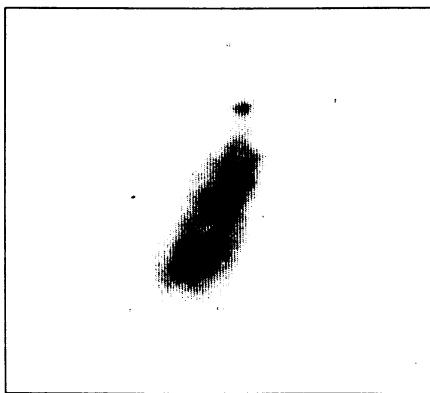


penko and Sargent to call it "peculiar" in the title of their paper on SN1985f, published in the Aug. 1 *NATURE*.

Because it was a spectroscope that first found SN1985f, the object's spectrum was the first peculiar characteristic to arrest astronomers' attention. The spectrum is dominated by emission lines, bright resonant emissions at wavelengths characteristic of oxygen, sodium and magnesium. The spectra of type II supernovas also show bright emission lines, but the dominant ones are those of hydrogen and helium, the outermost layers of the exploding star. Oxygen, sodium and magnesium should lie deep within the star. SN1985f is also much dimmer than the other two types of supernova. There is evidence that it never achieved the maximum brightness of either type.

Filippenko and Sargent point out that these characteristics seem to match those of a kind of "peeled" supernova posited some time ago by Roger A. Chevalier of the University of Virginia in Charlottesville. He suggested that a star that had somehow lost its outer layers would explode into a



SN1985f is near center of NGC4618 in this negative print.

supernova much fainter than a usual type II. But Chevalier did not say — nor apparently has anyone else — how such a star might lose its outer layers.

Other astronomers have been rushing to observe SN1985f. One of them, Michael De Robertis of the Lick Observatory, at the University of California at Santa Cruz, points out another peculiarity: In spectra

he has taken between March and July, the intensity of the emission lines does not change. Those of known types of supernova do change over such a 90-day period. This "calls into question" the designation of the object as a supernova, he says. But if it is not a supernova, neither De Robertis nor apparently any other astronomer has suggested what else it might be.

If SN1985f is the representative of a new class of supernova, Filippenko and Sargent point out, it can explain certain strange objects that astronomers have classed as supernova remnants: Cassiopeia A, a very famous radio source; the object N132D in the Large Magellanic Cloud; and "the extraordinary object in NGC4449." Supernova remnants are the clouds of ejecta thrown out by the explosion, which continue to emit light and/or radio for centuries and millennia. From the present condition of Cas A, astronomers can calculate that its explosion should have happened in 1665, but there are no contemporary records of a sighting. If it was type III, it may have been too dim for the naked eye. — D. E. Thomsen

Taking food from thought: Fruitful entry to the brain's word index

Early in 1983, researchers at the University of Maryland and Johns Hopkins University in Baltimore saw a stroke patient with a bizarre problem. Many stroke victims suffer wide-ranging memory losses, but this patient was fine save for his inability to remember the names of many fruits and vegetables. As it turned out, his produce problem provided the scientists with important clues to the "thesaurus-like" ordering of words in the brain.

Although the patient is a sample of one, he displays the most specific organization of categories of words in a discrete brain area yet observed, according to investigators John Hart Jr., Rita Sloan Berndt and Alfonso Caramazza.

The patient, whom they dubbed "M.D.," did not fit into their larger study of gross language problems since he had virtually recovered from several strokes that had occurred almost two years earlier. He complained, however, of difficulty remembering certain "food" words. Further tests suggested that his core problem was with the names of fruits and vegetables. M.D. could, for instance, name pictures of an abacus or a sphinx, but he was dumbfounded when shown an orange or a peach.

Over the next year, to better understand M.D.'s unusual problem, the scientists probed his knowledge of word categories. When asked to name a large number of fruits and vegetables — using drawings, photographs or actual pieces of produce — he was correct just under two-thirds of the time. But when shown other items, such as vehicles, household objects, animals, shapes and trees, he

correctly named nearly all of them. When M.D. had to sort pictures from different conceptual classes into appropriate piles, he again had considerable difficulty only with fruits and vegetables. (The other classes were animals, vehicles and food products.) The same pattern emerged when he was asked to generate as many names as possible from a series of categories and to name items based on verbal definitions or on feeling an object without seeing it.

On the other hand, report the scientists in the Aug. 1 *NATURE*, when provided with the names of fruits and vegetables, M.D. pointed "immediately and with certainty" to the corresponding pictures. He categorized correctly all the written names of fruits and vegetables that had mystified him as pictures.

"It is as if the name is the key to knowledge of fruits and vegetables; the patient cannot find the key for himself," writes psychologist John C. Marshall of Radcliffe Infirmary in Oxford, England, in the same issue. "But, given the name key by the examiner, the patient has no problem in unlocking his apparently intact store of information about fruits and vegetables." According to Marshall, this indicates that M.D.'s brain lesion, which involved the frontal lobe of the cortex and the basal ganglia, impaired part of a "thesaurus-like indexing system of names that give access to the knowledge base represented in the brain."

Cautions Berndt, "We only have data on one patient, but this clearly suggests that items in the mental 'encyclopedia' are organized along specific categories

in the same brain area."

Her claim that the estimated 75,000 words that an educated adult commands may be categorically indexed in the brain goes beyond previous findings with brain-damaged individuals. It is known that left-hemisphere damage can, for example, interfere with memory for faces, colors, color names and numbers. British researchers recently identified more fine-grained disturbances in four brain-damaged patients who were markedly better at naming inanimate objects than they were at naming living things and foods.

"Evidence is beginning to accrue for [Berndt's] claim that there is semantic memory composition in the brain for categories such as vegetables and flowers," comments psychologist Myrna Schwartz of the University of Pennsylvania in Philadelphia. More patients need to be examined for similar category-specific deficits, she adds; this is rarely done with stroke victims. Research in the area is further limited, explains Schwartz, who works with Alzheimer's disease patients, because it is not known how common various language and memory problems are among brain-damaged patients and data are scarce on their language capacities prior to brain damage.

Nevertheless, Berndt says that M.D., who has returned to work at a federal agency, has shown investigators that an adult's vocabulary may be segmented into specific categories that can be disrupted "highly selectively" when the brain is injured. — B. Bower