

... Brain

purines have a spectrum of behavioral effects, Goodwin says, including anti-anxiety and anti-convulsant properties similar to the drugs. Goodwin points out that drug companies, independently developing analogs to the anti-anxiety drugs, have synthesized chemicals that resemble purines.

The new understanding of the mechanism of benzodiazepine action should help in the design of better drugs, Tallman says, "and purines may be best." □

Samuel A. Goudsmit dead at 76

Spin is that mysterious, misnamed, misunderstood property of subatomic particles that dictates so much in their behavior. The amount of it they have determines the statistical laws they obey, and therefore whether they are a secure building block for structures. If electrons did not have spin in the amount they do, there would be no atoms and thus no chemistry, no biology, no geology, no solid state physics.

The spin of electrons was discovered in 1927 by two doctoral students at the University of Utrecht in the Netherlands, Samuel A. Goudsmit and George E. Uhlenbeck. Its discovery was a kind of capstone of early quantum mechanics. It answered the serious outstanding questions about the details observed in the spectra of

atoms. At the time there was great rejoicing.

Many physicists have thought that Goudsmit and Uhlenbeck should have had a Nobel prize for the discovery, and in 50 years the Swedish committee has been repeatedly memorialized to that effect. Now it will never happen. Goudsmit, who had been teaching at the University of Nevada at Reno, died there on December 5. He was 76.

Goudsmit was born in The Hague into a family of business people. He once confounded a sociologist, who was interviewing physicists to prove the proposition that pure scientists came from families of intellectuals, by saying: "My father was the manager of a toilet seat factory. My mother had a millinery business." And then, when the audience had tumbled to what he had said about his father: "Don't laugh. Toilet seats were a good business—at least until the bottom dropped out." It was always dangerous to hand Goudsmit a straight line, but, if you didn't, he would hand himself one of his own.

Against the family's advice he went to Utrecht to study under Paul Ehrenfest, one of the greatest of Dutch physicists. When his doctorate came, in spite of his already existing world fame among physicists, the best job offer in the Netherlands was secondary teaching in a provincial town. Then the University of Michigan offered him and Uhlenbeck faculty positions, which they both accepted. Of his move to the United States Goudsmit later made a

revealing remark. In response to a question about an American physicist who had moved to the Netherlands at the same time: "It was an exchange reaction. He became a Hollander, and I became an American."

During the Second World War Goudsmit was a member of Project Alsos, a group of American scientists who monitored German research on nuclear weapons. In the course of that work, Goudsmit was with some of the first Allied troops into Holland and discovered that his parents had been murdered in the Nazi massacre of the Dutch Jews.

After the war he became chairman of the physics department at Brookhaven National Laboratory. He served concurrently as editor of *THE PHYSICAL REVIEW*, *PHYSICAL REVIEW LETTERS* and finally managing editor of all the publications of the American Physical Society. Here he promulgated Goudsmit's Law, the physical equivalent of Ingelfinger's Rule in medicine. Goudsmit's Law says that newspapers and magazines shall not mention a physics result until it has been published in *PHYSICAL REVIEW LETTERS* first. Many science reporters must have gained an appreciation of his forthright and somewhat acerbic personality by arguing with him over that. After he "retired" from Brookhaven, he went to the University of Nevada.

It would be nice to be able to say that he departed this world with an appropriate one-liner, but the fact is he was found dead of a heart attack in his car. □

Based on recent findings of neurosurgeons, clinicians and psychologists as well as the author's own experiments and observations, this path-breaking study shows how we think and why we behave as we do. Written for both the scientist and general reader, it covers basic human capacities (speaking, learning, loving, hating, dreaming) as well as the philosophical problems of creating, knowing, and believing. Illus. \$14.95.

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J. Z. YOUNG
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