COUNTDOWN TO

Accidents not withstanding, of the two spacecraft now racing towards Mars, it is the Mars Pathfinder (pictured centre) which is set to land on America's Independence Day - 4th July 1997 but it is the Mars Global Surveyor (MGS) which will take the next set of images of Mars, as it approaches the red planet for orbit insertion round about 11 September 1997.

The MGS has the camera which it is hoped will re-image Cydonia, that mysterious region in the northern hemisphere, now famous for its mile-and-a-half rock-carving of a face-like- feature, within proximity of an apparently ancient city with a layout of mounds displaying tetrahedral geometry and environs of provocatively designed structures. The camera is a replica of the Mars Observer instrument.

Although NASA has stated that it will re-photograph the Face and place the images on the Internet, there is still some doubt as to the priority being assigned to Cydonia. NASA's chief administrator Dan Goldin was reported to have stated last November that there are two ways that NASA could approach the questions raised:

"We could say: 'You don't know what you are talking about; we know that there couldn't be a civilization on Mars and therefore we'll never take a picture of that spot'."

(This does of course beg the question, precisely how does NASA [or anyone else] know that there isn't a civilization on Mars?)

Goldin continued: *"However, leaving aside for the moment any answer or answers to that pointed question, there are taxpayers who believe this.*

"So one of the things we are going to do on our next mission is, when the spacecraft goes over that spot, if we have the right pointing, we'll try and take a picture and scientifically show what we have found."

Goldin's choice of words, 'if we have the right pointing' suggests that nothing is certain here. As far as the geologists and planetary scientists ensconced at the Jet Propulsion Laboratory (JPL) are concerned, the only reasons to go back to Mars are to study its climate, soil, magnetic fields and atmosphere. The attitude 'there couldn't possibly be even the remnants of a civilisation, never mind a current one' still prevails: such closed attitudes may result in the areology (Martian geology) of Cydonia receiving precedence over any photographs of ruins of artificial structures. As professor Stanley McDaniel, author of The McDaniel Report has consistently stated, 'it is the prioritising of re-imaging Cydonia that is the critical issue'.

McDANIEL IN THE UK

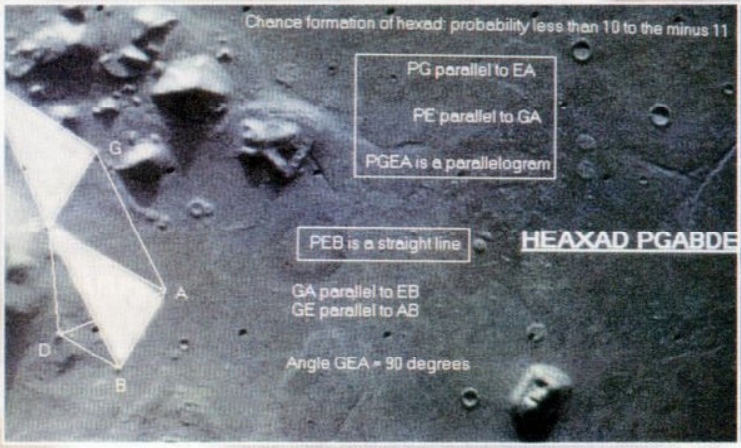
"The Face on Mars is not the only anomaly in Cydonia," asserted professor McDaniel while in Britain to lecture at several universities and a couple of schools. McDaniel certainly cut a striking figure as he walked down St.Giles in Oxford town centre the day after his lecture to the *Space and Astronomy Society* at Oxford University's St. John's College, where I had the opportunity to discuss some of the issues about Mars.

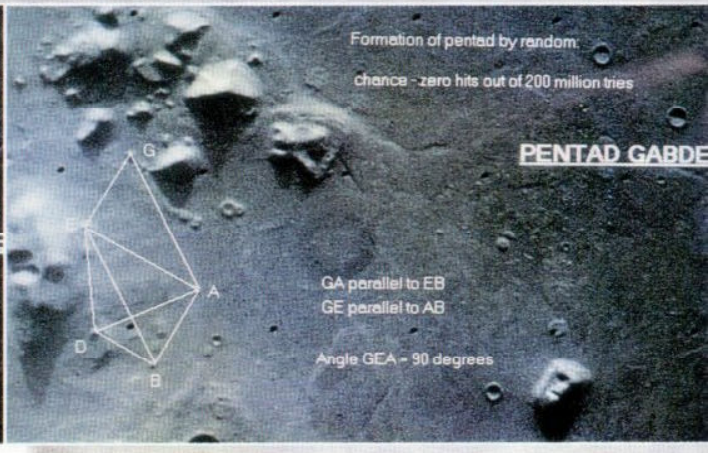
We talked about the history of the Cydonian investigation, so effectively summarised in his Report; about the failure of the Mars Observer in 1993 and its repercussions; about the recent failure of the Soviet Mars probe and the two previous Phobos probes.

This uncanny failure of probes to Mars is telling, when we consider the success of other space missions in recent years.

We talked about the high hopes we have that the MGS will re-image Cydonia at much higher resolution and also discussed the data on the analysis of 'The Mounds' in the area.

It was the mounds that McDaniel focused on during his rapid tour of Scotland and England, as well as the methodology behind the investigations and the lack of logic and reasoning in some of NASA's explanations for the Martian anomalies.





ANANDA SIRISENA

CYDONIA

Professor McDaniel is deeply concerned at some of the ill-founded statements coming out of places like the JPL. As a professor of philosophy of science, he is troubled by the lack of critical thinking espoused by planetary scientists both within and outside of NASA when it comes to explanations of 'The Face' and related features.

Broaching NASA's perennial contention that 'The Face' is simply an illusion of 'light and shadow' was certain to evoke a sharp reaction from him."Where are the objects that are causing these shadows to make the rock look like a face? Where are they? They are not evident on the second high-resolution Viking frame 70A13, nor on the original frame 35A72 on which 'The Face' was discovered in the first place!"

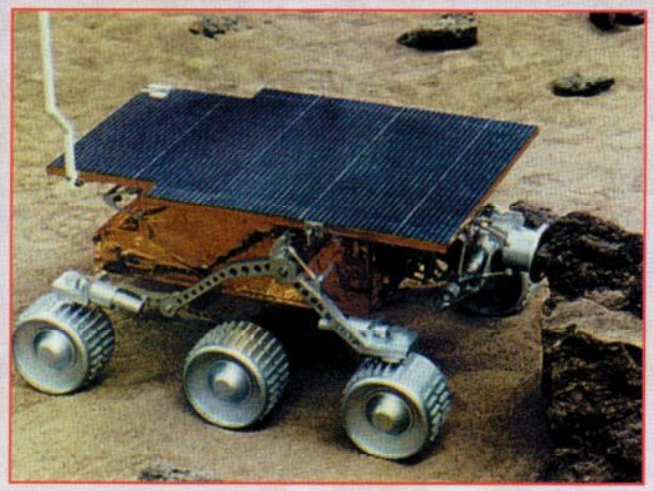
He was adamant that this simple 'cop-out' line was quite without foundation. It is a good point - NASA has used this excuse line time and again in order to misrepresent the actual nature of the rock. Scientists and members of the press (hard-nosed journalists) have bought this explanation 'hook, line and sinker' without thinking about the implications.

Professor Stanley McDaniel was keen to shift attention to the 'mounds' research in Cydonia, away for just a moment from the large-scale features such as 'The Fort' and 'The D&M Pyramid', whose nomenclature has already entered research folklore.

"The mound configurations in the area of 'The City Centre' are a remarkable pattern, worthy of further investigation and higher camera priority," McDaniel reminded me.

We discussed the paper that he had co-written with professor Horace Crater on the subject - entitled 'Mound Configurations on the Martian Cydonia Plain : A Geometric and Probabilistic Analysis'.

I complemented him on the fact that many hundreds of copies of this paper had already been disseminated in England and Europe.



Its careful analysis of the placement of right-angled triangles formed by the mounds is a scholarly piece of work, requiring only a basic understanding of geometry and elementary trigonometry to appreciate the scope of professor Crater's stunning discovery - that the 'mound configuration' displays tetrahedral geometry - that is, the pattern of the layout is tantamount to a template placed on the surface of Mars for the construction of a tetrahedral pyramid.

I suggested that if such a pattern were found on Earth, then an archaeological team would be dispatched post-haste to the site. He did not disagree.

When professor McDaniel lectured at the Astro-Physics Department at Imperial College in central London, he seemed to be like a man on a mission, set to educate the public and academe alike on the importance of assigning higher priority to the features in Cydonia.

Since manned missions to Mars appear to be out of the question at the moment, it is robotic exploration of our neighbouring planet that will bring in heaps of information over the next twelve to twenty years.

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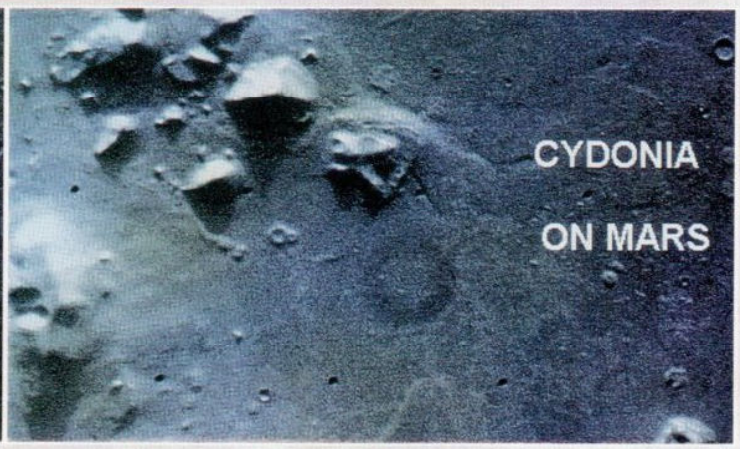
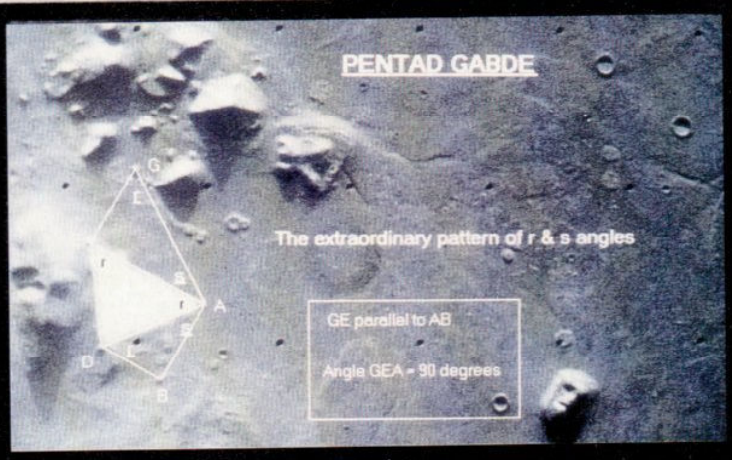
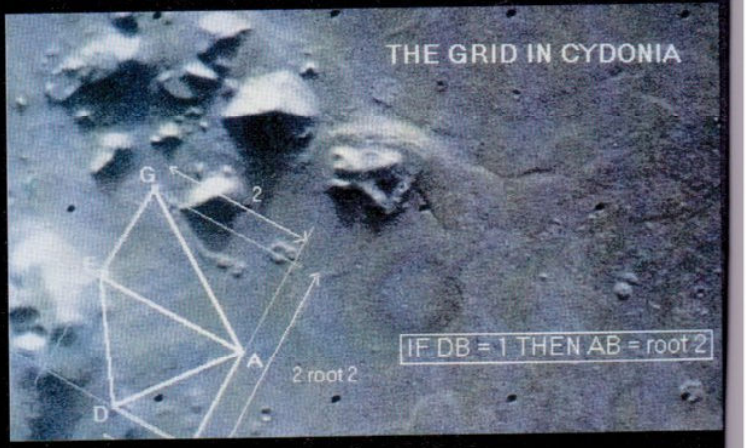






COUNTDOWN TO CYDONIA

The Mars 'Pathfinder' is only one of many planned for excursions every two years as the millennium draws to a close and a new one with hope for greater openness and knowledge unfolds. To date there is no guarantee from NASA that it has given the appropriate priority to any re-imaging of Cydonia.

We can only hope that the spacecraft remains in orbit long enough for the camera to take at least a dozen very high resolution pictures over the so-called 'City Centre' of Cydonia..

Goldin admits, *"I think we have to be somewhat sensitive, especially when we're dealing with government money, to recognize some of the issues that the public has."*

Recognition by NASA's chief administrator that it is the public who fund the space agency is not lost on most researchers. Sensitivity to this one fact alone might raise the stakes in the issue of priority.

Without adequate priority, the opportunity to re-image Cydonia might be lost forever by the Mars Global Surveyor. Goldin himself recognises the political problems that might ensue for NASA if it continues to evade the region of Cydonia. He said:

"Now in the past, NASA has been severely criticised; every time people come with ideas, immediately we had a tendency to say 'no'. And sometimes we have to be a little bit more open with it."

As if to mollify those who might be vehemently opposed to re-photographing Cydonia - and it appears that there are some planetary scientists who do not want it re-imaged - Goldin continued, "Now, I'm not going into wild and crazy things but it's very easy for scientists to dismiss out of hand, things that the general public believes in and to say, 'This is wild. This is crazy. We're not going to talk to you'." As evidence of fairness, Dan Goldin is then reported to have said, "Let me consider what you're saying and let me give you some data so you could draw your own conclusions and not tell you the answer."

Such refreshing statements are like a breath of sweetly-scented Martian air to those who have been investigating the anomalies on Mars for many years. Nevertheless, it remains a fact that NASA has an unusual contract with the Camera Principal of the Mars Global Surveyor, who will retain rights to the photos for at least six months after they are taken and transmitted back to Earth via the Deep Space Network.

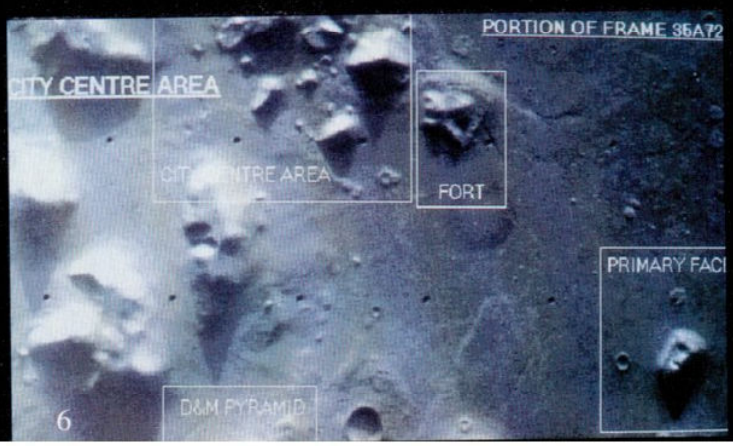
The public would love to see the pictures immediately upon receipt on Earth.

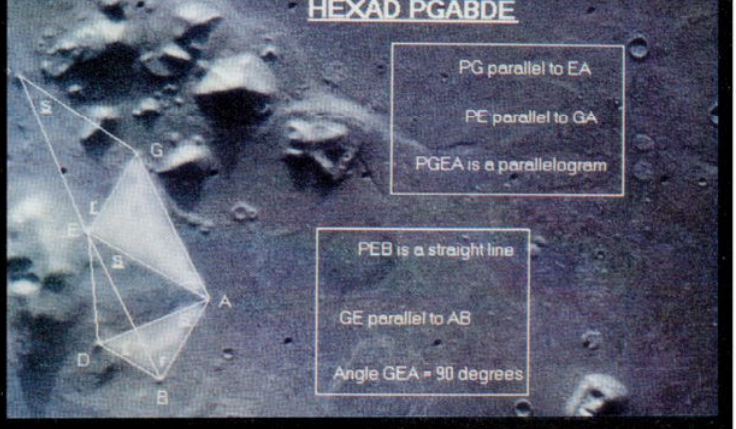
THAT

A theory that microbes once lived on Mars is boosted by two new studies of a rock that was blasted away from the red planet and eventually landed on Earth.

Researchers at the University of Wisconsin, Madison, and at the California Institute of Technology said the new studies do not prove that Martian microbes once lived in the rock. But they remove one challenge based on the temperature history of the potato-size chunk of Mars.

We have ruled out the high temperature hypothesis" that would have made life impossible, said John W. Valley of the University of Wisconsin. "I still don't have final answers. There should still be scepticism."

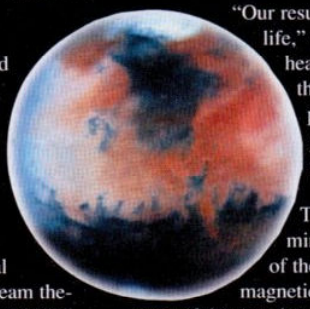




MARTIAN METEORITE

Wisconsin scientists determined the range of temperatures the rock was exposed to by analysing the ratios of carbon and oxygen isotopes. At Cal Tech, researchers traced the temperature history by measuring magnetic fields within the rock. Both studies were published in April in the journal Science.

NASA scientists last summer claimed that small globules of carbonate found inside a Martian meteorite were the fossilized remains of microbes or bacteria that lived on the red planet more than 15 million years ago.



Based on a microscopic and chemical analysis of the globules, the NASA team theorized that the microbes lived and died in the rock, leaving behind organic chemicals and fossilized remains. The rock was then blasted from the Martian surface by a meteorite impact and spent thousands of years wandering in space before falling to Earth in the Antarctic. The rock was recovered from an ice field and identified by chemical composition as coming from Mars.

A major challenge to the theory has been that the carbonate globules actually formed by inorganic processes at temperatures of more than 1,200 degrees - far too hot for life.

But the new studies show that temperatures of the globules never exceeded 212 degrees - scalding, but still within the living range of known life forms.

"Our work shows that there are no show-stopper lines of evidence in the temperature," said Valley. There are other reasons to be sceptical, however, he said, "and it will be difficult to convince the world one way or the other."

"Our results don't prove there was life," said Joseph L. Kirschvink, head of the Cal Tech team. But the finding proves that the possibility of life cannot be eliminated because of temperature, he said.

The Cal Tech team determined the temperature history of the rock by measuring the magnetic field direction of tiny parts of the samples. The magnetic field direction in a rock will change slightly each time it is heated and cooled.

"To make the measurement, we had to saw apart a specimen the size of a grain of sand," said Altair T. Maine, a member of the Cal Tech team.

Kirschvink said his team found that after the rock cooled from a lava some four billion years ago, it was never again heated to a temperature lethal to all life.

The Cal Tech study also showed that early in the history of Mars, the planet had a magnetic field similar to that of Earth. Kirschvink said this means the planet probably had an atmosphere. A strong magnetic field allows a planet to retain an atmosphere. Over billions of years, however, Mars has lost its magnetic field and most of its atmosphere, he said.

Kirschvink said the magnetic studies also show that the sampled part of the Mars meteorite never heated up as it entered the Earth's atmosphere and smashed into the Antarctic. This suggests that micro-organisms could survive a trip from Mars to Earth.

"An implication of our study is that you could get life from Mars to Earth periodically," he said. "In fact, every major impact could do it."

Earlier studies had suggested a Mars origin of life and Kirschvink said his studies do not rule out this possibility.

Kurt Marti, an expert on the chemistry of the solar system at the University of California, San Diego, said the two new studies may lay to rest temperature challenges to the Mars life theory, but he said there are other objections.

"These all have to be addressed one by one," he said. "Until that is done, we have to be careful about accepting or rejecting this theory."

Among the theory's other problems: the need for chemical evidence of life based on carbon isotope ratios, and better physical evidence that the carbonate globules are, in fact, fossils.

Valley said he hopes to start soon an analysis of the carbon isotopes.