

operation, a new neutrino detector with unprecedented sensitivity has confirmed yet again that solar neutrinos are only about half as common as researchers predict when they combine nuclear physics with profiles of the Sun's internal temperature and pressure.<sup>3</sup> The Super-Kamiokande detector, a 50 million litre water tank one kilometre underground in the Kamiokande mine, 'catches' roughly 10 neutrinos daily.

Since the efficiency of the claimed nuclear reaction responsible strongly depends on temperature, astronomers could conceivably explain away the shortfall by positing that the Sun's core is slightly cooler than thought. However, since helioseismology has 'pinned down' the Sun's central temperature (15.6 million degrees Kelvin), this 'out' is no longer viable. Instead, physicists now favour the hypothesis that neutrinos may

'oscillate', spontaneously transmutating between different varieties (electron, muon and tau neutrinos) and thus changing their properties *en route* from the Sun's core to the Earth.<sup>45</sup> Allied to this is a recent added twist — the neutrinos may supposedly undergo decay — but this requires abandoning the almost sacrosanct 'relativity principle'.<sup>6</sup> Only further years of experiments will begin to test these attempts at explaining this critical shortfall in the solar neutrinos detected.

So *'after 10 years, no one has yet explained all the data on neutrinos'*? Of course there's one explanation not considered — perhaps the reason for the critical shortfall is that nuclear reactions are not solely responsible for producing the Sun's energy. But such an explanation would be tantamount to an admission that we really don't yet know how the Sun operates, which would clearly be embarrassing. And

if we don't understand how our nearest star operates, how can the astronomers be so sure how all the other stars 'evolved' and now operate? As candidly admitted by David Malin, head research scientist at the Anglo-Australian Telescope, in a recent interview on Australian ABC radio, *'How little we really know!'*<sup>8</sup>

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## Galaxy-Quasar 'Connection' Defies Explanation

Astronomers have known for decades about the strange 'connection' between the galaxy NGC4319 and the quasar Markarian 205 (see Figure 1).<sup>1</sup> Without any explanation so far, astronomers are still baffled, and with good reason.

Figure 1 is a reproduction of an isophote image of the galaxy and quasar made by superposing a number of photographic plates taken by Halton Arp using the 200-inch Palomar telescope.<sup>2</sup> The image clearly shows that a luminous 'bridge' connects the two objects which is distinct and well away from any 'pixel [picture element] bleeding'.<sup>3</sup>

So what is baffling about such a clear linkage between this galaxy and its apparently close neighbouring quasar? The 'basic' problem is that the galaxy and the quasar have discordant red-shifts, which according to the standard (Doppler) red-shift interpretation means that the galaxy is

receding at a velocity of 1800 km/sec, whereas the quasar is travelling at 21,000 km/sec. Thus, according to the Hubble law, the galaxy is 107 million light years away and the quasar is 12 times further away at 1.2 billion light

years! Obviously, this simply cannot be, because the galaxy and the quasar are clearly connected together by a 'bridge', probably of luminous gas filaments. They give every appearance of existing together.

Some critics have claimed that the bridge is only an illusion, but Arp and his colleagues have staunchly defended the reality of this connection for many years, and Arp's photography (Figure 1) has documented it. Ignoring this cosmological 'anomaly' won't make it go away! Perhaps red-shifts may not be connected with recession velocities and so may not be a reliable index to distances in an expanding universe after all. These are very fundamental questions to our understanding of the universe. In the words of astronomer William Kaufmann: .

*'If Arp is correct [about red-shifts not being distance indicators], if his observations are confirmed, he will have single-handedly shaken*



Figure 1. Isophote image of the galaxy NGC4319 (top) and the quasar Markarian 205 (bottom) clearly showing the 'mystery' luminous bridge connecting them (north is up, east is left).

all modern astronomy to its very foundations. If he is right, one of the pillars of modern astronomy and cosmology will come crashing down in a turmoil unparalleled since Copernicus dared to suggest that the sun, not the earth, was at the center of the solar system.<sup>4</sup> James Waterhouse is thanked for

bringing this unresolved 'anomaly' to our attention, and for providing the reproduction for Figure 1.

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## Cosmic Snowballs Bombard the Earth?

Images from a NASA satellite suggest that the Earth is bombarded every day by thousands of 20 to 40 tonne house-size snowballs, a previously unknown type of interplanetary object.<sup>1</sup> These frozen missiles are believed to break up high above the Earth's surface and send down a gentle cosmic rain (Figure 1).

At the same time as NASA released pictures taken by its Polar satellite, Louis Frank of the University of Iowa announced the discovery.<sup>2,3</sup> This is the same Louis Frank who caused a furore in 1986 when he claimed that NASA's Dynamics Explorer satellite had spotted icy chunks plunging into the atmosphere at the rate of 20 a minute.<sup>4</sup> After vigorous scientific debate back then, virtually all other astronomers dismissed his claims as a misrepresentation of the satellite's observations.

Undaunted, Frank persevered with his research on these mini-comets or cometesimals, which Jerry Bergman reported here in the **Creation Ex Nihilo Technical Journal**.<sup>5</sup> And vindication has now apparently come. The Polar satellite carried a camera with sharper resolution and produced more detailed images of small dark holes in the ultraviolet (UV) emissions that radiate upwards from the Earth.<sup>6</sup> The holes, asserts Frank, are caused when the ice from the mini-comets

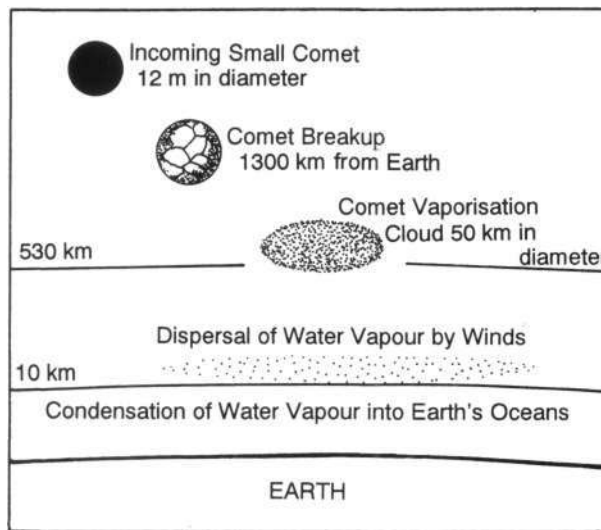


Figure 1. The fate of hypothesised small comets entering the Earth's atmosphere.

melts, generating small clouds of water vapour that briefly block UV emissions from below. However, the mini-comets do not pose any threat to life on Earth because they melt while they are still hundreds or thousands of kilometres above the planet (see Figure 1).

Thomas Donahue of the University of Michigan at Ann Arbor, who has been one of Frank's most vocal critics in the past, says that Frank has now proved his case.

*'My attitude has changed from one of very great scepticism to one of fascination. All in all, the observational evidence is overwhelming.'*<sup>7,8</sup>

Two separate instruments on the satellite, including one that Frank did not operate, registered the holes, and

the ice chunks 'move as they should move', he says. Whereas on earlier images the dark spots were usually only the size of one pixel (picture element) and were thus mostly written off by sceptical colleagues, on the Polar satellite images the dark spots span clusters of pixels thus confirming their existence. Furthermore, Frank has images that appear to show the postulated snowballs hurtling towards the planet. When the UV and visible-light cameras looked just above the Earth's atmosphere, they detected long streaks of bright light which Frank interprets as sunlit

clouds of water vapour and other gases coming off some of the snowballs as they near the Earth.<sup>9</sup>

So it was a science story the media could not resist — the detection of mini-comets up to 40 feet (12 m) or more across pelting the Earth at the rate of one every few seconds, each dumping tonnes of water on us. Around the world, newspapers and magazines carried the astonishing Polar satellite image of one such object breaking apart 15,000 km above the Atlantic.<sup>10</sup> But surely, said the critics, such large objects would be seen by even the most casual observer as 'shooting stars' tearing across the night sky.

In fact, they have been observed, but mainly by those who have been