And God Created…………..The Beet Armyworm
By David Everson

Among God's animal wonders are many unusual methods of self protection. From exterior armor, camouflage, speed, appearance, chemical defenses to physical form changes God has a whole host of methods that organisms use to protect themselves. But the case of the beet armyworm God used another form, the gross out factor on vomiting a predator! Yet, it is really not all that simple, let's take a few moments to examine this marvelous creature.

The beet armyworm is just one of a host of caterpillars of different moths and butterflies. This happens to be the larval stage of the small mottled willow moth. Living primarily in Europe this moth would pass unnoticed by most everyone as just another of the thousands of moths that flit around lights at dark. But, the caterpillar of this moth is has defenses that are both gross and cunningly successful.

The beet armyworm is attacked by many predatory ants, one of the most common being the European Fire Ant. When the armyworm is attacked it uses a fairly common defense, that of regurgitating the contents of its stomach onto its attacker. We have all seen grasshoppers attempt this defense when we try to put them on a fish hook. And over all by collecting the toxins from the plants that they are eating and concentration them into a noxious substance is really fairly effective. But the vomit of this caterpillar is really not all that toxic, in fact if just a little sugar is added the ants will quite happily eat the solution. Yet when ants attacked and the vomit touched their body, the attack stopped immediately and the ants began cleaning themselves and left the beet armyworm alone in and gave up food in order to take care of personal hygiene and leaving the beet armyworm to make an escape. Researchers watching this wanted to know why, because hunger is generally a very strong drive in all living things far above being clean.

So researchers from the Universities of Wurzburg and Basel in Europe collected the fluid and had it analyzed for its chemical content. What they found was an ingenious system that God designed into the oral secretions of this worm. They found substances that act as "surfactants". These are chemicals that are used in detergents and soaps and they are all around us in our homes. They lower the surface tension or holding ability of water molecules or of most liquids and allow them to spread out more easily over a surface. On a water-repellent surface, a drop of water will sit in an almost spherical bead. But load that water up with surfactants, and it will start to spread out into a flatter disc. Normally when a drop of water gets on an ant it will bead up and roll off, but with the surfactant it will spread out and the ant has trouble breathing and will spend several minutes cleaning the water off. This is when the caterpillar makes his escape.

Additionally it appears that there may be other chemicals that have the affect of digesting the outer exoskeleton of the ant causing body parts to stick together after the cleaning was done. This may be because of substances that digest the outer coverings. Further research into these secretions will be needed to know for sure.

The "vomiting defense" is really only effective for the beet armyworm in the case of a single attacker. Ants that attack in swarms will easily over power the caterpillar and its oral secretions and make a quick meal of it.

Scientists have been trying to isolate such chemicals from biological sources as they have a variety of industrial uses and are thought to be generally less toxic than their synthetic petroleum-based types. Bacteria have provided most of these "biosurfactants" in the past but caterpillars could be a rich new source and deserve additional study.

The wise man Solomon said, "Go to the ant, thou sluggard; consider her ways, and be wise:" Proverbs 6:6. I guess we can now rightly say, "go to the prey of the ant, consider her ways and be wise" but anytime we consider the design wisdom of the creator it will make us wise.