Re: Musings about the Cambrian Explosion

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- *From*: "g" <gillawton@xxxxxxxxxxxxx>
- *Date*: Sat, 8 Oct 2005 01:33:52 −0400 (EDT)

"Jim McGinn" <jimmcginn@xxxxxxxxx> wrote in message
news:di6d2d$1kfe$1@xxxxxxxxxxxxxxxxxxxxxx
>
>> − http://www.fossilmall.com/Cambrian_Shadows/Protichnites.htm
>>
>> Until now, most life has been underwater anyway. What happens on the
>> land
>> is just the tip of the iceberg.
>
> Interesting. Well, maybe I'm wrong on this. I was
> just trying to make sense of why there was such large
> jump in the rate of novelty. The only thing that
> makes sense is that there was a relatively sudden
> increase in the spatially defined level of
> opportunity. How about this. Maybe Oxygen breathing
> lifeforms did not make it up to land during the
> Cambrian (they would have to wait until there was
> enough Ozone in the upper atmosphere to reduce
> ultra−violate rays, possibly). But some ultra−violate
> resistant plants did begin to colonize the land
> surface. This produced a relatively sudden increase
> in the amount of amount of oxygen from the CO2
> breathing plants and this sudden increase in oxygen
> is what afforded the cambrian explosion to
> aquatic animals. (One way to test this hypothesis
> is that we'd expect a relatively large increase in
> species that breath directly from the atmosphere
> rather than from gills, possibly? I don't know.)
>
> Jim

Jim,

Me, too. My guess (where my effort to stamp out ignorance has progressed to
at present) is that
oxygen was produced by algae.

Does anybody know, for sure, when photosynthesis began (as a metabolic

process whereby carbon dioxide was absorbed along with nutrients in the water, and oxygen was oxygen was released as a by−product of that process)?

I will see what info I can find that might serve to rule in or rule out whether the first photosynthesis was a characteristic evolved by algae.

If my understanding is correct on how we know oxygen increased during the Cambrian (which I assume to have been produced by algae) is because there is fossil evidence of in−water oxygen respiration mechanisms: gills (and other?).

When I was a child I read about some kids who painted themselves with a substance that blocked oxygen from their skin and died from oxygen deprivation, despite the fact they were breathing and their lungs were working just fine. As best I recall, humans absorb oxygen NOT ONLY through the lungs but, also, through the skin.

In a deep lake in (??? Bolivia, I think it is) there is a kind of frog with very, very wrinkled skin. The members of that species are enabled thereby to live in a lake where the 'air' is thin to begin with, and also deep down on the bottom of that lake, where the amount of oxygen is very limited. Therefore, gills are NOT the only means of absorption. It will be interesting to learn how much "absorption surface" might have been a part of the "program" of some of the pre−Cambrian fossils.

Micro−organisms (or pre−organisms) might have been able to get by on a very limited amount of oxygen.
As grouping occurred (chains and clusters) in the forming of larger organisms, are not there many fan−like appendages among them?

I'm getting so many questions going that I'm going to have to list them to keep from forgetting them.

But, in a nutshell, oxygen did increase during the Cambrian. The water may not have absorbed that oxygen directly from the algae −− DANG !, ANOTHER question −− but, even if it did not, and the oxygen was released into the air... the oceans would have absorbed oxygen molecules through the action of surface turbulence (wind−driven breaking waves) and perhaps also by osmosis. Or so seems possible in my in−need−of−constant−upgrading imagination.

g

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- ***Follow−Ups***:
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- ***References***:
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    - ◊ *From:* Jim McGinn

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