

7 *Cosmic Dust*

Recent Cosmic Dust

Ackerman in *It's A Young World After All* (1993) — still popular with young earth advocates and available free online¹ — discusses the fact that if the cosmic dust originated billions of years ago that it would have by now all been gone, having fallen into the sun by the Poynting-Robertson effect. He argues that since there is still some cosmic dust falling on earth that therefore the earth cannot be millions of years old. It must be new because cosmic dust is still falling on earth. Hence, because there is recently falling cosmic dust, there must be a recent origin to earth.

Ackerman overlooks many facts. For example, there is the simple fact of an *ongoing* continuing source of cosmic dust from collisions of asteroids in the nearby belt near Mars and elsewhere. Ackerman also overlooks the opposite effect that light has upon cosmic dust. Moreover, Ackerman overlooks the strength of earth's gravity to overcome the Poynting-Robertson effect.

Poynting-Robertson

There is no need to doubt this principle which Ackerman states regarding the Poynting-Robertson effect. The claim is true that if the cosmic dust originated billions of years ago, and it was all absorbing (not reflecting) light and it was not captured by a planet's gravitational pull, indeed within a million years the solar system should have been

1. You can read an online copy of this chapter from Ackerman at <http://www.creationism.org/ackerman/AckermanYoungWorldChap03.htm> (2005). Ackerman is borrowing from Slusher, *Age of the Cosmos* (a 1980 ICR technical monograph), which is still popular with ICR.

swept clean of any such rock or dust less than six feet in diameter.² This is acknowledged by Dalrymple in *The Age of the Earth* (1991) at 282.

However, it is not true that dust which reflects light would be drawn into the sun. The opposite occurs. Reflected sunlight applies an outward force on dust particles. As a particle nears the sun, the outward pressure is greater than the gravity pull into the sun, thus *repelling the dust*. You see this effect in the trail of a comet, as its dust *points* away from the sun as it approaches the sun.³

This disproof of Ackerman's thesis was in print only *six years* before Ackerman's book. How did he miss it?

The Amazing Ring In Our Orbital Plane

There is a second qualifier on this Poynting-Robertson effect. We have evidence that earth has a gravitational pull sufficient to hold dust in our orbit. There is a huge dust ring associated with the earth's orbit which is about 30 million miles wide from its inner to its outer edge and about 200,000 miles thick. (*Discover*, Nov. 1994 at 31.)

How does this work?

Originally, it was a mystery why zodiacal light was 1-2% brighter in the direction of the earth's trail than in its forward direction. This amazing dust trail was causing a specialized and structural phenomenon. It turns out that earth's gravity has a highly specialized effect that does this. It was confirmed with the aid of a supercomputer at the University of Florida. Al Jackson and Herb Zook of the Johnson Space

-
2. See Slusher, "Some Astronomical Evidences for a Youthful Solar System," *Creation Research Society Quarterly* (June 1971) at 55, 56 ("Robertson found that [in] a time of 2 billion years any masses of rock less than six feet in diameter within the earth's orbit would be cast into the sun.")
 3. Arthur N. Strahler, *Science and Earth History* (Amherst, New York 1987) at 145.

Center did the initial work. Their results were later confirmed in much greater detail by Stanley Dermott, Bo Gustafson, and their colleagues at the University of Florida.

Again, the zeal of ICR young earthers missed an opportunity to see design because they are so intent on seeing a young earth. The details of how earth's gravity works on this ring (and how the ring is being kept alive for millions-billions of years) were only discernible by a supercomputer. It is truly amazing. As one science webpage explains:

Their simulations prove not only that the ring exists but that it has **a peculiar structure**. As Earth patrols the inner edge of the ring, it carves out a small, traveling niche in the dust, leaving a gap in front of the planet and concentrating dust in its wake.

The cause of the dust ring is a phenomenon called **resonance**: dust particles are trapped whenever their orbital period and Earth's **fall into a ratio of whole numbers**. If the ratio is, say, 5 to 6, a dust grain orbits the sun five times for every six Earth orbits. On every fifth orbit, it passes near Earth and gets accelerated by the planet's gravity. This provides **just enough of a boost to offset the drag of sunlight on the particle**. Instead of falling into the sun, the particle remains in a more or less stable orbit.⁴

Thus, the dust is held around earth by an amazing coincidence. The effect operates only if you find the comparison of the orbital period of earth and the dust particle itself are **a ratio** of whole numbers. The dust particles must have a different orbital period than earth. This period must *precisely* be a whole number and so must earth's orbital period. Then, and only then, can earth capture this dust ring and hold it

4. http://www.zinkle.com/p/articles/mi_m1511/is_n11_v15/ai_16387776 (2005).

against the Poynting-Robertson effect. This is a miraculous design. We may not know what purpose it has. However, it is too far-fetched to believe this coincidence has an accidental explanation.

Hence, this disproof of Ackerman's dust clock points to design. How could such facts have been ignored by Ackerman? Because young earth zeal is more important to young earthers than the zeal to reveal God's handiwork in nature. You will see this imbalance over and over again — where great creationist arguments (such as the Big Bang) are scorned because they run against the zeal to prove a young earth.

By the Way: Amazing Resonance Elsewhere

The study of other planets point to their moons as the source of comparable dust rings around them. Their dust rings are largely fed by collisions of comets or asteroids with the moons that surround these other planets. This has a resonating effect that keeps the rings alive for millions of year. Their dust creates the moons. Then the moons are pulverized by comets and the dust is released only to eventually reform as moons. It is another system of amazing resonance and recycling, as if the solar system were designed to self-sustain itself.⁵

Thus, our cosmic dust around us largely comes from the same source that feeds our neighboring planets: our nearby moon.

And the fact dust particles are held by similar resonances around other planets mean that these resonances themselves overcome the Poynting-Robertson effect upon which Ackerman is relying. Thus, once particles are so trapped, their "particles could remain in stable orbits indefi-

5. See, "Rings Around The Planets: Recycling Of Material May Extend Ring Lifetimes," *Space Daily* (Dec 09, 2003) <http://www.space-daily.com/news/extrasolar-03w.html> (2005).

nately." (Strahler, *supra*, at 145). This explains why there is still cosmic dust among the planets. It does not prove a young earth or solar system.

Could It Be Direct Cometary Dust Entering Earth?

However, another explanation of current cosmic dust are both comets and collision of asteroids.

Comets often have dust tail. Those tails often extend many tens of millions of miles across space. As they near the sun, the comets outgas this dust. As a result, comets contribute a fair amount of new dust.⁶ Despite Steven I. Dutch pointing this out in 1982 in his article "A critique of creationist cosmology" *Journal of Geological Education*, Vol.30 (1982), 27-33 at 31), the same old arguments are simply repeated without addressing and rebutting what appear to be unassailable facts.

Dalrymple likewise pointed out long ago that dust is replenished from the collision of asteroids with themselves. Since asteroids are large enough to avoid the Poynting-Robertson effect generally, and there are so many traveling in the same orbital plane as the planets, occasional collisions of asteroids can explain the continual resupply of cosmic dust.

Yet, again, Dalrymple's obvious point from the early 1990s is ignored through 2007 by those who repeat the young earth argument over the Poynting-Robertson effect.

Later in another chapter, Ackerman unwittingly provides proof that asteroids create cosmic dust by his mentioning the discovery in 1983 of three dust rings in the asteroid belt beyond Mars. Ackerman will misinterpret this data to support a young universe. Nevertheless, it corroborates that asteroids are the origin of cosmic dust.

6. *Discover*, Nov. 1994, at 31.

Ackerman, nevertheless, concludes: “The fact that they [cosmic sphericals] exist in abundance in outer space, as determined by a number of observational evidence, is a strong indication that the solar system is not nearly as old as evolutionist scientists maintain.” (*Id.* at 33.)

What Ackerman must prove is that no dust of older origin than what we see once existed. He is correct that most of the cosmic dust we see is in fact recent (except the large dust ring caught in the earth’s orbital plane, as discussed above). It is a good deduction that any recent dust was produced by asteroid collisions. The existence of cosmic dust cannot prove a recent creation unless you can prove that there was no cosmic dust in space prior to the current stream of cosmic dust — at least none prior to 10,000 years ago if we follow Ackerman’s assumptions.

However, Ackerman's assumptions ironically are totally disproved by the updated Moon-dust figures that he so happily relied upon earlier to prove a young earth.

The Apollo missions established that the moon is buffeted by about 11 thousand MT of dust per year. This quantity would translate into 1.2 inches of dust for a moon of 4 bya, +/- .5. However, 2.5 inches was discovered. But when other sources of outflow and inflow are accounted for (*i.e.*, decomposition of ultraviolet light and radiation, other sources of erosion, inflow from larger meteorites and comets, and outflow from impacts that expel debris from the reach of the moon’s gravity), this is consistent with an age around 4 by.⁷

In other words, there has been cosmic dust accumulating for roughly 4 billion years on the moon. This disproves Ackerman’s implicit claim that no cosmic dust preceded the current cosmic dust.

In sum, no one disputes that most of the current cosmic dust in space must have a recent origin. Is that due to a young universe or a recent origin of this dust from cosmic

7. J.S. Dohnanyi, “Interplanetary Objects in Review: Statistics of their Masses and Dynamics,” *Icarus* 17 (1972) at 1-48.

collision? Other than the earth's dust ring (recently discovered), there is only evidence for dust from recent cosmic collision (*i.e.*, on the moon and the asteroid belt around Mars), but none due to a young universe.

Ackerman then makes the same argument about the meteor stream. He says that scientists do not know the origin of meteorites. If the stream were very old, then it would have sorted into various sizes in gradual symmetry according to the same Poynting-Roberson effect. (The larger objects would always trail in a stream of meteorite particles towards the sun.) Again, Ackerman has simply proven at best a recent origin of presently visible meteorites, but this does not mean you necessarily have a young Solar System. Fossil evidence on earth proves many meteorites date back (by several independent methods) as far back as 4.55 bya. Thus, numerous facts disprove his unwarranted extrapolation from the facts.

Frustrated Christian Scientists Against Popular Preachers

As one disgruntled Christian scientist wrote Dr. Kenney in 2005 about Kennedy's May 25, 2004 broadcast, it is misleading for Christian leaders to keep peddling this argument when the evidence is to the contrary:

2) Cosmic dust: You stated that the Voyager space probe(s) found three huge rings of dust between Mars and Jupiter, but the Poynting-Robertson effect, which you described with a bit of detail, would cause this dust to fall into the Sun in a relatively short period of time. That is certainly correct, but what ***you did not say is this dust can be shed by comets and produced by collisions***. For the former we can see this process happening today. A particularly good example was Comet Hale/Bopp in 1997 where you could look up in the sky and see a large dust tail. For the latter, all the asteroids we have looked at are pock marked with many craters, so obviously impacts have hap-

pened, and dust will be thrown out into orbit around the Sun in such collisions.⁸

In other words, Ackerman's argument over fifteen years ago is being broadcast in 2004 by Dr. James Kennedy. But it was refuted many times beforehand. Yet, evangelical pastors keep promoting this false evidence, and broadcast it on nationwide television. What explains this?

Short-Period Comets

Ackerman makes a related point in *It's A Young World After All* (1993). He says that we observe today many short-period comets that have an "average life-span of 1,500 to 10,000 years." (*Id.* at 37.) He then argues that if the "solar system were even as old as one-half million years, there should be no short-term comets left. Yet there is an abundance of them."

Unless Ackerman can rule out any source for short-period comets, his point fails. We have a ready answer in the presence of comets in long-period trajectories. If their trajectory requires millions of years for completion, they are the type that could survive billions of years beforehand.⁹ Thus, there is always the possibility that a long-period comet was per-

8. <http://www.csharp.com/kennedy.html> (accessed 12/14/07).

9. "You stated that we 'know' in two million years all the comets, long and short period, would have disintegrated if the Solar System were that old. ***In fact as many comets can survive several passages of the sun, but some cannot. Comets with orbital periods of about a million years would still be around,*** and this makes no assumptions about comets on orbits that do not take them into the inner Solar System, but are later perturbed by passing stars." (Letter to Dr. James Kennedy, April 2005 available at <http://www.csharp.com/kennedy.html> (accessed 12/14/07).

turbed in orbit and became what we now observe as a short-period comet. In fact, we know a small percentage of longer-period comets are changed into short-period of comets by just such perturbations.¹⁰

What is puzzling is how Ackerman could ever have deduced a young earth anyway merely from the presence of short period comets.

First, he admitted that “every time [a comet] passes close to the sun more of its substance is burned off and forever lost.” This loss of material, he says, “is the basis for a very important clock.” He is suggesting that we can know the maximum of how long a comet has been rotating around the sun by its current size. So Ackerman is saying that we know it is 10,000 years old today because it must have been bigger earlier and lost so much mass over the past 10,000 years. He cites no scientist for this alleged dating system of comets. (I suggest that what may deduce short-period comets by trajectory and size. We cannot know its maximum age because the trajectory and size can be altered over time.)

Ackerman then claims this is a dilemma that ‘evolutionists’ have solved by resort to “fantastic and impossible” notions of things like volcanoes in space. Ackerman’s only cite is the “scientific creationist” Harold Slusher’s *Age of the Cosmos*. And even this quote is again a non-sequitur: Slusher says the failure to find a mechanism for the origin of comets points to a very “short time scale” since their “creation.” (*Id.* at 40). How this follows is puzzling: it makes no sense. If you do not know where the comet is coming from, and even assuming you know it is only 10,000 years old, what have you proven about the age of the universe? You have maybe proven the comet is at least 10,000 years old, and hence the universe must have this minimum age. However, you cannot

10. Hugh Ross, Ph.D., *Creation and Time* (Colorado Springs, Colo.: Navpress, 1994) at 117. See quote in text connected to footnote 12 *infra*.

deduce from the “recentness” of some phenomenon that no older phenomena ever occurred. That would be a non-sequitur (it cannot follow), and logically must be rejected.¹¹

Moreover, it is not factually true that we have no reasonable explanation for the current supply of short-period comets. Comets are made up of gases and debris left over from star formation. They can condense just like a star does from huge gas and dust clouds abundant near the sun’s orbital path around the center of our galaxy. Ackerman mentions this theory of comet origins put forth by astronomer J.H. Oort, which led to the dubbing of this source of comets as “Oort’s cloud.” (*Id.* at 38) (Ackerman inaccurately says this theory only offers an explanation for the origin of “long-period comets.”) Ackerman attacks this theory on the ground “there is no direct observational evidence of either the shell (Oort’s cloud) or prospective stars or planets to disturb it.”

Hugh Ross, an astronomer and Christian, disagrees. He explains:

Even the supply of comets with short orbital periods is not at all threatened. ***A small percentage of the long-period comets and comets traveling along parabolic and hyperparabolic paths will get tugged enough by the gravitational pulls of the planets from their paths to transform from very large orbits about the sun.*** Multiplying this small percent-

11. What Slusher originally claimed was more logical, but was speculative. He said that “certain astronomers believe that comets, and the planets, came into existence about the same time. If this is true, then the lifetime of a comet can be estimated and the age of the planets accordingly determined.” Slusher, *Creation Research Society Quarterly* (June 1971) Vol. 8, at 55, 57. He cites no authority that any scientist made a claim of concurrent origins. I suspect that as it became more evident this was wrong, Slusher and supporters would not relinquish this comet-argument. They ended up still thinking some “date” could be extrapolated for the age of the universe from short-period comets.

age by the total number of comets that could be so perturbed ***yields a number big enough to explain all the short-period comets***, both those that are presently observable and those that existed in the past 5-billion year history of our solar system.¹²

In other words, you can deduce the presence of the material that comprises comets in the path our sun uses to orbit the center of our galaxy. You can then deduce how many would be changed into short-period orbits. The current figure matches prediction. Thus, short-period comets are often, in fact, really long-period comets put on a course that at first made us think they were short-period comets. The true facts point to an old universe.

Yet, even if Ackerman were correct, short-period comets only prove the minimum age for the universe. They do not prove that the universe is no older than 10,000 years.

12. Hugh Ross, Ph.D., *Creation and Time* (Colorado Springs, Colo.: Navpress, 1994) at 117.

