References

1. Harris, *et al.*, *Theological Wordbook of the Old Testament*, #1582a, BibleWorks. v. 7.0, 2001.
2. Klenck, J.D., Major terrestrial animal taxonomic classifications as defined by God, *Journal of Creation* **23**(2):118–123, 2009.

Marine fossils in amber support the Flood Log-Mat Model

I wish to draw your attention to page 9 of *Journal of Creation* **24**(1), and in particular to the encapsulated spider photograph. Michael J. Oard is a regular contributor and often has something quite readable, and whilst the article deals with the Flood-Mat concept, I believe he misses the point of the spider encapsulation.

From early days I learned encapsulation using low viscosity epoxy resins was indeed not only science but cutting edge art as well. The big troubles here are:

1. The need for transparency and
2. The inclusion of air around the body of the encapsulated subject
3. Getting an exothermic reaction right to prevent the point where by the whole thing becomes distorted by the heat of the reaction.

Commercial encapsulation of say electronic circuits use a lot of filler, not really for opacity, but for a reduction in the volume of reactants and therefore a reduction in the exothermic reaction. In short fillers hide a lot of sin as well as circuit components.

Transparency is a dreadful requirement, every mistake shows up and the greatest distortion of all is the inclusion of air bubbles around the object either from improper wetting out of the surface of the object or from boiling out the essential juices within the object. Hairy objects like spiders are incredibly difficult to address.

In this instance the insect was encapsulated in full gait—hunting spider one second—object d'art the next. There are no obvious air inclusions though there is a plethora of included particles around the body suggesting the spider was on easily spreadable bark at the time of encapsulation.

Presumably (and I was not there) the blob hit the spider from above, wrapped around the insect, picked up some detritus from under the spider and settled into a shape that when eroded over time presents us with a totally enclosed insect. Obviously the spider's skeleton provided some reinforcing to the amber as it cured and in its tumbling state until it was retrieved. However, the cure rate of the amber was slow enough that no boiling out of the fluids occurred as the spider abdomen is clearly well formed. That is particularly tricky given that the spider is covered with hairs and capillary openings for air to enter the spider's body. It appears death was instantaneous as there is an absence of striations around the body to indicate after encapsulation movement. Thus the goo at that time must have had a viscosity of at least 300 centipoise to instantly immobilise the prey—the thickness of honey on a cold winter's day.

To get the wetting out of the body shown usually requires a viscosity approaching 5 centipoise—the thickness of honey at about human body temperature—but the inclusion of suspended detritus around the spider's body suggests that the viscosity was significantly higher.

It almost becomes a paradox, except that the amber may have fallen in a blob from a height which ensured that there was a variation in viscosity from the centre of the blob to the outside skin. Such a variation would present the necessary encapsulation components to achieve the unusual array within the object photographed. That is, immobilised spider compete with detritus suspension at the same time. The speed of impact could also account for blowing away surrounding air, and the rebound after impact with the surface the spider was walking over would account for the suspension of the body in a walking gait and the suspended detritus.

Now to digress somewhat. We have *Pinus radiata* on our property near to where we park the cars if they are intended to be reused during the day. During the year pine cones form and about autumn the cockatoos arrive to digest the pine cones. They usually fly in very quietly about 9 am but by 3pm, high on the blend of terpenes they have ingested they hurtle around the house in a most drunken display of aerobatic skills. Then the branches where the cockatoos have been harvesting the pine cones weep sap. The sap hits the cars with an initial viscosity of circa 150 centipoise and if not removed becomes part of the paint system of the vehicle. This viscosity would not be enough to immobilise a spider of the size shown—it would slow it down but not fixate the insect as shown. The droplets are small; about 3 to 10 ml in volume only. The photograph suggests an encapsulated volume of around 30 to 50 ml depending upon the actual size of the spider.

To allow for the current size of the amber object in the photograph we would need to allow for about a 50% reduction in the overall mass due to rolling and abrasion. However no matter what reduction you may wish to argue for, it is a very large chunk of goo that hit the spider. This large chunk would only be available if the branch was being removed by a herbivore and the sap was able to pour out before hardening and sealing the stump. This obviously would be possible in the age of the dinosaurs where we are told tree pruning was achievable.

The point of this entire discussion revolves around the chemistry of encapsulation, and I contend that the way it was handled was poor to the point that it can be seen as trite, and to me that is a disappointment. It reduces the veracity of the argument by Oard and this is disappointing.

At the top of column 3 on page 9 some effort has been made to address this problem, but to me having spent some time working with low viscosity epoxy resins in encapsulation, the photograph shows a work of art, that I believe is truly not reproducible by human hands. Insects that are encapsulated are often the result of several pours to address the concerns enumerated above. The insect (if real—and not a plastic replica) is treated first to seal the body with a film of goo; then the mount base is prepared and when the insect is mounted on the partly gelled base the encapsulation media is poured into place. The chemistry has to be correct to control the exotherm, the artistic skills of the encapsulator have to be high to achieve a pleasing result. And finally the rounding or reworking of the resin system has to be done with great skill to achieve transparency as depicted.

Even the drying out of the volatiles within the goo without apparent and distorting shrinkage is amazing. For a non reactive hardening often called a non convertible hardening (where there is no chemical reaction that produces a 3rd chemical that has no physical relation to the monomeric components); oxidative hardening can only occur with the removal of the solvent species. Removal of a component by evaporation often yields very high stresses through out the goo, introducing distortional forces not consistent with the image shown.

Clearly to me only one operator is capable of achieving this output in the field, on the trot so to speak, and this little glimpse of His mighty works deserves a lot more attention than the offering made with the caption for figure 1. But it is only a little spider in a heap of dried goo.

It truly is "consider my works ye mighty and despair!"

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Michael Oard replies:

Mr. Rook brings up the interesting point of how insects become entrapped in amber with wings and legs spread out. Indeed there are puzzles. The point of the Perspective articles was to point out some of the mysteries and that marine organisms are found in amber.

The log mat floating on the floodwater can account for a number of the observations, such as the abundance of amber, aquatic and marine organisms in amber, the association with marine sedimentary rocks, and the common occurrence of amber in low-grade coal. After billions of trees are catastrophically torn out of the ground early in the Flood, the original violence as well as the occasional turbulence of the floodwaters would be expected to cause deep gashes in the wood. This is one of the causes of trees giving off copious resin:

> "Numerous genera of plants all over the globe spontaneously *or as the result of trauma* produce sticky substances that have been termed resins [emphasis mine]".[1]

One possibility for explaining the unique condition of the insect is that the insect could have become stuck on top of one resin flow with wings and legs outstretched. Then a second slow flow gradually enveloped the organism so that the three-dimensional shape was preserved.[2]

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References

1. Lambert, J.B. and Poinar, G.O., Jr., Amber: the organic gemstone, *Accounts of Chemical Research* **35**(8):628, 2002.
2. Grimaldi, D. and Engel, M.S., *The Evolution of Insects*, Cambridge University Press, New York, p. 57, 2005.

Errata

Journal of Creation **24**(1)

Boudreaux, E. A. and DeMassa, J.M., Analysis of most probable reactions among products in Miller's experiment.

- On p. 124, under equation (5), the following corrections are: $h = 6.626 \times 10^{-34}$ Js; $E^* = E_a = -69 \times 10^3$ J/mole; $k_{rxn} = 7.7 \times 10^{24} s^{-1}$.
- On p. 125, top right hand column, corrections are: $E_a = -21 \times 10^3$ J/mole; $k_{rxn} = 3.0 \times 10^{16}$ s^{-1}.
- On p. 125, reference 14 is: Hutchens, J.O., *Handbook of Biochemistry and Molecular Biology.* Physical and Chemical Data, Fasman, G.S. (Ed.), CRC press, Cleveland, OH, 1976. Original references 14, 15, 16 become 15, 16 and 17 respectively.