



God and the Astronomers

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In *God and the Astronomers*, Dr. Robert Jastrow, world-renowned astrophysicist, describes the astronomical discoveries of recent years and the theological implications of the new insights afforded by science into mankind's place in the cosmos. He explains the chain of events that forced astronomers, despite their initial reluctance ("Irritating," said Einstein; "Repugnant," said the great British astronomer Eddington; "I would like to reject it," said MIT physicist Philip Morrison) to accept the validity of the Big Bang and the fact that the universe began in a moment of creation.

God and the Astronomers Details

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Matt says

This was a great summary of the origins of the Big Bang Theory. The author, a prominent astronomer as well as an agnostic, gives a brief summary of the key scientists and their contributions. Interestingly, he talks about how many in the scientific community pushed back against the idea of a big bang because it suggested a beginning - a little too close to what religions have been teaching for millennia.

"Theologians generally are delighted with the proof that the Universe had a beginning, but astronomers are curiously upset. Their reactions provide an interesting demonstration of the response of the scientific mind - supposedly a very objective mind - when evidence uncovered by science itself leads to a conflict with the articles of faith in our profession. It turns out that the scientist behaves the way the rest of us do when our beliefs are in conflict with the evidence. We become irritated, we pretend the conflict does not exist, or we paper it over with meaningless phrases."

Jake Page says

Really interesting read. Robert Jastrow is a self-proclaimed agnostic, and he gives a history of the discovery of the new cosmology starting with Einstein and Hubble and ending today.

Evidence is given for the Big Bang (the universe exploded into existence in a moment, and is not eternal). The discovery of the expanding universe is also addressed, but the vernacular is not overly scientific. I love this topic because it always leaves the people studying it wondering how things got to be how they are on a cosmic scale.

He ends the book with this quote: "For the scientist who has lived by his faith in the power of reason, the story ends in a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries."

Erik Graff says

I'd read Gamow in elementary school and Jastrow's Red Giants and White Dwarfs in high school, supplementing such occasional forays into scientific cosmology with issues of Scientific American, but really didn't keep up with developments much. Graduating from seminary, however, gave me the time and an interest in reacquainting myself with Jastrow via this book about the philosophical, even theological, problems posed by contemporary astrophysics and cosmology.

Frankly, I found it perplexing that Jastrow primarily conceives of such questions as "what caused the big bang?" in theological terms at all. While the question may be valid, bringing in the god-concept introduces a whole lot of baggage which just obfuscates what is, more neutrally speaking, a philosophical question. Causality is more adequately addressed, I think, by Kant.

Frederick says

This book is terrible. Its just public relations for physics. Don't waste your time. I wish I could remember where I read that this was important. Yuchh.

Chanelle says

Very hard to read, but very interesting. I believe in the Big Band Theory now, but don't think it should be taught without recognizing God's place in it. My favorite part of the whole book is ~

"The scientist has scale the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock,, he is greeted by a band of theologians who have been sitting there for centuries."

Manny says

This book is enthusiastically quoted in Collins's *The Language of God* , and when I saw a copy going yesterday for only 5 Swiss francs I couldn't resist the chance to learn more. It's an odd piece of work, and its author seems to have been an odd person. According to Wikipedia, he had an extremely distinguished career at NASA, among other things serving as the first chairman of the Lunar Exploration Committee and leading the Theoretical Division for several years. But he was also a co-founder of the George C. Marshall Institute, which is described in the following terms:

Jastrow together with Fred Seitz and William Nierenberg established the George C. Marshall Institute to counter the scientists who were arguing against Reagan's Starwars Initiative, arguing for equal time in the media. This institute later took the view that tobacco was having no effect, that Acid Rain was not caused by human emissions, that ozone was not depleted by CFCs, that pesticides were not environmentally harmful and it was also critical of the consensus view of anthropogenic global warming. Jastrow acknowledged the earth was experiencing a warming trend, but claimed that the cause was likely to be natural variation.

The preface says that *God and the Astronomers* is based on a Phi Beta Kappa lecture given in 1978, and it does indeed have a somewhat insubstantial feel; it's short, and a lot of it consists of pictures. You can read the whole thing in a couple of hours, including the two afterwords. The basic idea is nice, and it's a thought I've had myself several times. Somehow, the faith-based community has dropped the ball as far as the Big Bang is concerned. Mainstream science was notoriously reluctant to accept the theory, and many scientists went on record as calling it Creationism in disguise. In 1951, Pope Pius XII even gave a public address where he said that the Big Bang provided scientific validation of Genesis. So how has the Christian Church allowed things to get to the point where Krauss, in *A Universe from Nothing* , claims that the Big Bang proves God *doesn't* exist? You (or, at least, I) can't help wanting to help save those poor creationists from themselves.

Well, Jastrow should maybe get some of the blame, because *God and the Astronomers* is a surprisingly poor piece of work. To start off with, it's one of the worst-produced books I've ever seen: the layout is horrible,

the editing is very bad (the same anecdote about Slipher is presented twice in the first two chapters), and at one point two pages actually appear out of sequence. The author expresses his gratitude to "Sally Bassett for exceptional dedication and ability in carrying out many tasks of editing, indexing and proofreading"; one wonders if this is ironic. The content is better, but, although Jastrow writes quite well, he is appallingly sloppy and careless with his facts. He misrepresents Hubble's discovery of the expansion of the universe. He makes it sound as though Einstein initially refused to accept the expanding universe for religious/philosophical reasons (Einstein just hated singularities, and was equally skeptical about black holes), and he gives the impression that Einstein reluctantly endorsed it only near the end of his life (he was a convert by the early 30s). Most surprisingly, Jastrow makes obvious mistakes when describing how the chemical elements are formed in stars. If he'd looked through Hoyle's 1955 *Frontiers of Astronomy* - a best-selling popular science book in its time - he'd have seen that his account was quite wrong.

Perhaps the most interesting thing about the book is that, once again, it shows how hard it is to decide what can and can't be understood by science. The philosopher Comte famously said in 1835 that it would never be possible to know what the stars were made of; 30 years later, Huggins used spectroscopy to prove him wrong. Here, Jastrow says in 1978 that we will never be able to understand what happened in the Big Bang, because all the evidence was destroyed by the enormous temperature of the early universe. And again, just 30 years later, WMAP produces a detailed picture of the Cosmic Microwave Background Radiation, which gives a wealth of information about what happened.

Nonetheless, Jastrow seems to have sold reasonably well, while Kragh's meticulously researched *Matter and Spirit in the Universe: Scientific and Religious Preludes to Modern Cosmology* is virtually unknown. And it's not random. With all his faults, Jastrow is entertaining, while Kragh's book - it pains me to admit it - often left me feeling rather sleepy. There's a lesson here, though it's a depressing one.

Jastrow is unflatteringly mentioned in Donald Prothero's chapter, "The Holocaust Denier's Playbook and the Tobacco Smokescreen", from Pigliucci and Boudry's *Philosophy of Pseudoscience*:

... one of the key strategies of tobacco companies and other organizations trying to deny an inconvenient scientific reality is to look for anyone with credentials who will serve as a "front person" for their cause and give them scientific credibility. These "experts" often turn out to be scientists with no relevant training in the field in question, yet because of their past (irrelevant) scientific laurels, they are taken seriously by the press and public. The shocking thing that Oreskes and Conway document in their 2010 book *Merchants of Doubt* is that just a few individuals (Fred Seitz, Fred Singer, William Nierenberg, Robert Jastrow and a few more) were at the front of every one of these attempts to deny scientific reality... defending tobacco companies, energy companies, chemical companies and the like against the evidence for smoking-related cancer, secondhand smoke, anthropogenic global warming, the ozone hole, acid rain and the "nuclear winter" scenario.

Joshua Johnson says

Written by the agnostic Dr. Robert Jastrow, a prominent astronomer, cosmologist, and physicist, this work is notable for its introductions to some of the key players in the evolution of scientific thought on the current

models of the known universe. Jastrow's work is notable for his bemused notation of the fact that many "objective" and "rationalist" scientists are in fact rooting for certain outcomes and ideas, and are not the impartial seekers of truth they are often portrayed as in media and culture. This rooting takes especial form in intellectual attempts to seek out evidence which will preclude the need for a belief in a designer or a creator. Worthwhile for those seeking enlightenment regarding the intellectual climate of the sciences.

Tom Meyer says

A fascinating book that has aged both extremely well and extremely poorly.

As a short history of 20th century astronomy, it holds up remarkably well, even after 30 years. Starting with the realization that there are galaxies other than our own at the turn of the century, the book follows the series of discoveries that led to the theory -- and later confirmation of -- the Big Bang, and does so in a very conversational, easy-to-follow way. Jastrow also goes out of his way to humanize the subject by spending a good deal of time on the biographies of some of the scientists involved.

Its philosophical discussion, however, is remarkably outdated; frankly, that's what makes the book so interesting. Jastrow was amazed at how many of his colleagues (especially among those who were atheists) took an instant disliking to the Big Bang. This dislike had little to do with the evidence for the theory; rather, it was based on a philosophical prejudice against a universe that had a definitive First Cause without antecedent. If the universe was created, it follows that there may be a Creator. Jastrow comes to no definitive conclusion, but strongly implies that religion may have the last laugh on the scientists.

What makes this so outdated is that this controversy no longer exists; though some scientists may have resisted the theism-friendly Big Bang initially, none do so now. After examining the evidence (and their biases), they've abandoned their old ideas in favor of the new ones that better explain and predict the Cosmos. Compare that with Creationists who -- 150 years after *The Origin of Species* -- are still opposing evolution for philosophical, not empirical reasons.

Matt Friedman says

In spite of a sometimes uneven writing style, a great account of the development of the Big Bang theory, and the inherent theological implications found therein. One of the most quoted lines concludes the penultimate chapter.

Merilyn says

A very easy read...mostly biographical and historical from the early 1900s to the 1978 copyright date. I read it in one sitting and enjoyed the afternoon spent with it.

Joseph Wetterling says

This is a short, relatively easy read. Jastrow manages to cover some complex and important topics - evidence for the expanding universe, Hubbles law, the birth of stars, and the source of heavy elements - in an understandable way. This is a worthwhile read for those central "a-ha" moments.

Geoff says

God and the Astronomers

Astronomers (Hubble, Humanson) discovered galaxies moving away from the earth. Thus, the universe is expanding. Red light shifts were used to measure how fast the galaxy was moving away from earth. This indicates a start to the universe. Repudiates the 'Steady State' theory of the Universe. Hubble's law: objects further away moving faster and further than closer objects, like drawing two spots on a balloon. Blow the balloon up with air, as the spots move away from each other, the further away the spot gets from each other, the faster it moves away from the other spot. (I think, made this up on as I write this. The air in the balloon would have to be a 'steady' flow).

The concept of an expanding universe at first upset Einstein b/c this pointed to a definite beginning of the universe, which implies a creation or 'prime mover' as the scientist like to say, that started everything. The 'big bang' theory is the start the author believes in, but he does not rule out a that the creation of the big bang was in fact caused by God. So this is a marriage of the believe in God and cosmic evaluation. Well this is nice, better than the believe in no God I guess. And at least the author admits that creation is outside the realm of standard science, e.g. it is not observable and subject to replication is scientific experiments. Which is also nice. But this book was written in the 1980's. Since then the hostility towards religion by science has gone up in degrees, just look at Niel Degrass Tyson's opinions.

Carol Mann Agency says

Dr. Jastrow places the facts before us so lucidly that the Cosmos becomes a living thing. -- John Barkham
Reviews

Jastrow's scientific credentials are impeccable. And he knows how to write for the layman. -- The New York Times

Lucid, delightful, instructive. -- The Wall Street Journal

Robert Jastrow ranks among the top writers on astronomy. -- Publishers Weekly

Zarah says

Easy to read through if you're like me and science goes over your head.

Overall it was interesting and a good summary of how a "beginning" was found and the expanding universe theory.

I see a lot of comments about how this book is pointless...for only the creationist...but as a creationist I have to tell you I find it kinda funny when the anti-religious people say Jastrow didn't need to tie in God...well of course he didn't need to. (He also points out how science is very much so like a religion--cough cough.) The point is that what theologians believed in--a beginning--was found to be true. Jastrow is still agnostic; this book has nothing to do with creationism.

There have been plenty of biblical things backed up by science--it's interesting sure, but it's not the reason I believe in the bible. Why? because scientific theories can, and have, changed.

Also, I think before anyone reads this book they need to realize it was published in 1978.

1978.

It doesn't make the book useless, but science discovers new things all the time. This book is a bit dated.

Overall, I still am glad to have read it because it was a small history of the evolution of science during the time these discoveries were being made.

That was more of a rant, but oh well.

Jeff says

If every effect in science has a cause, what caused the birth of the universe? Have scientists, with ultimate irony, brought themselves face to face with the possibility of God?

I quote Dr. Jastrow's astonishingly candid closing statement in the last paragraph of this book as the best summation of this book's premise:

"For the scientist who has lived by his faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak. As he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries."
