

And God Created.....The Bluebird That Isn't Blue!

by David Everson

Now just hold on, before everyone reading this assumes I have taken leave of my senses let me explain. There are “bluebirds and blue jays” and birds what have blue colors on them, the only problem is that there are NO blue feathers! In the entire world there is not one feather that has a blue pigment in it. Let's look at how God was able to produce such lovely “blue” birds without ever making a single “blue feather”.

Color is produced by God in one of two ways. It is either a material called a pigment that absorbs certain color wavelengths and reflects others, or it is caused by bending light into a particular wavelength of light which our eyes interpret as a specific color. The bending of light was first discovered in 1869 by John Tyndall who noted that small particles in the sky “preferentially” scatter the blue wavelengths of light and so on a clear summer day we see the familiar “sky blue” color. We also see this bending of light in a prism that separates all of the white light into the colors of the rainbow as well when light passes through water molecules that produces the colors of the “rainbow.” This also happens in structures that have a particular shape so they can “preferentially” reflect just the blue wavelengths and produce a blue color, this is called “Tyndall Blues.”

Now let's get back to our non-blue birds for what is happening to make them look blue. First there are no blue pigments in any feathers, there are red pigments, yellow pigments but not blue, so that is not the answer for the bluebird. A blue feather has a layer of the pigment melanin in them. Melanin is the dark color pigment that causes a “tan” in our skin. This is why a “blue” feather when ground up produces a dark colored material. But, on top of the melanin layer is a tiny air pocket. It is that air pocket that “preferentially” scatters the light reflected off of the melanin to make us think the feather is blue. So bluebirds are actually black colored but the reflected light is bent so that we are fooled into thinking we are seeing a blue bird.

But there is a second process at work in many birds that appear to be blue. This is called iridescence and it is very common in many different birds. The surface of a feather is another where light can be reflected and if the surface is smooth that reflection is not changed, but if the surface is scratched or furrowed the light is not reflected the same. This process is called the “prismatic effect” and it occurs in many birds such as ducks and hummingbirds. This happens when the feathers will appear one color with light reflecting one way off of it and another when light reflects off of it from another angle. When you look at a mallard duck, you can see that the feathers on the head are black, but the surface of the feather is scratched with such a pattern that as the duck swims away from you the light strikes it so that it is bent and as it is reflected it “looks” like it is blue.

So, what we see is that God has used basically an “optical illusion” to help us enjoy the beauty of the blue jay and the mountain bluebird that we see in the world around us. For indeed there are No blue feathers on any bird in the entire world. May we always praise Him for the things that He has created for us to enjoy!