

NATURE'S INCREDIBLE SERMONS

Scripture Reading: Psalm 8, RSV

The great storehouse of truth is the word of God—the written word, the book of nature, and the book of experience in God's dealing with human life...

If the follower of Christ will believe His word and practice it, there is no science, in the natural world that he will not be able to grasp and appreciate. There is nothing but that will furnish him means for imparting the truth to others. Natural science is a treasure house of knowledge from which every student in the school of Christ may draw. As we contemplate the beauty of nature, as we study its lessons in the cultivation of the soil, in the growth of the trees, in all the wonders of the earth and sea and sky, there will come, to us a new perception of truth. (*Christ Object Lessons*, pp. 125, 126.)

A new perception of truth, a sense of wonder and awe, must have been given to the Psalmist as he stood tending sheep one night. It was clear, and the stars shone brilliantly against a blue-black sky. According to the science of his day, he was looking at a dome with small stars placed in it. It was beautiful. The moon was inspiring. He felt very small and reflected on man's importance in a universe so large, so precisely ordered.

We see almost precisely the same sky in Palestine these thousands of years later. Like the Psalmist, we can pick out a white band of especially thick stars and other faint light—our Milky Way galaxy. We see the same thing, but our understanding is almost totally different. The sermon nature preached to the Psalmist is essentially the same sermon it preaches today. The difference is that it packs a much mightier wallop now than it did then.

We have now learned that those twinkling stars are not fixed in a dome above the earth and that the faint light—the opaque trail in the heavens—is far more spectacular than anyone in David's time could have imagined.

When we look up into the night sky, we are gazing backward down a time tunnel. What we see is not the stars as they are but as they were when their light left them. It is well known that light travels at 186,000 miles a second, and at this speed takes eight minutes to reach the earth from the sun.

The closest star beyond our sun, Proxima Centauri, is seen not as it is but as it was 4.25 years ago. Were it to blow up today, we would not find out about it until 1982. With photographic plates and radio telescopes, we can look back billions of years in time.

We on earth are truly a mere speck. Our solar system is part of the Milky Way galaxy—a gigantic spiral that is 100,000 light years across. That milkish band you see in the heavens on a clear night is simply our looking at the Milky Way galaxy on an angle that lets us look across it at its widest point from our perspective.

Within our galaxy are 100 billion suns, and within the known universe it is estimated that there are more than 100 million such galaxies. "What is man that thou art mindful of him?"

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We have learned a great deal about the heavens because of light. You will be surprised if you haven't studied any astronomy or physics to learn how much light can tell us. All of you know that when you pass a ray of light through a prism, it breaks up into the spectrum, the colors of the rainbow. But it also does some other things that can be recorded on photographic plates. You can tell by looking at the bands in between the colors (these bands are perceptible in the photographic plates), the temperature of the object you are analyzing, its chemical composition, and the speed at which it is traveling to or from the earth. Every element known in the universe has a unique band on the spectrum. So we know that the sun possesses hydrogen and helium, etc.

Estimating the speed of a distant object stems from a scientific principle known as the Doppler Effect, which we can understand if we relate it to the sound of a whistle as a train approaches. As it draws nearer, the sound gets higher and higher; as it passes and goes further away, the sound gets lower and lower.

In light, when the object is moving toward the earth, the spectrum moves or shifts toward the blue end; if moving away, toward the red end. How far it goes toward the red tells us how rapidly it is moving away from the earth, or in relation to the earth.

Other explanations may be possible for these shifts but most scientists accept this explanation. If it is true, some fantastic things are going on out there in space that have provoked some of the wildest theories ever propounded.

It was learned in 1924 that whole galaxies are traveling away from the earth at tremendous speeds. Scientists concluded that the whole universe must be expanding with everything in it moving farther apart from everything else.

Two theories have been developed to explain this: One is the "Big Bang." Ten billion years ago, all matter in the universe was contained in a primal atom (called a "cosmic egg") which exploded, and many fragments became galaxies.

Another belief, the "steady state" theory, contends that the universe is eternal. To fill up increasing space as everything moves away from everything else, it is estimated that 62 atoms of hydrogen per cubic inch of space are being created out of nothing every billion years. Thus, new galaxies are formed to fill in the gaps caused by the expanding universe. (This is only a theory, but it is an intriguing one.)

Take a look at the star about which we know most—our own sun. From it, we can get a picture of what must be happening in the universe.

The sun is a ball of glowing matter a million times the volume of the earth. It is in a permanent state of nuclear activity. Every second, 4 million tons of hydrogen are destroyed in explosions that start somewhere near the core, where the temperature is about 25 million degrees Fahrenheit. Each second, the sun radiates more energy than mankind has used since the beginning of the world.

Tongues of hydrogen flame leap from the sun's surface with the force of a billion hydrogen bombs. They are forced up by the enormous thermonuclear explosion at the core of the sun, where 564 million tons of hydrogen fuse each second to form helium.

Matter at the core of the sun is so hot that a pinhead of it would give off enough radiation to kill a man 100 miles away. (*Strange Stories, Amazing Facts*, Pleasantville, New York: Reader's Digest Association, 1977, p. 14.)

In the various names given to different kinds of suns or stars, our sun is known as a yellow dwarf. In size it is midway between the largest and the smallest stars, and also midway between the hottest blue-white stars and the coolest red stars. Rigel Star is 60,000 times brighter, and the cool Antares—a red super giant—is 27 million times bigger.

The nuclear reaction that keeps the sun shining involves a mass loss of about 4 million tons a second, as just mentioned, but it is so enormous in volume that it will take 8 billion years to use it up so that it will begin to expand into a red giant (assuming theories are correct).

Apparently, stars can die. They have been observed blowing up and gradually disappearing. When they do begin to die, some incredible things occur.

Near the brilliant Dog Star Sirius is a faint dot of light, a much smaller star known as the Pup. Although it is smaller, the material at its center is so dense that one matchboxful would weigh 50 tons.

Astronomers observed a wobbly orbit in the larger star which led them to believe there must be another one nearby. To make such a large star as Sirius wobble takes a sun as large as our own which is 865,370 miles in diameter.

But the Pup is only 24,000 miles in diameter. That means that as a star it has the same mass as the sun, the same density, but 1/27,000 of the sun's volume. It is like a mountain of feathers weighing the same as a small brick of gold. The Pup star is only 1/125th as bright as the sun.

Astronomers have found many more like these called "white dwarfs." One of the densest of these stars is known as +70 8247. It is about half the size of the earth, but every cubic inch of it weighs 620 tons!

Astronomers believe that these exceptionally dense stars are in the final stages of their evolution and are nearing extinction. If this is true, in time it will become a neutron star, shrinking so much that its density becomes so pronounced every cubic inch would weigh about 20 billion tons.

There seem to be "broadcast" stars in outer space. In 1967 a radio signal was picked up in Cambridge, England, which was as regularly spaced as a broadcast signal on our own radios. A graduate student had discovered it by accident while working with radio telescope equipment designed to record weak signals.

Scientists were excited. Signals from intelligent beings in outer space? Why else were they so precise and regular? But as the signals continued without variation for months, they began to realize they had found a new kind of star—one that emitted regular but natural bursts of energy. They called them pulsars. Only one has been tracked down as a visible star. In 1969 astronomers at the Steward Observatory in Arizona spotted it faintly flashing in time with its radio signals. It lies in the Crab Nebula, 4,000 light years away. It is believed that these are dying stars and that rotation accounts for the pulsating. They are so dense that one cubic inch weighs over 10 billion tons.

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But some of the most puzzling objects in the heavens are the quasars. We still do not know what they are, but it is believed they are the brightest and remotest objects known to man. Scientists are used to being surprised, but quasars knocked them for a loop. The Milky Way numbers 100 billion stars, many of them brighter than the sun. Yet one quasar is 200 times as bright as the entire Milky Way galaxy.

The first one was spotted at Mt. Palomar Observatory by Maarten Schmidt. He had picked up some unusual radio signals and was trying to find a Milky Way star that could be their source. At the precise spot in the sky, he saw a point of light, but it was not a star. The object was so far away that its distance was estimated at 1 billion light-years. (Don't forget that light travels about 6 trillion miles in one year.)

It also showed a red shift on the color spectrum, moving away from us. But this one had a pronounced red shift, not only brighter than anything else ever seen, but also moving outward into space faster than anything else ever observed—about 177,000 miles a second (just under the speed of light).

Some of the most farfetched theories yet propounded have been offered as explanations for these objects—matter and anti-matter in collision or possibly a supernova, an exploding star that sets off many other stars in a chain reaction like fireworks.

The last theory I will mention concerns the black holes, which is disputed by many but also believed by many scientists. Some of the stars that are dying, it is thought, get so dense that their gravity makes it impossible for anything to leave their gravitational pull; not even light can get out.

The star becomes forever invisible. Astronomers have observed wobbles in certain large stars and know there is tremendous gravity affecting them, but they cannot see light or receive radio signals from anything that might cause it. Anything coming near such incredible gravitational forces would be vacuumed into its center instantly. It is believed that some of these black holes are eating up their close neighbors. But, again, this theory is not accepted by many scientists.

There are unusual phenomena and there are equally incredible explanations, but that something the Psalmist did not dream of is going on out there cannot be disputed.

In the heavens things are so massive in size and power that even the tremendous power of a nuclear bomb seems as nothing. Things are in a constant state of flux; dynamic change characterizes even the remotest stars.

They blow up, they move at enormous speeds, they evolve into different kinds of stars over long periods of time. The universe seems to be expanding at a phenomenal rate, and to some minds at least, some philosophical notion of creation out of nothing is needed to keep things rational.

What kind of God is this whom we worship? The Psalmist could see the raw power of a thunderstorm and literally shake with fear. But he did not see in a telescope the explosion of 4 million tons of hydrogen in one second, a hydrogen bomb so massive that it could heat a planet 92 million miles away which orbited in a space near absolute zero.

The Psalmist could marvel at the brilliance of the moon and the brightness of some stars; but he could

not imagine a single entity 200 times as bright as all the 100 billion suns of the Milky Way galaxy.

If you are not touched with awe and wonder and, yes, even reverence, when you think about the being who brought this all into existence and who upholds it all with his power, you are beyond the reach of the Spirit of God. That is why it is wrong to chit-chat in church; that is why it is wrong to take God's name in vain; that is why it is wrong to take him for granted.

And I need to speak most of all to the balcony about this. More and more we get complaints about talking during church, even during prayer.

We are here to worship God—the God of the pulsars, quasars, galaxies, suns and planets. “What is man that thou art mindful of him? Yet thou hast created him a little lower than the angels (or translated a god).”

Man himself may be an even more incredible wonder than the heavens. But, the point is that nature preaches majesty! We respond with reverence and awe and worship.

One of the negatives of city life, and there are many positives, is that you cannot go out on a snowmobile late at night into a large field and look up on a clear, winter night at the heavens. The natural impulse is to stare and be silent, to take a deep breath and shake your head in astonishment. At such moments you are coming very close to worship and you are hearing one of the most eloquent sermons God ever preaches.

“When I look at thy heavens, the work of thy fingers, the moon and the stars which thou hast established...O Lord, our Lord, How majestic is thy name in all the earth.”