Grace 4 You
Exploring God's Word
Lesson 26

"The heavens declare the glory of God;
And the firmament shows His handiwork."
Psalm 19:1

Science & the Bible (part 1)

Theme: Science reveals God's handiwork.

Review of Lesson 25

Our study of archaeology has shown there are many items that have been 'unearthed' to give evidence that the Bible is reliable and accurate in every detail. Minor characters such as Simon, Rufus, Alexander, and Erastus provide overwhelming evidence that we can rely upon God's Word. The Dead Sea scrolls show the OT was carefully and faithfully preserved in the form we have it today. The ossuary of James and the Shroud of Turin may not be authentic, so we must be cautious accepting findings until the facts are fully revealed. The Jewish Temple will be rebuilt in the future, this may create great conflict, but it will happen since it is part of God's overall plan.

Introduction

God has designed humans with investigative and curiosity-filled minds that desire to know and to discover truth. The discovery of truth is something God knew would be a quest of His specially created humans. There is considerable information that can be learned from study of the world around us and from a study of ourselves. This quest to learn is not wrong, in fact it is part of God's plan. Certainly we appreciate what science has discovered in the fields of space exploration, medicine, physics, electronics, etc. The inventions that flow from these discoveries greatly enrich our lives every day. Yet, there is often a deep distrust of science in many Christian circles, due to scientific pronouncements which seem to deny the existence of God or which belittle the Scripture.

The Bible is primarily concerned with spiritual matters; when it does mention science, or any topic, it is correct. Science involves the discovery of what God has done and how the universe behaves. Science helps us to unravel the mystery of how God created and sustains the universe. As scientists discover the incredible workings of the atom or the overwhelming complexity of the universe, they are only revealing the handiwork of God and discovering more of how the universe works. Ultimately, true science glorifies God and confirms the accuracy of His Word.

Christians often treat science as an enemy of faith and the Bible. The topic is often framed, "The Bible versus Science" or "The Bible or Science." It is common for Bible believers to resist scientific discoveries because they feel science has set itself against God. Is this a realistic viewpoint? We know the Bible is true and we know science has done many wonderful things; but, it is hypocritical to marvel at space exploration, enjoy the wonders of laser technology, and stand in awe of medical-science discoveries one day, then go to

church the next day and pretend science is our enemy. Some scientific findings have proven to be wrong, but generally science does correct itself. In the same manner, some interpretations of the Bible have been wrong and have required a change. Because errors and misinterpretations have occurred does not make the two enemies.

A Sad Past

There is special revelation (truth in the Bible) and natural revelation (truth that science can discover). Most scientists in the past believed the Bible and in God. They considered all truth to be God's truth, and it was their duty to discover it. God has given humans inquisitive minds that desire truth, whether in science or in the Bible. In the search for truth sometimes scientists have been wrong, sometimes theologians. You can be sure the Bible has never been wrong. Here are some examples:

1. Centuries ago no one understood what fossils were. Some theologians said they were tricks put in the rocks by the Devil to deceive us, others said they were put there by God to test our faith. Neither were correct or biblical. We now know fossils occur as the result of natural processes (God's laws) that slowly produce stone out of once living things. They represent real animals/plants that existed sometime in the past.
2. Columbus and others were convinced the earth was a sphere, not flat. For centuries people had proposed that the earth was spherical with "antipodes," i.e., those on the other side of the earth, "…who walk with their feet opposite to ours." Theologians rejected this because they thought the Bible taught a flat earth.
3. In previous centuries it was generally believed that heavy objects fell faster than light objects. Eventually, scientists like Galileo (1564-1642 AD) and Sir Isaac Newton (1642-1727 AD) disproved this. Thus, if a cannon ball and a pea were dropped from a high tower they would reach the ground at the same time (discounting the resistance of air) because the rate of fall is independent of an object's mass.

Discussion: There have been many cases where scientists or theologians have been wrong, discuss the cases above or other examples. Was the Bible ever wrong?

Bible Truth

Number of Stars

We can see about 3000 stars with our bare eyes. Jeremiah 33:22 says, **"… the host of heaven cannot be numbered …,"** just like the sand of the sea. They could not number the stars then, nor can we now because our count keeps increasing as we see further and further into space. Each galaxy (a large collection of stars, gas, and dust that revolve around a central core) contains an average of 100 billion stars (even up to a trillion), Picture 1. The universe is composed of billions of galaxies. So, the size of our universe is incredible and the number of stars is beyond anything we can comprehend. Truly, the number of stars is beyond measure. The size, complexity, and beauty of our universe helps us realize the unsurpassed majesty and power of God.

God Calls the Stars by Name

The Scripture says, **"He counts the number of the stars; He calls them all by name"** (Psa. 147:4; also Isa. 40:26). It seems God has named the stars and is familiar with each one. He refers to them by name for

a reason, and many of those original names have been preserved and passed down to us. He named them so humans in all ages could know about Him; so He could communicate truth to mankind throughout history, as will be discussed in the next section. There is considerable archeological evidence that indicates the star and constellation names (and the meaning of the names) were established in antiquity. For example, there was a first century BC temple in Denderah, Egypt, which contained the constellations on its dome (planisphere). This temple's dome (in part) is now in the Louvre Museum in Paris. Based upon the positions of the stars and constellations on the dome, the dome likely represents sky conditions that existed thousands of years before it was built. So, biblical scholars believe God revealed the star names and what they mean in early biblical days, perhaps to Noah or even Adam.

God refers to stars and/or constellations in many places, examples being Job 9:9, 38:31-32; Amos 5:8; Acts 28:11 (refers to the stars Castor and Pollux). Job was probably written around, or slightly before, the time of Abraham (~ 2000 BC); thus, we know that the star names and constellations were established even at this early date, **"He made the Bear** (big dipper)**, Orion, and the Pleiades …"** (Job 9:9, parenthesis added), Picture 2. The original star names have been handed down to us in a recognizable fashion and are obviously important since they are mentioned in the Bible and God calls them by name.

Creation Reveals God's Glory

The Bible says that God created the universe and it is a witness to all people; everywhere on earth, in all ages, of the existence of God (even if they have not read the Bible). **"The heavens declare the glory of God; And the firmament shows His handiwork. Day unto day utters speech, And night unto night reveals knowledge. *There is* no speech nor language *Where* their voice is not heard"** (Psa. 19:1-3). Romans 1:20 confirms this, making it clear that through the created world all humans know of, **"… His eternal power and Godhead, so that they are without excuse."** Day and night, the heavens declare the glory of God. The truth is revealed through creation (known as or called natural revelation) and that truth is made clear to every person. From that truth everyone knows that God exists, it is not hidden from anyone. Once a person knows that God exists, if they seek Him, they will be led to further truth of the Savior.

Discussion: If God declares His glory and reveals Himself through creation, why do we need to tell others about God? (Thoughts: a person can come to realize there is a God through observation of the created world. Once they know there is a God they then have to discover more about sin, forgiveness, and Christ. This is where we can help.)

Stars Have Different Glories

Stars are being born and dying today, as observed by astronomers. Stars have a life-cycle just as humans do, i.e., they live and die according to God's design. Stars were originally created on the fourth day, but all stars are not now the same age. Stars are much like humans, who vary in age even though the first humans were created on the sixth day.

Scientists believe stars begin as clouds of gas (mostly hydrogen) and space dust that gather together, collapsing into a "ball" due to gravity. This collapse requires that fast moving particles will slow down when they reach the central area, and in the process the energy of movement is converted into heat energy. This conversion to heat is in accordance with a natural law called the law of the conservation of energy, i.e., energy is neither gained or lost but can be

converted to a different form. As the collapsing matter (gas and dust) slows down tremendous heat is created. Most of the matter is hydrogen and when the core temperature reaches six million degrees Centigrade (11 million degrees Fahrenheit) nuclear fusion begins. Nuclear fusion means four hydrogen atoms unite (fuse) to make one helium atom. Nuclear fusion releases tremendous energy (light, heat, etc.). When fusion begins, a star is born. This is controlled nuclear fusion. Uncontrolled fusion is what makes a hydrogen bomb so powerful. A star is called a "main sequence star" when it uses hydrogen for fuel (fusion). The Sun is such a star.

Discussion: The law of the conservation of energy sounds boring, why should we care? (Thoughts: God designed His creation in a way that is: orderly, understandable, and based upon His wisdom. It helps us understand why the universe behaves as it does.)

Some common star types and names are discussed below and shown in Picture 3. The meanings of some of the original star names are shown in parenthesis. The original names and meanings refer to the coming Redeemer, the Cross, and His second coming. The following discussion is designed to help the reader see why Psa. 19 and Romans 1:20 are true, i.e., that people of all ages and in all parts of the world could see the natural revelation of God. Not only could they see the natural revelation, they apparently had the names of the stars which attested to God's plan for redemption. The stars discussed below can generally be seen at night (in a dark location) sometime during the year. All the stars and the constellations tell a continuing story about Christ, but that is not discussed here.

- **Main sequence stars** use hydrogen for fuel in a nuclear reaction. Our Sun is such a star; in fact, 90% of stars are of this type. The Sun is larger than three-fourths of all the main sequence stars in our galaxy. Stars can be hotter or cooler, brighter or dimmer, and larger or smaller than the Sun. A well known main sequence star is Sirius; it is the brightest nighttime star and means P*rince of the heavenly host*. Spica (*The Branch*, Jer. 23:5-6) is a blue-white main sequence star. The more massive stars tend to be very hot on the surface and emit more blue light, the smaller mass stars are cooler and emit more red light. The hotter and more massive a star is, the sooner it uses up its fuel. When a star uses up its hydrogen fuel in the core it begins to die; what happens next depends upon its mass.
- A **giant star develops** when a relatively mature star has used up the hydrogen in the core. If a star's mass is somewhat like the Sun's, the central part will begin to collapse due to its own gravity while the outer layers expand (outward) and become cooler. Typically the diameter of such a star is about 100 times larger than it was originally and the surface is cooler. The cooler surface gives the star a pinkish color. It's large size and cool surface indicate it has becomes a **red giant**. Inside near the core, the temperature again rises as the core collapses. When the core temperature reaches 200 million degrees Centigrade (360 degrees Fahrenheit), something new happens, the star begins to fuse helium as the energy source. Giant stars are much larger than the Sun and much brighter. Typical red giant stars are Aldebaran (*The leader*) and Arcturus (*He comes*). A **blue giant** is a massive, very hot, brilliant, blue-white star (the color depends upon the surface temperature and the mass of the star). The giant stars (whether a blue or red) are not main sequence stars because they no longer fuse hydrogen in their cores. The fate of red and blue giants depends upon their mass. Eventually most giants will slowly die and become a **white dwarf**.

- A **white dwarf** is a dying star. They are small and very dense remnants of a star's core. They originally are very hot and brilliant, but will become dim and cold. A white dwarf is what remains after a red giant star loses its outer layers. They are made mostly of carbon. They are about the size of the earth (but much heavier). However, their mass is not sufficient for any more nuclear reactions to take place. As they lose their heat they will become a cold, dark black dwarf. Scientists think in the far distant future our Sun could turn into a white dwarf and then a black dwarf as it cools down. This will only happen if and when God so plans it to occur.
- A **supergiant** is the largest type of star; they are rare. When a star is aging and has a mass about two times or more that of the sun, a giant star first forms. Later, it grows to form a supergiant, with diameters up to 1.5 billion miles (900 times that of our Sun). Rigel (*The foot that crushes,* referring to Gen 3:15), is a blue-white supergiant. Betelgeuse (*The coming*), commonly pronounced "beetle juice," is a red supergiant. When a supergiant dies it violently explodes; the outer layers are blown away (called a **supernova**). The core then collapses due to gravity and becomes a **black hole** (intensely packed nuclear material that is so dense not even light can escape because of the tremendous gravitational field). It draws nearby stars and objects towards it and "gobbles them up." One teaspoon of a black hole would weigh 15 billion tons.

Each of these stars has its own history, beauty, features, life cycle, meaning, and glory from God. Scientists can see new stars being born and old ones dying. How interesting that I Cor. 15:41 says, **"… for *one* star differs from *another* star in glory."** At the time Corinthians was written, they could see that glory with their eyes; we see it even better today with telescopes. We realize such a verse had to come from God, the stars' Creator.

Earth Suspended in Space

Job 26:7 indicates that God, **"… hangs the earth on nothing."** In Job's day who could have known the earth was floating in space, that it was not held-up by anything? All the ancient wisdom of man indicated the opposite of Job's words; clearly, these were the words of the Creator who alone knew the whole truth, Picture 4.

Take 2 Heart

Summary

God designed humans to have an inquisitive mind and to seek truth since all truth is from God. Science is the pursuit of truth as found in the world around us. At times believers have stood in the way of scientific discoveries, because they misinterpreted the Bible. Scientists have also made major blunders. However, as scientists continue to unravel what God has done and how He did it, the greatness of God becomes more obvious. The number of stars is beyond our understanding, yet God calls them all by name and is familiar with each one. The heavenly bodies reveal the glory of God and that should make everyone aware of the need to seek Him. The life-cycle of stars is informative and fascinating. God revealed that the earth was hung upon nothing millennia before scientists knew. The findings of science make our lives richer and create excitement.

Gospel

The Bible reveals all the spiritual truth we need. The main spiritual truth is belief in one God, whose Son,

the Lord Jesus Christ, died to pay the penalty of our sin. If we recognize our sinful condition and believe in Jesus Christ for the forgiveness of our sin, then we are saved. We become His child. The Bible says, **"... He has delivered us from the power of darkness and conveyed *us* into the kingdom of the Son of His love, in whom we have redemption through His blood, the forgiveness of sins"** (Col. 1:13-14).

Encouragement

Christian teens often face rejection and ridicule because of their faith. The Lord knows this and is touched by your feelings and pain. You may be ridiculed for believing the Bible, but He has promised to help you through each situation. Young people who are sincere in their faith are the true "stars" of this world, with an incredible future here on earth and at home in Heaven. The more you know about the Bible and science the more you can help those who are seeking God. A Christian scientist can help guide scientific studies and help others see the truth of God. Studying science will not cause a true Christian to give-up their faith. What it will do is help you appreciate and stand in awe of the greatness of our God.

Additional Resources

1) Bullinger, E. W.; "*The Witness of the Stars;*" Kregel Publications. 2) Seiss, Joseph A.; "*The Gospel in the Stars;*" General Books.

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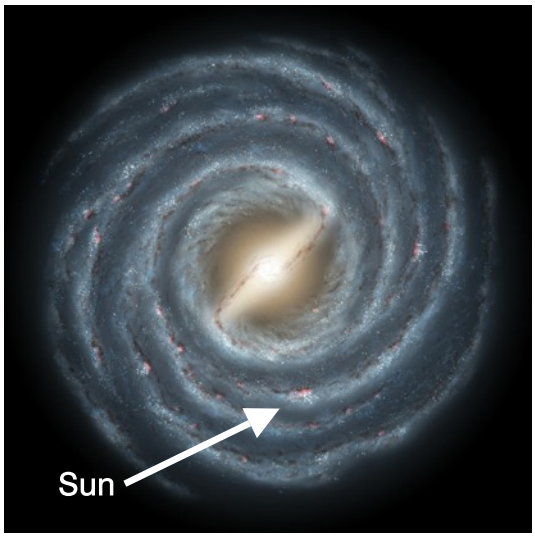
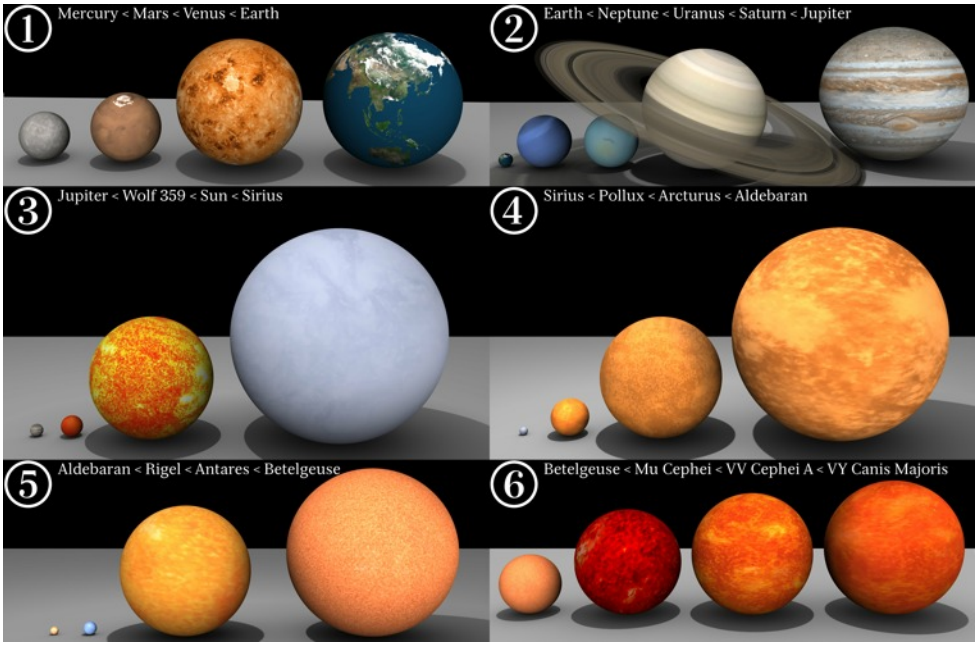


Picture 1. Schematic model of the Milky Way Galaxy--our galaxy. Our spiral galaxy (note the spiral arms) is like a majestic cosmic pinwheel, slowly spinning in space. Each speck of light is a star. The galactic arms tend to have younger blue stars and the central bulge has older yellow stars. This view of our galaxy is from above, a side view would show that it is very thin, like a disc. The presumed location of the Sun and our entire solar system is shown (too small to be seen). Our galaxy is some 120,000 light years across (a light year is a measure of distance--there are six trillion miles in just one light year) and 10 light years thick in the disk area. The vast majority of the galaxy is empty space. (www.nasa.gov)

Picture 2. The Constellation of Orion is outlined by the light lines. The bright pinkish star on the left side (below and to the right of the "n" in Orion) is Betelgeuse and the bright white-blue star star on the lower right is Rigel. The three stars that lie close together in the central area (in nearly a straight line) are called Orion's belt. (wikepedia.org)



Picture 3. Relative sizes of planets and stars. The color and appearance of the various heavenly bodies is shown. The largest object in frame 1 is the smallest in frame 2, and so on. (en.wikipedia.org)

Picture 4. The Earth suspended in space. (taicarmen.wordpress.com)