

later how they had learned of the tragedy often provided substantially different descriptions (SN: 2/2/91, p.78).

Unlike many previous studies, Weaver's experiment compared flashbulb memories to those associated with an everyday event. The Texas psychologist instructed a group of college students to do their best to remember all the circumstances surrounding their next meeting with a friend or roommate. Immediately following these incidents, participants wrote down answers to a questionnaire inquiring about what they did during the encounter, what time and where it took place, what clothes they wore, what they thought during the meeting, and who was there. Volunteers also rated the amount of emotion and surprise they felt during the meeting and their confidence in the accuracy of their memories.

By coincidence, on the same day students received the questionnaire — Jan. 16, 1991 — the United States began the bombing of Iraq that signaled the beginning of the Persian Gulf War. When students arrived at class two days later with their first set of completed questionnaires, Weaver administered a similar questionnaire asking about their memory of the bombing and the degree to which it had surprised and upset them.

A total of 22 students participated in the study, which included three-month and one-year follow-up questionnaires.

Assuming that participants' original memories were on the mark, memories of both events decreased comparably in accuracy three months later and held steady when assessed at one year, Weaver reports in the March *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: GENERAL*. The amount of detail correctly recalled after one year remained impressive, indicating that the decision to remember even a trivial event can make a big impact, he maintains.

Students consistently rated their confidence in memories of the bombing considerably higher than their confidence in memories of the personal meeting. However, greater confidence did not lead to markedly improved accuracy in recalling bombing-related events.

Rather than entering a special preservation system in the brain, flashbulb memories may serve as benchmarks in our lives that connect personal histories to cultural history, Weaver suggests. People often choose to enshrine memories of individual experiences that provide a link to a significant public event; communications media then maintain the memory of the public event, inflating confidence in associated personal memories.

"In the future, these students will confidently report memories of where they were when the first war of their generation took place, but they may be no more accurate than memories for other personal events," Weaver concludes.

— B. Bower

Fungi study harvests Westinghouse prize

The outcome of this year's Westinghouse Science Talent Search would have made Swedish botanist Carolus Linnaeus smile.

That's because first-place winner Elizabeth Michele Pine, 17, following in the footsteps of the 18th-century taxonomist, tackled the classification of a group of fungi called false truffles. Last week, Pine, of Chicago, received a \$40,000 college scholarship for this research, part of a \$205,000 pot awarded to 40 young scientists.

Though often identified by the stem and cap that poke out of the ground, mushrooms and other fungi can fool even experts. "[Some] can look very similar; yet they are no more closely related than a skunk is to a sea otter," Pine explains. A student at the Illinois Mathematics and Science Academy in Aurora, Pine studied whether the shape of microscopic spores would prove a better indicator of kinship among these plants. She compared DNA from false truffles with DNA from *Laccaria* mushrooms, which produce similar spores. Her results indicate that taxonomists should probably reclassify false truffles as belonging to the *Laccaria* genus. Understanding these relationships is a necessary first step to studying and using fungi, Pine adds.

The judges awarded a second-place, \$30,000 scholarship to Xanthi M. Merlo, a 17-year-old senior from Washington Park H.S. in Racine, Wis., for her work examining the role of a recently discovered blood protein in clotting. Sixteen-year-old Lenhard Lee Ng from Chapel Hill (N.C.) H.S. took third, earning a \$20,000 award for a mathematics project.

Three students received \$15,000 scholarships. Fourth-place winner Constance Lee Chen, 17, of La Jolla (Calif.) H.S. studied two genes important in the development of cancer. For his fifth-place project, Ryan David Egeland, 18, of Wayzata Senior H.S. in Plymouth, Minn., examined how deicing salts affect the long-term survival of common freshwater crustaceans called daphnia. Wei-Hwa Huang, 17, of Montgomery Blair H.S. in Silver Spring, Md., captivated the judges and onlookers at the weekend exhibit of projects with the new strate-

gies he developed for variations of a peg-hopping game called peg solitaire.

Four more finalists each earned \$10,000 scholarships, the first three for mathematics or computer science projects. They are Mahesh Kalyana Mahanthappa, 16, of Fairview H.S. in Boulder, Colo.; Steve Shaw-Tang Chien, 17, and Elizabeth Dexter Mann, 17, both from Montgomery Blair H.S. in Silver Spring, Md.; and Zachary Zisha Freyberg, 17, of Midwood High School at Brooklyn College in New York City for biochemical research.

The remaining finalists each received \$1,000 toward college expenses.

Just as serendipity often plays a role in important research discoveries, it also helped guide these high school students to their projects. Ng came up with his project as a result of analyzing whether rounding off provided adequate approximations for balancing his mother's checkbook. Pine happened upon fungi because her father suggested she do research for a summer job. An interest in model airplanes motivated 11th-place winner Aaron James Passey, 18, of Bothell (Wash.) H.S. to do his engineering project.

Their results may advance the frontiers of science. Egeland, for example, showed that salt does exert subtle effects on daphnia. His results suggest that toxicity studies, which typically last a month, may need to run longer, he says. The 12th-place finalist, Michael Ward Itagaki of Punahou School in Honolulu, synthesized a complicated organic molecule that collaborators at the California Institute of Technology are testing as a synthetic alternative to a natural anticancer drug. — E. Pennisi



President Clinton with Science Talent Search finalists; top winners (above, left to right): Pine, Merlo, and Ng.

AP/Wide World Photo

Westinghouse Electric Corp.