely requires some further explanation? However, I have no doubt that the publication will improve as it goes on.

Let me say how much I enjoyed your new bulletin and wish you continued success with your venture.  
Yours etc.,  
Gene Duplantier, Toronto, 6.

Yours etc.,  
David A. Hardy, F.R.A.S.,  
Birmingham, Warwicks.

I received the other day, a copy of "Space Review" which you're editing, and I would like to congratulate you on the first issue. I usually rely on 'SPACELIGHT' and 'SKY & TELESCOPE' for astronomical and astronautical information, but your small publication gives me a lot of interesting news items that I would otherwise miss.

I received with many thanks the very interesting and useful copy of your periodical and I should be very glad of later ones too.

Yours etc.,  
P. Starkey, Kingston Hill,  
Surrey

Yours etc.,  
Dr. P. Hédevári, F. I. L. S., F. A. H. G.,  
(Geophysical Institute: Budapest)

Thank you for sending the first issue of SPACE REVIEW, which is quite interesting and promises well. I would suggest though, that infor-

In my last letter I told you that I had already seen your review; I now find it is an American review which I've had under my eyes and this is different to yours. I thank you nonetheless for sending me the specimen and to have

incorporated in the review, a report on my balloon experiences.

Yours etc.,

Dr. Audouin Dollfus,

Director, Paris Observatory.

Meudon (Seine & Oise)

Comment: Is there indeed another publication issued in the U.S.A. with the same title? Presumably its an astronomical publication, but I would appreciate further details, if possible, as to publisher, address, etc..

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### LATE NEWS-FLASHES AND GOSSIP

#### Our Universe an Atomic Particle?

Dr. Peter F. Browne, a physicist at the National Physical Observatory believes that our universe is only an electron to a super universe; in the same way, a tiny particle known to physicists as neutrinos could be a complete micro universe with its own galaxies, stars and planetary systems.

Dr. Browne believes that our universe is a self-contained cycle and challenges Prof. M. Kyles' expansion theory based on the phenomenon of the Red Shift.

Dr. Browne claims that the light shift to the red end of the spectrum is due to "fatigue" of light as it plows through the gravitational field of the universe. The energy lost in this way is absorbed by the universe, reappears as matter which produces new stars; this, again is broken down by nuclear reactions, releasing light and other radiations. (London A.P. 27/3/62)

#### No Junk in Space Says Woolley

At the April meeting of the RAS, the Astronomer Royal, R.v.d.R. Woolley commenting on the talks given by Prof. H. Bondi, Drs. Baldwin, Blackwell and King-Hele on the forthcoming launch of a British made satellite by the U.S.A. and its effect on optical and radio astronomy, stated that although this project may be regarded as harmless if the metal needles released by the satellite forms a temporary 'belt' around our Earth, great caution should be taken in future to ensure "any old junk" is not launched into orbit.

#### Does Comet Seki-Lines Exist?

A group of Danish astronomers have been trying to observe the new comet which was supposed to have been visible from northern latitudes during early April.

Because no such object has been detected by Danish observers, the group wrote to the RAS concluding that the comet is non-existent.

#### Fish Suicide Complex

Sydney, Australia, 21/12/61. The suicide complex among fish along the Australian coast ended today as suddenly as it began. There is still no explanation for the baffling sea mystery which caused thousands of fish to hurl themselves to death along nearly 200 miles of coastline from Sunday until yesterday. Lester Cribb, Chairman of the Evans Head Fisherman's cooperative said, "Its amazing whatever caused the fish to die has now disappeared. (Ref: International Bulletin, P.O. Box 1524, Amsterdam).

#### Mars May Not Be Red Planet

Dr. Nikolai Kozyrev, astrophysicist of Pulkova Observatory <sup>who</sup> Mr. Leningrad, has made a large series of spectral observations of the planet, has come to the conclusion that the red colour is due to the absorption of blue and violet rays in its atmosphere and not the colour of its actual surface.

In an article published in "Izvestia", Kozyrev maintains that it follows from this that the density of the atmosphere of Mars is not as low as has hitherto been believed, but approaches the density of the Earth's atmosphere. (Ref: Soviet