

# ERRATA

On page 28, the Pembertonian list for Event VI includes “Framing a scene” as a bullet point, which should be ignored.

On page 29, in the “The Free Man’s Blessing” section, the second sentence both begins and ends with the phrase “unlike a Command.” Pretend that it didn’t.

On pages 49 and 50, Mulligan utilizes an Opportunity after getting drunk, which, of course, he can’t. It should read: “He narrates getting stinking drunk, choosing to resist the roach instead of giving in to his rival.”

On page 52, there is a dumb grammatical error. Please forgive us!

Such mutants are possible but the hardness of the cockroach cuticle depends upon the tanning process which cross-links its cuticle with a process that creates a mahogany-like color. Thus an albino cockroach (or other naked insect) would have weakened cuticle which would make it very vulnerable to attack. In insects clothed in colored hairs or scales the color of the scales can become white due to the storage of white substance in the scales. In this sense the underwing moth, *Catocala relictata*, has an albino morph which is able to hide on birch bark trees based on its ability to hide on the cryptic bark surface...

## BURN THIS UNHOLY CAMPUS DOWN NOW!

The reproductive behavior is somewhat driven by its terminal abdominal ganglion, the VI abdominal ganglion, which is quite large. The preying mantid is in the same insect Order, Dictyoptera, and it is famous for the males prowess in completing sexual behavior after the female has bitten off the male’s head. In this case the brain (in the head) is thought of inhibiting the reproductive behavior and when bitten off the reproductive behavior, released from inhibition and programmed into the VI ganglion, takes over.



## GERMAN - AMERICAN Friendship Society

**FIRST MEETING  
OCTOBER 30, 1919**

**Put the “war” behind you  
to-day!**

I assume you are referring to annelid and polychaete worms and not the larvae of insects ( e.g. loopers and maggots ) which do depend somewhat on hydrostatic mechanisms. Given that spiders, like worms, have a partial hydrostatic skeleton I am not sure that there is any difference in efficiency unless you say that the success of insects vs spiders shows that the insect design is more successful. I would say that the variety of motion shown by insects is an indication of the benefits of the opposing-muscle approach to design. Insects have established several mechanisms of flight while spiders have only been able to do it by parachuting. *Perhaps this is an indication of the limits of a hydrostatic skeleton.* I am not sure that it says anything about the efficiency of comparable motion in a biophysical sense. When a hydraulic system is more efficient, the insect uses it. The spider is limited to using blood pressure to extend limbs, perhaps because they have not developed an easy local sclerotization of structures by which to create the fulcrum and levers for extensor muscles to work. Again this does not speak to whether the blood pressure extension is more or less efficient.

Cockroach blood is not red because they do not use hemoglobin to carry oxygen. In fact their bloodstream is not used to carry oxygen either. They use a system of pipes called tracheae to bring the oxygen and remove carbon dioxide from their tissues. As a result other factors determine the blood color. **Male cockroaches have relatively colorless blood.** Larval females have colorless blood. Only adult females which are producing eggs have a slightly orange blood because of the protein vitellogenin which is made in the cockroach liver (its fat body) and transported through the blood to the ovary. This protein like chicken yolk is orange because it carries a carotenoid, which is a vitamin A like molecule needed by embryos to develop normally. **The short answer: Cockroach female adult blood is occasionally orange.** All other cockroach blood is colorless.

## THERE IS A ROACH PROBLEM

This was a period of transition for American collegiate football in which the game at once flourished -- and nearly crashed. Tactics, such as the Flying Wedge that Pemberton had pioneered, led to wholesale injuries and in 1895 to a