

OF HIGHER ORDER

"Terms of higher order can be neglected."

—Ptolemy.

Names, names, names

Before I learned about the places where high-energy physics is done, I was under the impression that Frascati came in bottles. But the world's physicists have taken all the old familiar names and given them strange new meanings. To the average boy Copenhagen means beautiful blond girls, but ask a physicist. Orsay used to be the name of a suburban train station in Paris (in the present political climate it will hardly do to mention the French foreign ministry), and Fontenay-aux-Roses should belong to the troubadours. But what has happened to it?

Sometimes physicists and technologists are also poetic, however. Wind-scale and Winfrith Heath sound like inventions of the Brontës. Where do the French study electron optics? Toulouse. In defense one could say that there is something Manichaean about matter being waves. When they use Carcassonne's circular ramparts to shield a synchrotron, I shall quit. Meanwhile, they have built a solar observatory on Capri. The next thing is a fusion laboratory at Naples (O sole mio!) and an oceanographic station at Sorrento (torna a Surriento, but don't forget to bring plankton).

Seriously, there is likely to be grave

confusion in this nomenclature. One example: The university of Iowa has a large research center at the town of Ames. If one says of someone, "He is at Ames," one might assume he was in Iowa. Then it turns out that there is something called the Ames Research Center in California, which is not in any town called Ames. Is the Rutherford Laboratory part of "Harwell" or isn't it? When one gets one of those classic British addresses, what does one do with it: Cheddar House, by Hangman's Crossroad, Upper Icechester, near Swampbottom, Berks. If you were going there, how would you start? Perhaps ICSU ought to set up a tradename registry for scientific laboratories under the provisions of a treaty that would forbid them to have the same, similar or confusing names. Like Actors' Equity it would register everyone's stage name and patent it to one place only. Laboratories would not be allowed to have institutional names reminiscent of the locations of competitors. We all know that there is a large and significant laboratory at Dubna, but suppose the Russians had an old Bolshevik named Dubna, whom they wished to memorialize with an institute, and went and built his memorial in Petropavlovsk. Something should be done about this sort of confusion before it spreads.

An interview with Professor Murphy

Few physicists have discovered so fundamental a physical law as the elusive Professor Murphy. (He is so elusive that we never did succeed in finding out his first name.) Yet, in spite of his renown, he has never won a prize,

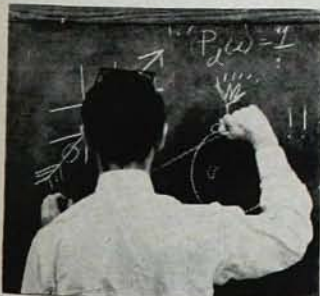
neither a Nobel nor even a gold medal. Recently, meeting him by chance, we took the opportunity to ask him a few questions:

• *Professor Murphy, how did you come to discover your famous Law of Disproportionate Disaster?*

"Well really it dawned on me gradually over many years, but the first time I noticed something fishy came shortly after I started my career."

• *What happened then?*

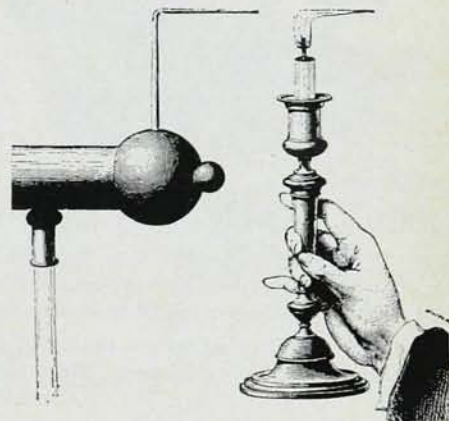
"I was doing an experiment in vacuum physics, it was many years ago in the days when we used complicated messes of glass tubing. What happened was that a gasket failed. You really



MURPHY

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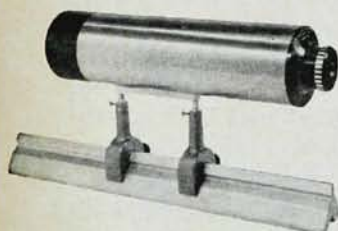
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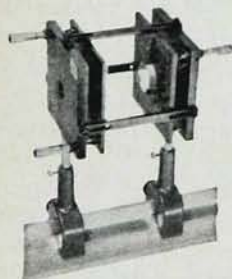
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should have seen what followed that.”

- *After that first experience, were there many others?*

“Hundreds. But it was twenty years before I felt I had enough data to publish.”

- *Was your publication the first mathematical statement of Murphy's law?*

“Probably. But when you speak of mathematical formulation, you have to distinguish among simple disproportionate disaster, compound disproportionate disaster and disproportionate disaster in mathematical physics. Which would you prefer to have?”

- *All three, but let's start with the simple case.*

“The simple case occurs when you have an experiment with essentially only one physical operation going on. Mathematically we express it as $P_d(x) = 1$. In other words the probability of disaster during the operation equals unity. Now if you have several operations going on at once—say a vacuum pump, an electron gun and other stuff—then you have the compound law. It's a function of the same form but depends on all the variables you happen to have around and gives a probability of unity for disaster involving all operations together. With both laws going at once, everything is sure to go to smash.”

- *How about mathematical physics?*

“Very simple. Any differential you manage to devise simply can not be integrated.”

- *That would seem to make mathematical physics pretty hopeless.*

“I agree with you that mathematical physics is hopeless but not for that reason. There are after all numerical methods, and then there's Finagler's Constant, discovered by a good friend of mine. It took him many years of dedicated fofzing, but he finally announced that in mathematical physics Finagler's Constant always cancels Murphy's Law.”

- *So mathematical physics goes on.*

“Could anyone doubt it?”

- *Do you know how Finagler made his discovery?*

“He was doing an investigation in elasticity, something about how far a rubber band would stretch, and the solution just hit him in the face.”

- *Thank you, Professor Murphy.* □

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