Doubting Dada Physics

by Tom Bethell

I reached Petr Beckmann by phone at the Community Hospital in Boulder, Colorado. He sounded very weak. He had an infected kidney, a complication of prostate cancer. He was eager to get back home so he could finish the July issue of his newsletter, *Access to Energy*. He would be telling his readers that he couldn't go on publishing it and that his good friend Art Robinson would soon take over. (A biochemist, Robinson was at one point scientific director of the Linus Pauling Institute.)

Beckmann has long been an inspiration to me. His newsletter exposes the political abuse of science, and brilliantly elucidates many scientific issues. In his house in the foothills of the Rockies, he has a printing press, and there he also publishes a journal called *Galilean Electrodynamics*. Over the last twenty years he has published many other pamphlets and books: *The Health Hazards of Not Going Nuclear*, *Musical Musings*, a book about language.

He was born in Prague in 1924. Both his parents were Communists. A refugee in England during World War II, he joined a Czech RAF squadron and repaired radar equipment. After returning to Czechoslovakia, he earned a Ph.D. in electrical engineering, then defected to the U.S. in 1963. He taught at the University of Colorado until he took early retirement in 1981. I have had the privilege of talking to him for many, many hours, and one day I hope to write a memoir of him. At some point in the next century, I believe, people will want to know more about this solitary genius, who found his own audience and published his own ideas and discoveries at a time of growing intellectual corruption in the academy. Above all, he is likely to be remembered for having undermined Einstein's theory of relativity, and for showing how physics could be returned to the classical foundations from which it was dislodged at the beginning of the twentieth century.

Ever since he learned relativity theory, Beckmann felt there must be something wrong with it. When he retired from teaching, he returned to the subject, spending several years on a book called *Einstein Plus Two* (1987).[1] He believes now that relativity theory "has been confirmed only in a narrow sector of physics, leads to logical contradictions, and is unable to derive results that must be postulated, though they are derivable by classical methods." He also believes that the theory is definitely falsified by the aberration of light from binary stars. An article to this effect will be published in the next issue of *Galilean Electrodynamics*.

The problem that Einstein tried to solve, the new problems that arose with his solution, and Beckmann's brilliant resolution of all these difficulties, are not so difficult as they may sound. In fact, mystification has greatly enhanced Einstein's reputation. I hasten to add that Beckmann is a great admirer of Einstein, whose famous equation of energy and mass, $E=MC^2$, is unaffected by all this; in fact, it was derived independently of relativity.

By the mid–nineteenth century, the evidence that light travels in waves had become overwhelming; wave theory accounted for refraction, polarization, and many other phenomena of light. The great puzzle was to understand what medium it travels in. Sound needs air; light needs . . . what? It can travel through a vacuum, through interstellar space. But if it is a wave, there must be an oscillating medium, however rarified. This medium was called the "ether" and the great challenge for nineteenth-century physicists was to detect it.

The most famous experiment was carried out by Michelson and Morley in 1887. Since the Earth must be moving through this ether in its orbit around the sun, it should be possible to detect an "ether wind," just as it is possible to feel the wind by putting your hand out a moving car. Albert Michelson, the first American to win the Nobel Prize in physics, designed the apparatus to measure it. But despite repeated attempts, no ethereal breeze could be detected. (Michelson's "interferometer" had been expected to measure a "fringe shift" where criss-crossing light rays were brought together.) This "null result" threw the world of physics into disarray. A wave without a medium!

Enter Einstein, fresh from the Bern Patent Office. He posited that there was no medium, and that the speed of light is the same in all directions, irrespective of the motion of any apparatus set up to detect it. His famous 1905 paper, setting forth the special theory of relativity, demonstrated that if these odd assumptions are made, everything can be shoe-horned in mathematically. But it *was* odd. If a sound wave moves toward you at 750 miles an hour, and you walk toward it at 5 mph, you will detect the sound approaching at 755 miles an hour. Observation agrees with common sense. The same is true of all other waves one can think of. But not electromagnetic phenomena (including light), said Einstein. The velocity of light was accorded a privileged, "absolute" status. Move toward the light source, and you will detect it approaching you at the same speed as someone who is standing still.

That was where absurdity came in. To preserve the absolute nature of the speed of light, space and time had to be distorted.

Tom Bethell is The American Spectator*'s Washington correspondent.*

[1] Available for $36 from Box 251, Boulder, Colorado 80306. Warning: It's technical.

Two twins are the same size: If A moves, he sees B smaller than himself. But B likewise sees A as smaller than *him*self. Which is absurd. Reality becomes observer-dependent, in opposition to the most basic precepts in science. The alpha and omega of the material world—the irreducible character of time and space—were sacrificed in order to preserve an absolute velocity. But velocity itself is nothing but space (distance) *divided* by time! This was Dada Physics. (It's interesting that the Dada movement, "having as its program the discovery of authentic reality through the abolition of traditional cultural and aesthetic forms," came right after the general relativity theory [1915].)

Beckmann says that most students of physics shrug and accept relativity theory—theirs is not to quarrel with the sainted genius of the twentieth century. Some have private reservations. Among intellectuals in general, the theory has been much admired: so abstruse, so deliciously disrespectful of the eternal verities, so marvelously baffling to the bourgeoisie. It doesn't interfere with the daily routine, makes no practical difference to the Newtonian world. But it does upset its theoretical underpinnings. Wonderful! The Muddled Majority who feel so reassured by their common-sense understanding of the world just don't realize that things aren't what they seem to be at all.

Pondering the theory in the late 1950s at Prague's Institute of Radio Engineering, Beckmann concluded that there had to be a medium for light, and in an offhand comment, a student named Pokorny, a (then) devout Communist, suggested the correct answer, as Beckmann is now convinced: the medium for electromagnetic waves is the local gravitational field—dense near the sun, attenuated in outer space. On Earth, the local field is that of the Earth itself. The point is, the Earth's gravitational field moves along with the earth. So that was why Michelson-Morley could detect no ether wind. It was like sitting in a jet as it goes down the runway, holding a toy propeller in your lap and expecting the wind to turn the blades. Absurd—the air in the cabin is moving forward with the plane.

But wait! The Earth also rotates on its axis, and there is good reason to think that the gravitational field does not go around with the Earth. Imagine this field as a hoop skirt on a woman with a circular waist. As she walks forward the skirt moves with her. But then, as she walks, she pirouettes, and now her body will slip around inside the skirt.

If this analogy is correct, the Michelson-Morley experiment might have been able to detect a fringe-shift after all—but a much smaller one than they had been looking for. In the latitude of New York the rotational velocity of the Earth is just one-hundredth of its forward movement around the sun. The relevant equation requires that this fraction be squared. So the expected fringe-shift would only be one ten-thousandth of what Michelson-Morley looked for. Even with today's equipment, such a shift would be difficult (although possible) to detect. It could easily be detected on the space shuttle, because the shuttle goes through the gravitational field much faster than the Earth.

Here are a few little-known points, casting doubt on Dada Physics. Michelson himself never accepted relativity theory, and toward the end of his life he developed an "entrained ether" theory similar to Beckmann's. In 1925, with a colleague at the University of Chicago, he did a complex experiment with very long light-paths (Michelson-Gale), and it did show a confirming fringe-shift. The experiment is omitted from almost all physics texts today.

Electromagnetic signals travel from Washington to Los Angeles more quickly than they do coming back. The difference is very small—37 nanoseconds—but consistent and repeatable. This is exactly what Beckmann's theory would predict, but it is something of an embarrassment to Einstein (who did not know about it; only recently have clocks been accurate enough).

Howard Hayden, a professor in the Physics Department at the University of Connecticut (Storrs), has taken up the cudgels for Beckmann, and has been giving talks on the subject to physics departments in New England. The response has been respectful: some puzzlement, no contradictions, only one or two indignant folk walking out in a huff. Hayden makes the following amazing claim: the constancy of the speed of light, irrespective of the observer's movement, has not been demonstrated experimentally. Hayden and Beckmann are offering a $2,000 reward (hereby offered to *American Spectator* readers) to anyone who can (pay attention) cite in the literature a valid optical experiment demonstrating that the speed of light east to west on the Earth's surface is the same as it is west to east, to an accuracy of 50 meters per second. Note: the experiment does not have to be done, merely cited. In response to an earlier article I wrote on the subject, this offer was published in *Science* magazine (November 30, 1990), but there were no takers.

Beckmann now says that the aberration of light from binary stars definitely refutes Einstein. "Without any equivocation," Hayden confirmed, "I can say that the stellar-aberration prediction of Einstein is wrong." Hayden's goal is to repeat Michelson-Morley in the space shuttle. He thinks he may have a shot because one of the astronauts is his former student.

Here's another surprise. A heralded confirmation of Einstein was the small discrepancy between the orbit of Mercury and the result predicted by Newton. Einstein's formula explaining Mercury's orbit was published in 1915 and was derived from general relativity, using very complex mathematics. Beckmann then found out that the same formula exactly had been published in 1898 by a man named Paul Gerber, who lived in Stargard, Germany, and was apparently a high school teacher! Gerber had used classical physics, plus the assumption that gravity propagates with the speed of light, not instantaneously, as Newton had assumed.

Beckmann found this information in another self-published book, put out in 1982 by someone in Cornwall, England. When the author heard that Beckmann's Czech/RAF squadron had been stationed in Cornwall, he sent Beckmann a free copy. "The guy's a nut," Beckmann said when he saw it, "like people who say chess is in the Bible." Gerber had beaten Einstein by seventeen years, using classical physics? How come this wasn't in the textbooks? Beckmann immediately bicycled to the U.C. library, pulled the old journal off the shelf. "The Einstein formula jumped out at me," Beckmann said. "I was dumbfounded."

When I spoke to Beckmann more recently at the Boulder hospital he said in a faint voice: "Einstein is dead. But it will take decades to bury him." ❐