

By the Campfire: Red Giants, White Dwarfs, Black Holes – And God

by Delmer A. Johnson

High in the mountains of Montana, three backpackers squat around a fire late at night. Most of the group of Adventist hikers have gone to bed, but these linger, warming themselves around the flickering fire. Ginger is a physicist; Greg is a graduate theology student home on break; Ralph is the associate pastor of their church. The friends have been talking for some time.

Ralph: Look at those stars! I wonder if we might be able to see the star that heaven is near tonight. Imagine how exciting it would be if our whole congregation reached heaven and we could travel around to visit the other planets together!

Ginger: Do you suppose heaven is actually in our own galaxy? Virtually all the stars we can see with our naked eye are right here in the Milky Way. Scientific observation and analysis tell us that there are literally thousands of galaxies out there.

Ralph: Space is so vast! It will take an eternity just to explore all the different worlds. I'm glad we'll have plenty of time.

Ginger: I've been thinking about that lately. A few months ago I read an intriguing book by an English physicist named Paul Davies. It's called *God and the New Physics*. Davies looks from the perspective of modern physics at a number of

questions which have traditionally been answered by theology.¹

Greg: That arouses my curiosity. I've read a couple of books recently in which Christian theologians address those very issues.

The End of the Earth

Ginger: I wonder about the destiny of this Earth and the universe. As Adventists we've been taught that after the millennium, fire will fall from heaven, destroying the wicked, and cleansing the Earth and the universe from sin. After that we'll spend endless ages together with God, learning and growing, spiritually and mentally. But cosmologists today talk about the ultimate destruction of our world and of the eventual end of the entire universe.

Have you thought about the future of the sun and Earth's corresponding destiny? Stars don't last forever, you know. Eventually their nuclear furnaces transform all the available hydrogen to helium, and they change into red giants, like Arcturus in Bootes, and eventually collapse into relatively small black or white dwarfs.²

Ralph: Yes, but Ginger, don't you think that God would see to it that the sun would maintain a steady output?

Ginger: He could. We know the nuclear reaction that produces heat and light in the sun joins four hydrogen nuclei to produce a helium nucleus. Eventually the hydrogen will be used up. Of course, that's a long way off, about five billion

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years they say, but then as the sun struggles to keep producing energy, it will form a new core of helium, which will contract under its own weight and grow hotter and brighter. The remaining hydrogen will keep on burning, in ironically expanding and cooling outer layers. The sun may become so large that it swallows up the inner planets, including Earth.

While this process is going on, the results on Earth will be devastating. First, the polar ice caps will melt, causing widespread flooding. Vast portions of Earth will become a baked desert, and eventually the oceans will boil. By that time, life as we know it simply will not be able to exist. As the surface of the sun grows nearer, the earth itself will be vaporized.

As astrophysicists look out into the universe, they observe stars in various stages of this cycle. God doesn't seem to be intervening in their natural progression.

Ralph: But God could just create a new sun when this one starts to act up. Maybe we could even do without the sun; after all, the Bible says the New Jerusalem will not need the sun.³ I suppose that he could even move his capital city to another planet. But couldn't God make sure that the sun always has an abundant supply of hydrogen to burn? Sort of like stoking a furnace?

Ginger: Perhaps in the case of our planet. After all, we believe that someday it will be the capital of the universe. But as astrophysicists look out into the universe, they observe stars in various stages of this cycle.⁴ God doesn't seem to be intervening in their natural progression. Even if God were to move the New Jerusalem to another planet, someday he would have to move it again, because the same problem would arise as the new sun ran out of hydrogen.

Some suns end in a spectacular event called a supernova. They blow themselves to pieces as the core crashes in upon itself. The gravity is so terrific that even the atoms collapse and the star becomes a sea of pure neutrons or a black hole.⁵

But back to our sun. As its core temperature

increases, the nuclear burning of helium will form carbon.⁶ Eventually, every kind of fuel will have been exhausted, and the sun will consist of moderately heavy elements like iron. As the nuclear furnaces die and internal pressure drops, gravity will take control, and the sun will contract until it's about the size of our earth. This giant lump of molten iron will orbit the Milky Way for billions of years, fading and cooling as it slowly reaches the end of its career as a black dwarf star.⁷

The End of the Universe

If this scenario were true only in the case of our sun, I suppose we wouldn't have much to worry about. But the mathematical formulas also apply to other stars of the same mass as our sun.

Greg: In other words, stars throughout the universe will turn into hot, black iron one by one. I imagine it will be like watching a large city office building at night. One by one the lights go out until the building is finally dark.

Ginger: Rather depressing, isn't it? Some stars will dazzle us as supernovae. Smaller stars burn their nuclear fuel more slowly and may take several thousand times as long to go through the cycle. Heavier stars will be unable to resist the force of gravity as neutron stars, and will become black holes, in which the force of gravity is so great that not even light can escape.

On the other hand, even as we speak, new stars are forming from interstellar gas clouds.⁸ Eventually, though, all material for the formation of new stars will be exhausted. The Second Law of Thermodynamics predicts that the universe will run down toward equilibrium.⁹ So the stars will gradually disappear from the universe.

That is the predominate theory about the end of the universe. But we have plenty of time between now and then: 10^{100} years, according to one estimate.

Prior to the end of the universe, we encounter the ultimate fate of the galaxies. As the burnt-out stars mill around the galaxy, now and then they will collide with one another. If one should happen to collide with a black hole, the hole will

swallow it. Some astronomers believe that there is a gigantic black hole at the center of our galaxy. If that's true, then the orbits of the burnt-out stars will gradually decay as they are slowly drawn closer to the monster hole.

Eventually the temperature of the universe will fall to nearly absolute zero. Black holes are only a few billionths of a degree above absolute zero, but once the universe becomes colder than they are, they will begin to lose heat energy through a process known as quantum evaporation.¹⁰

The ultimate fate of black holes is speculative, but Davies says that it seems like they will reach their end in this way. As 10^{67} years go by, they will condense to microscopic dimensions. They will increase in temperature as they contract until finally they will shine like stars for a few billion years, and may actually create some matter from energy. Eventually they will probably explode amid a shower of gamma rays.

Ralph: That's our modern cosmologic destiny? Seems pretty bleak to me.

Greg: Indeed it is. It's hard to find any meaning or purpose in life if ultimately every achievement of humanity will be reduced to gamma rays zinging their way across a vast, dark abyss of ever-growing space-time.

Ginger: Of course, there are a couple of other theories about the ultimate destiny of the universe. Both of them rely on the possibility that the universe's total mass may be great enough that gravity will eventually slow and halt the expansion that we now observe in the universe.¹¹ Then it will begin to contract, ever so slowly at first, but gradually gaining momentum over billions of years. Galaxies will begin to converge on one another. By the time the universe has shrunk to one hundredth of its present size, its temperature will reach the boiling point of water, and earth, if it is still around, will be totally uninhabitable.

As the ultimate implosion nears, structure breaks down, atoms themselves are dispersed, and protons, electrons, and neutrons break apart. The entire universe shrivels into less than the space of an atom. All matter is squeezed out of existence at an infinite density. Absolutely nothing will be left. Events, time, and matter will cease to exist.¹²

Ralph: Again, that doesn't offer much hope. What significance would there be to life, anyway?

Ginger: Some scientists feel as you do. They can't accept the idea of the end of the universe. They argue that some unknown force will stop the final implosion microseconds before the end and reverse the process, causing the universe to emerge, phoenix-like, from the fireball into another cycle of expansion and contraction.¹³ This process, they believe, has been going on for all eternity, and will continue *ad infinitum*.

Ralph: An unknown force? Small comfort that gives. You've already pointed out that life as we know it could not survive.

Ginger: This theory of an oscillating universe has plenty of critics. On the theoretical level, each cycle could produce an increase in the ratio of photons to nuclear particles. Over an infinity of time, the universe would be reduced to photons, devoid of nuclear particles. Since matter still exists, we know the universe has not existed from

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eternity. Even if the history of the universe involves a tremendous number of cycles, the Second Law of Thermodynamics will inevitably triumph as entropy [disorder] rises to its maximum state.¹⁴

Ralph: Those theories make eternal life impossible! We'll either be cooked in a fiery inferno, or frozen as the last small suns exhaust their final resources.

Ginger: Of course, these are only theories, but experiments demonstrate the accuracy of the predictions that such theories make.

Greg: Science certainly has a high credibility level in modern society. One risks losing the respect of thinking people by brushing off science. In this area in particular, science presents us with a picture of the end—an eschatology, if you will; and it is illuminating to compare it with Christian and biblical eschatology.

The Bible writers also portray some pretty spectacular and terrifying events at the end of time, but unlike science's predictions, theirs are filled with radiant hope.

Theological Perspectives on the End

A conference held in New York City in 1971 drew together leading thinkers from three contemporary theological currents concerned with the future. One group drew on the metaphysics of Alfred North Whitehead. These "process theologians" were largely from the United States, although some were British. Whitehead developed his metaphysics in response to the theory of relativity and quantum theory. Essentially, he saw the fundamental units of the world as events rather than substance. For him, process was fundamental both to the world and to God. John B. Cobb, Jr., David R. Griffin, and Lewis S. Ford are representatives of this group who have addressed questions about the future.¹⁷

Process theologians seriously anticipate the ultimate extinction of life on this planet. Meaning for the future is ultimately located in God. Process theology shifts the locus of our hope from the world and its future to the ongoing contribution of our world to the life of God.

One process theologian envisions "an endless series of expansions and contractions of the universe." Each new universe that emerges presents a novel organization in which God is able to actualize new possibilities, experiencing everything which may be experienced. Our hope is to be found in the present experience of God, to which we are contributing, and to live on because of our enrichment of that experience.

Ralph: It doesn't sound as if the process theologians believe in eternal life for humanity. For them, God will survive and be the better because of all our experience.

Ginger: That sounds as if God is using us. Does God cause all the pain and suffering we see in the world in order to enhance his experience?

Greg: Process theologians don't believe that God is responsible for the suffering in the world, because they don't believe he is all-powerful. They say that God is doing the best he can with the material he has to work with.¹⁸

Anyway, a second group of theologians addressed concerns about the future in the spirit of Teilhard de Chardin. Teilhard was a French Jesuit priest, best known during his lifetime as a professional geologist and paleontologist.

Teilhard believed that the process of evolution was incomplete and that, therefore, creation was continuing. The lines of evolution were converging, he wrote, toward the ultimate unity, a single hyperpersonal center, a focus of consciousness and personality which he called "Omega." Omega, which he seemed to identify with the risen Christ, is both the future goal of the universe and a present influence, drawing the universe toward itself.¹⁹ At the conference, Philip Hefner and D. D. Williams spoke about the future from the Teilhardian perspective.²⁰

Process theologians don't believe that God is responsible for the suffering in the world, because they don't believe he is all-powerful. They say that God is doing the best he can with the material he has to work with.

In the secular world, political movements call men and women forward toward the future, while in the religious world, churches focus on the call from above. Teilhard saw God as both ahead and above, drawing humanity into both community and transcendence. Hope for the future then, according to the Teilhardian, is based upon two things: the character of God and the reliability of his creation.

Finally, the group known as the "theologians of hope" attempted to address questions of the future from within a biblical framework. There were several German as well as American theologians within this group, among them men such as J. B. Metz, Jürgen Moltmann, Wolfhart Pannenberg, Carl Braaten, and Hans Schwarz.²¹

The theologians of hope see a future with limitless possibilities. The human race will find its fulfillment in the endless freedom that exists in God.

For God, however, the question of the future is a bit more complex. He is Lord over time as well as space, matter, and energy, and as such, all times are present to him. Yet it seems that there must be some sort of ranking of temporal events within God, if he is to interact with people living in historical time.

Hans Küng explicitly addresses the issue of the end of the universe in his book, *Eternal Life?* He observes that Isaiah depicted the end of the world as a terrifying vision:

The heavens will vanish like smoke,
The earth will wear out like a garment,
and its inhabitants die like vermin . . .

But Isaiah followed this vision with a promise:

But my salvation shall last for ever
and my justice shall have no end.²²

Küng says that the end of the world appeared to authors of Old and New Testaments as an act of God. Today we realize that it is also within the power of human beings. Technology provides the human race with power to exterminate itself.

After discussing two scientific scenarios for the end of the universe, heat death and implosion, Küng goes on,

If not only man's life, but—as is now scientifically probable—earth and the universe do not last forever, the question arises: What comes then? If human life and the history of humanity have an end, what is there at this end? The biblical message—the New Testament prepared by the Old also in this respect—says: at this end is not nothing, but God. God who is both the beginning and also the end.²³

Küng concludes that our future lies in the kingdom of God, brought about by God's action coupled with human initiative. The main content of the consummation is seeing God. Nevertheless, the biblical expectations also include an image of a satisfied nature and satisfied humanity.

Ginger: It's interesting to hear what those theologians think, Greg, but how would you, as an Adventist studying theology, respond to what these scientists are telling us about the end of the universe?

An Adventist Perspective on the End

Greg: I really don't think that we can get much help on this issue from any "historic" position. The first place to look in Ellen White's writings for a comment on this topic would be the final chapter of *The Great Controversy*. There, at the close of the millennium, following the last judgment, fire envelops the earth, cleansing it from every trace of sin's curse.²⁴

If the universe is going to end in such a way that life as we know it cannot survive, it becomes difficult to believe in eternal life.

The fire will bring an era to an end, but it will mark not only an ending, but also a beginning. Not only will the redeemed continue to learn, using their minds to probe mysteries and wonders, but they will also teach. Knowledge, love, reverence, and happiness will continually increase throughout the universe, as space will no longer be a barrier for interplanetary travel.

Nothing whatever is said of an end to the universe. Apparently Ellen White never wrote in any detail on the history of the universe following the destruction of Satan and the renewal of our earth.

Ginger: That would make sense. It has only been in the past few decades that we have compiled evidence that the galaxies are receding from one another, and that the universe is expanding.²⁵ In Ellen White's day, many people believed that God had placed the stars in their proper positions and that they would remain fixed throughout eternity. If God had not informed her differently, it would seem natural for her to share that view.

Ralph: Sure. What difference does it make as far as our salvation is concerned whether the stars are just sitting in their appointed places, or whether they are moving away from one another? Not much, I think. But the point is that if the universe is going to end in such a way that life as

we know it cannot survive, it becomes difficult to believe in eternal life.

Greg: In the centuries before Copernicus and Galileo, people had a considerably different conception of the universe. Eratosthenes, who lived in the third century B.C., is deemed to be the first person in history who realized the earth was spherical, not disk-like or rectangular. The notion of vast, empty regions of space is a relatively modern concept in Western thought.

People living in the ancient Near East believed that before the earth and sky were created there was nothing but water.²⁶ It was necessary to create an open space in this primeval water so the land and living things could exist. In order to do this, they believed something had been pushed up to make a vault. In Genesis, this is called the firmament.²⁷ “Hard as a mirror,” according to Job; “like a canopy,” said Isaiah.²⁸ We might compare it to a giant superdome or planetarium.

God placed the sun, moon and stars within this “superdome.”²⁹ Below the inverted bowl with its heavenly inhabitants lay the land. Above and below—surrounding all—was water.

How our conception of the universe has changed! During the Middle Ages, people believed the universe resembled an onion, with crystalline spheres for each planet and an outer sphere containing the stars. By the 19th century, the bounds of the static universe had grown. Telescopes had revealed stars at enormous distances from earth. In the 20th century, our conception bloomed into a dynamic, expanding universe.

In the expression “the heaven and the earth,” the Bible writers described their universe—the earth under their feet, the sea, and sky above—this great abode that they shared with other creatures. As they saw the birds, sun, moon, planets, and stars, all were part of what they called the heavens. It is vastly different from the swirling galaxies and myriad suns we envision when we think of the universe, but it was all the universe those writers of a bygone era knew.³⁰

Several texts talk about the heavens passing away, like the one in Psalm 102:25-27.³¹ These statements were as radical in their day as the pronouncements of modern cosmologists are in ours.

Of old You laid the foundation of
the earth,
And the heavens are the work of
Your hands.
They will perish, but You will endure;
Yes, they will all grow old
like a garment;
Like a cloak You will change them,
And they will be changed.
But You are the same,
And Your years will have no end.

Ginger: And don’t forget this one:

“Heaven and earth will pass away, but my words will never pass away.”³²

Greg: Right. But still these people did not despair. Even if all around them was destroyed, they believed that God was above and beyond the universe that they knew, and that out of the ashes of absolute destruction, God would create a new home for his people.

Ralph: But we have always associated those texts with the time when God purifies our planet from sin.

Greg: Nevertheless, at the time they were written, the texts did speak of a total destruction of absolutely everything known to humanity. The only refuge was to be found in God. I think that that concept can serve as a source of hope for modern people, too.

Creation and Eschatology

Ginger: I have a question about the relation of the end of the world to the beginning of the world. Some people within the Adventist church think that life has existed on earth for more than six, ten, or even twelve thousand years. Some think it may have been here for as long as most geologists and paleontologists claim.

I remember reading that our understanding of the end is tied up with our understanding of the beginning.³³ Some Adventists are concerned that if we accept the idea that life has been around for a long time, we will have to change our understanding of the Second Advent.

Greg: The problem of eschatology and science challenges our beliefs about the events surround-

ing the Second Advent, as well as about eternal life in light of the impending demise of the material universe. Scientists may be wrong about what lies in the future; but let us assume, for the sake of discussion, that they are correct.

Ralph: It seems that if a person believes that the world was created in six consecutive days, it's easier to believe that God can bring it to an end in the twinkling of an eye. The notion of a relatively sudden beginning seems to fit well with a sudden end. There ought to be a certain symmetry between the beginning and the end.

Ginger: Why should we require symmetry between the beginning and the end? Consider our own life. We believe that we had a beginning when we were born. Yet we believe that if we accept Christ as our Saviour and remain faithful to him, our life will never end.

Greg: You have a point, Ginger. While symmetry between the beginning and end seems appealing, it is hardly necessary.

But I think Ralph raises a question we need to address. A number of theologians have seen a relationship between the beginning and the end, or between protology and eschatology. Arthur Ferch and Fritz Guy,³⁴ among Adventist theologians, have pointed to such a relationship; and Hermann Gunkel, Claus Westermann, A. R. Peacocke, and Hans Küng have called attention to it as well.

In modern times, Hermann Gunkel was the first theologian to explicitly link these two extremes of time,³⁵ following the Epistle of Barnabas which states, "Behold, I make the last things like the first."³⁶ But Gunkel spent most of his book delineating parallels between Genesis and Revelation and Babylonian mythology.

Claus Westermann detected a correlation between beginning and end in Genesis. In the story of the Flood, for instance, the Creator decides to destroy what he has made. Thus Westermann traces humanity's concern with beginning and end back to a very early time.

Peacocke condenses Westermann's book, noting similarities in the biblical picture of those extremities. In both, barriers between humans and God are absent, and human beings are free to confront God face-to-face in his divine majesty,

something not allowed in the rest of the Bible; in both, our race lives in paradise; and in both, humanity is free from the curse of death, sorrow, and suffering.³⁷

Westermann insists that the beginning and the end must be studied together.³⁸ The description of the beginning, found in Genesis 1-11, and the description of the end, found in the book of Revelation, delimit the boundaries of history and provide an origin and goal for historical time.³⁹

For Westermann, two characteristics in particular set primal and end time apart from historical time: the universal scope of their concern and their special relationship to "mythological" language. As for his first point, the Old Testament, before the story of Abraham, is clearly universal in its scope, then progressively narrows from a concern with humanity as a whole, to a focus on the descendants of Abraham and then Jacob. In

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the New Testament, Westermann argues that the book of Revelation primarily presents the final history of God's universal people. As for his second point about the Bible's language concerning beginning and end times, he concedes that the first 11 chapters of Genesis are not obviously mythological, but says Revelation is clearly figurative.

Westermann observes additional parallels between primal and end times. In both, God judges human beings in person and personally meets out punishment, while in the rest of the Bible God punishes indirectly, through an intermediary. In both eras, universal peace, or salvation, embraces even the animal world.⁴⁰ The end time is described as creation made whole again.

Hans Küng also relates protology and eschatology, warning that we must beware lest we think that we can derive "exact advance reports of the end of the world" from the Bible.⁴¹ He cautions that we shouldn't attempt to harmonize biblical statements about the end with the different scien-

tific theories of the end.⁴² The Bible writers' point was that even though everything familiar should vanish, God would continue on and see his people through.

Old Testament Process

Adventists believe in a biblical approach to eschatology. What better place to start than in the Old Testament? How would you describe it, Ralph?

Ralph: Moses told the people of Israel that if they were careful to follow God's commandments, the Lord would make them the greatest nation on earth.⁴³ The Hebrews anticipated that their nation would develop and increase in influence gradually, like the unfolding of a rose, from bud to full bloom. As the people faithfully followed God they would be blessed, their fame would spread throughout the earth, and one nation after another would come and ask to be instructed in the law of the Lord.

And, to a point, that's how it worked. During the reigns of David and Solomon, Israel's territory expanded, their military might increased, and people did come from distant lands to learn about God.

Greg: In a way you might say that the Exodus was the template upon which Israel built its future expectations. Of course, we must acknowledge God's role in their prophetic visions; we might say that he was working to bring the Exodus experience to its culmination.

Ralph: It's too bad that the Hebrews didn't cooperate. Again and again in Kings and Chronicles we read how they turned from God to worship Baal and Ashteroth, until finally Israel was exiled by the Assyrian empire and Judah by the Babylonians. But God had promised that this would not be a permanent arrangement, and the many prophecies holding out the hope of a return from exile were fulfilled. Seventy years later, the Jews returned to their native home, just as Jeremiah had prophesied.

Ginger: If it were true that protology and eschatology must be symmetrical, then one would expect to find a process of progressive develop-

ment described in the opening pages of the Old Testament.

Greg: Exactly. But instead of that, in the Old Testament we find a dramatic, sudden beginning followed by an extended, gradualistic eschatology. The overall picture of eschatology in the Old Testament does not resemble the sweeping, unilateral action of God found in the story of Creation. It appears, rather, to depict an extension and completion of the Exodus.⁴⁴

New Testament Transformation

The book of Revelation receives a great amount of study in Adventism because of our emphasis on apocalyptic. Revelation recalls the Old Testament prophets in a new context: the context of Christ. The revelator focuses primarily on Jesus Christ as he singlehandedly brings about a transition from a world of sin to a sinless paradise.

The New Testament prophecies focus on the person of Jesus. Rather than things getting better and better as the church converts the world and Christians become renowned for their success, wisdom, and power, we see a picture of a church, now burning with zeal, now plunging into apostasy, and down toward the end, lukewarm. Rather than expecting the conversion of the world, we expect wickedness to increase until the day Jesus returns.

Jesus stands in the spotlight of the New Testament. Jesus, the one who defeated Satan and sin in a few short hours between the garden of Gethsemane and the empty tomb. Jesus, the conquering King, who descends from heaven to attack the kings of the whole earth who have gathered to do battle against him. Jesus, the one who rains fire from heaven upon Gog and Magog who have gathered together for war against the saints. Jesus, who intervenes decisively in the history of this world to eradicate sin in a way that reminds one of his dramatic and decisive act on the cross. With one fell stroke, Satan's forces are destroyed and the church is delivered.

Ginger: It doesn't seem as though the expectations of either the Old or New Testament were

based on the Creation story of Genesis. In the Old Testament, the Exodus was the central event, just as the cross was in the New.

Greg: That's true. The Old Testament prophecies are filled with new and different meaning because of the first advent of Christ. The book of Revelation is the revelation, not of the church or of the role of the Jews, but of Jesus Christ. He is the theme and refrain of the whole New Testament. Certainly there are allusions to Genesis, as well as the prophets, but the new understanding did not result from a renewed study of protology. God didn't change his plans to be more in harmony with events at the beginning of world history, but because of events surrounding the cross.

On the day of Pentecost, nearly 2,000 years ago, Peter said that the last days had arrived.⁴⁵ They arrived with the first advent of Christ. They will conclude with the Second Advent. As Christians, we are a people who live between the times: we look back to the first advent and forward to the Second Advent.⁴⁶

Once it becomes clear that the expectations of the Old Testament had their roots in the Exodus experience, and that they were an extension and culmination of God's leading in that event, then it is obvious that New Testament eschatology finds its basis in the cross. Our expectations, as Christians, are based on the New Testament and therefore find their roots, not in protology, but in Christology. Our teaching about the Second Advent must find its basis in the first.

As long as Jesus was with them, the disciples clung to expectations of national greatness drawn from the Old Testament. But at Jesus' ascension, a new vision was born: the Messiah had gone away, but he would return in the same way they had seen him go into heaven. From the moment of the ascension, the Second Advent was linked to the first.

So New Testament eschatology is based on the first advent, especially on the events of the passion week, when, in a dramatic way, God intervened in the history of our planet. In the brief span of time between Gethsemane and the resurrection, in one decisive act, Jesus broke the power of Satan.

Just so, when he returns, he will open a path

through the skies and through the grave for his sleeping saints. In one brief moment, he will change the immediate destiny of the righteous and, in one decisive act, deliver his people from the very presence of sin.

Eschatology is not based on protology, either in the Old Testament or in the New. Rather, the hope of the Second Advent is modeled on the first advent. The model for Adventist eschatology, then, should be the first advent: God's decisive intervention in this world.

Ralph: I never thought of it that way before, Greg. But how would you answer Dr. Westermann? He seems quite persuaded that beginning and end are inextricably intertwined.

Greg: Without doubt they are. We can see parallels between them in the cases of direct judgment and punishment and of universal peace. But while there is indeed a connection between beginning and end in the Bible, we must be careful. Questions about creation do not necessarily demand that we have questions about the Second Advent.

If God took a vast amount of time to create this world, then a sense of balance seems to suggest vast amounts of time at the end. If God worked through natural processes in the beginning, we should expect he will work in a natural way at the end.

My main point of disagreement concerns Old Testament eschatology. Westermann sees a fundamental progression between the eschatology of the two testaments. He points out a cycle that is frequently repeated: the people are in trouble, they cry for help, and God delivers them. This cycle recurs often in the Old Testament and, in the New, reaches its pinnacle in the deliverance accomplished by Christ on the cross.

I see differences between the testaments in the areas of actors and timing. The primary event in the Old Testament was the Exodus. There are two things we might note that are wrapped up in the word *exodus* itself. First, the focus is on people.

They were the ones who actually walked from Egypt to Canaan. They were the ones in transition from slavery to landowning. They would never have made it without God's mighty acts in their behalf, but it was they who made the journey.

Second, the Exodus was a gradual process. The Hebrews did not suddenly wake up to discover that they were not slaves in Egypt, but Palestinian farmers. The new nation still had to cross the wilderness and conquer other nations and tribes.

Certainly there is continuity with the New Testament. God's role is utterly indispensable in both testaments. But in the New Testament, the central event is the cross of Jesus Christ. There are two things we can note from that event. First, the focus is indisputably on Jesus. He is the one who works. His disciples have fled.

Second, the cross is an event to be proclaimed. Jesus, in a few short hours, secured eternal salvation for humanity. The role of the disciples was to preach the good news about what Jesus had done. In the case of the Second Advent, the role of God's people is rather passive. We can prepare for it, but when it comes, it will be entirely God's doing. We cannot change ourselves from mortal to immortal.

Ralph: But if God actually took a vast amount

of time to create this world, then a sense of balance seems to suggest vast amounts of time at the end. If God worked through natural processes in the beginning, we should expect he will work in a natural way at the end.

Greg: Again, this type of symmetry between Creation and eschatology was not present in the Old Testament. Genesis presents the story of Creation in what seems to be a relatively brief period of time, but expectations for the end depict an extended process. The basis for change in the apostle's outlook was not study of the book of Genesis. The work of Christ in the first advent is the model for the Second Advent. The foundation of Christian eschatology should be the cross. Our authority comes from the messengers who assured the anxious disciples that their friend Jesus would return someday in a way that resembled the final events of the first advent.

Time had passed quickly as they talked, and only a few embers still glowed in the fire. Greg suggested, and the others agreed, that sleep sounded pretty good. After saying Good night and expressing appreciation for the others' contributions, the trio headed for their respective tents.

NOTES AND REFERENCES

1. Paul Davies, *God and the New Physics* (New York: Simon & Schuster, 1983), p. 229.

2. A. R. Peacocke, *Creation and the World of Science* (Oxford: Clarendon Press, 1979), pp. 324, 325. Here Peacocke describes the eventual fate of "main sequence" stars.

3. Revelation 22:5.

4. Chet Raymo, *365 Starry Nights* (Englewood Cliffs: Prentice-Hall, 1982), pp. 45-49.

5. Davies, p. 201.

6. See Peacocke, p. 325.

7. Davies, p. 201; Peacocke, pp. 325-326.

8. Raymo, pp. 8, 9; Carl Sagan, *Cosmos* (New York: Random House, 1980), pp. 11-13.

9. This is not without its problems. For example, it is uncertain if the Second Law can be applied to the universe as a whole. See Peacocke, p. 326f; and *The Encyclopedia of Philosophy*, s.v. "Entropy," by G. J. Whitrow, p. 527.

10. Stephen W. Hawking, "Particle Creation by Black Holes," *Comm. Math. Phys.* 43 (1975): 199-220. Peacocke, p. 327.

11. Peacocke, p. 327.

12. Davies, pp. 204, 205.

13. Davies, p. 205; Peacocke, p. 328.

14. Steven Weinberg, *The First Three Minutes* (New York: Basic Books, 1977), p. 154. R. M. Augros and G. N. Stanciu, *The New Story of Science* (Lake Bluff: Gateway, 1984), p. 61. Davies states that "only further work on ultra-high energy physics is likely to settle the issue," p. 205.

15. Peacocke (p. 140) asserts that Whitehead's metaphysics has lost much of its influence in the light of more recent scientific thought.

16. *Ibid.*, p. 340.

17. John B. Cobb, Jr., *God and the World* (Philadelphia: Westminster Press, 1969), Ch. 2, and "What Is the Future?"

A Process Perspective," in Ewert H. Cousins, ed., *Hope and the Future of Man* (Philadelphia: Fortress Press, 1972); John B. Cobb, Jr., and David R. Griffin, *Process Theology: An Introductory Exposition* (Philadelphia: Westminster Press, 1976), ch. 7; Lewis S. Ford, "Response to Johannes Metz," in Ewert H. Cousins, pp. 135, 136.

18. David R. Griffin, "Creation Out of Chaos and the Problem of Evil," in Stephen Davis, ed., *Encountering Evil* (Atlanta: John Knox Press, 1981).

19. Ian G. Barbour, *Issues in Science and Religion* (New York: Harper and Row, 1966), pp. 399-408.

20. A. R. Peacocke, p. 339; Philip Hefner, *The Promise of Teilhard* (New York: Lippencott, 1970), ch. 4, "The Future as Our Future: A Teilhardian Perspective," in Ewert H. Cousins, ed., *Hope and the Future of Man* (Philadelphia: Fortress Press, 1972), *From Science to Theology: An Essay on Teilhard de Chardin* (Nashville: Abingdon, 1969); Daniel Day Williams, "Hope and the Future of Man: A Reflection," in Ewert H. Cousins.

21. A. R. Peacocke, p. 335; Carl Braaten, *The Future of God* (New York: Harper & Row, 1969), *Eschatology and Ethics* (Minneapolis: Augsburg Publishing House, 1972), and *Our Cosmic Journey* (Minneapolis: Augsburg Publishing House, 1977); W. Pannenberg, *Jesus—God and Man* (Philadelphia: Westminster Press, 1971); J. Moltmann, *Theology of Hope* (London: SCM Press, 1967) and *The Experiment Hope* (Philadelphia: Fortress Press, 1975); J. B. Metz, "Questions for Moltmann and Pannenberg," *Una Sancta* 25 (1968): 32-51.

22. Isaiah 51:6. Text translated by Hans Küng in *Eternal Life?* trans. Edward Quinn (Garden City, NY: Image, 1985), p. 203.

23. *Ibid.*, p. 214.

24. Ellen G. White, *The Great Controversy Between Christ and Satan* (Mountain View, CA: Pacific Press, 1950), pp. 672, 673.

25. Robert Jastrow records the development of the theory of the expanding universe and its initial rejection by Albert Einstein in chapter 2 of *God and the Astronomers* (New York: Warner Books, 1978). The chapter covers the years 1913-1925.

26. M. Pumley, "The Cosmology of Ancient Egypt," in Carmen Blacker and Michael Loewe, eds., *Ancient Cosmologies* (London: George Allen & Unwin, Ltd., 1975), p. 26; W. G. Lambert, "The Cosmology of Sumer and Babylon," in *ibid.*, pp. 46, 50, 56.

27. Luis I. J. Stadlemann, *The Hebrew Conception of the World* (Rome: Biblical Institute Press, 1970), pp. 56-59.

28. Job 37:18; Isaiah 40:22.

29. Genesis 1:14-17.

30. E. J. Harder "Theological Dimensions of the Doctrine of Creation," (presented to the national conference of the Association of Adventist Forums, West Yellowstone,

Montana, August 10, 1985), pp. 3, 10.

31. See also Job 14:12; Isaiah 34:4; 51:6; 65:17; 2 Peter 3:7, 11-13; Revelation 20:1, 11; 21:1.

32. Matthew 24:35; Mark 13:31; Luke 21:33.

33. "The cataclysmic beginning of our world revealed in the book of Genesis *guarantees* the supernatural end of our planet when Eden lost will become Eden restored. A denial of the Biblical doctrine of creation (protology) puts the scriptural teaching on the end (eschatology) in question. Eschatology cannot be without protology," Arthur J. Ferch, *In the Beginning* (Washington, DC: Review and Herald, 1985), pp. 9, 10.

34. "A catastrophic, supernatural end of history . . . seems to presuppose a similarly sudden, supernatural origin of history," Fritz Guy, "Adventist Theology Today," *Spectrum*, 12:1, p. 10.

35. "*Schopfung und Chaos in Urzeit und Endzeit: Eine religionsgeschichtliche Untersuchung über Gen 1 und Ap Joh 12*, mit Beiträgen von Heinrich Zimmern (Göttingen: Vandenhoeck & Ruprecht, 1896; 2nd ed., 1921)." Cited by Claus Westermann, *Beginning and End in the Bible*, trans., Keith Crin (Philadelphia: Fortress Press, 1972), p. 23f.

36. Barnabas 6:13. Dated about 135 A.D.

37. Peacocke, p. 330.

38. Westermann, p. 1.

39. *Ibid.*, p. 28-32.

40. Westermann, pp. 18-19, cf. Genesis 1:29, 30.

41. "That the world as it is and as it has become with all its laws and impenetrabilities, has an ultimate uncontrollable meaning not derived from itself: this cannot be substantiated by scientific cosmology, nor perhaps by philosophy, but possibly only by theology which for its own part is derived from biblical protology and eschatology. The substantiation of *horizons of meaning and value* is in fact the task of a theology developed on the basis of the biblical message—no more, but not less. . . . If we want to avoid hasty conclusions in regard to the end of the world, we have to start out (as also in regard to the beginning of the world) from the fact that biblical eschatology is not a prognosis of end events any more than the biblical protology is a report of events at the beginning," Küng, p. 208.

42. *Ibid.*, p. 210.

43. Raymond Cottrell, "The Role of Israel in Old Testament Prophecy," in F. D. Nichol, ed., *The Seventh-day Adventist Bible Commentary*, rev. ed. (Washington, D.C.: Review and Herald, 1977), Vol. 4, pp. 25-38.

44. Donald Gowan, *Eschatology in the Old Testament* (Philadelphia: Fortress Press, 1986), pp. 22, 25, 26.

45. Acts 2:14-17.

46. Hans K. La Rondelle, "Interpretation of Prophetic and Apocalyptic Eschatology," in Gordon Hyde, ed., *A Symposium on Biblical Hermeneutics* (Washington, D.C.: Review and Herald, 1974), p. 228.