

And God Created.....The Bombardier Beetle

by David Everson

When Christians look at the world around them we see many marvelous works of God. Each one of these is evidence of the great designer. But there are some that go well beyond just the usual design evidence to the degree that explaining these organisms in any other way is impossible. Let's look at one of those examples, the bombardier beetle.

The Bombardier Beetle belongs to the genus *Brachinus*, they are small beetles about one half inch long. They live in most temperate climates, but are found mainly in Europe. Their most unique feature comes from the mechanism that God has provided them with for defense. They are able to defend themselves against animals many times their own size, including man. They do this by shooting at the attacker up to 15 to 20 times every few minutes, and the story of this mechanism is nothing short of amazing.

The bombardier beetle has two glands in the abdomen that it uses to make and store two chemicals, hydroquinone, and hydrogen peroxide. These chemicals when mixed together normally would produce an oxidation reaction that changes the nature of the chemicals. But these beetles also have an inhibitor that has not been identified that prevents this. When the beetle is about to be attacked by a frog, mouse, or other insect, he quickly squirts some of this mixture into twin combustion tubes, which can be aimed in a 360 degree radius. These tubes secrete two special chemicals called enzymes that cause a change in the mixture. These enzymes are a mixture of 40% catalase and 60% peroxidase but they are not used up in the reaction and can be used over and over billions of times. The chemical reaction that occurs leads up to the explosive finale. The hydrogen peroxide is changed into water and oxygen, and the hydroquinone into quinone, a noxious chemical. As this reaction occurs heat is given off which brings the liquid to boiling at 212 degrees Fahrenheit and builds up a great deal of pressure. The combustion tube has valves at the outside that can be closed until the pressure rises sufficiently to expel the liquid a fair distance giving off an audible "pop" as it does so. It is this mixture that is expelled into the mouth and face of an attacker. It burns, irritates, startles, and confuses the attacker, who thinks twice about the attack on the bombardier beetle.

More interestingly the male bombardier beetles and the female beetles each have a different type of chemical discharge. The males are unaffected by the discharge of another male beetle, but are knocked unconscious by the discharge of a female beetle. The females are not affected by the discharge of either type. This would appear to help the females protect themselves against unwanted attentions of a male.

The question must now be asked, "How did this beetle get such an extravagant mechanism of self-defense?" The evolutionist must believe in millions of small accidents and changes to get this mechanisms. Yet, why would a beetle evolve any of this mechanism if it did not produce a beneficial result the first time it was used? The mixture is of no use without the enzymes. The enzymes are of no use with the mixture. The mixture and enzymes are of no use without the combustion tube. The combustion tube is of no use without the valves to control and build up pressure. This could go on and on, but what it really means is that there is no way that this defensive mechanism could come about unless it all happened at once. An impossibility for evolution, a simple matter for the Great Designer! *"The fool hath said in his heart, There is no God." Psa. 14:1*