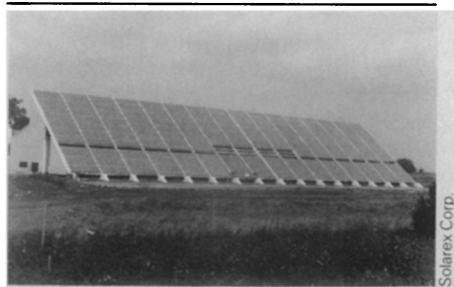


stantiates the case that aluminum can cause dementia diseases. Clarence J. Gibbs Jr. of the National Institute of Neurological and Communicative Disorders and Stroke in Bethesda, Md., one of the investigators to link aluminum to parkinsonism-dementia (SN: 9/11/82, p. 166), finds the data reported by Davison and his colleagues "kind of sketchy." But both agree that more research has to be done before aluminum can truly be said to cause dementia diseases. For instance, as Brody points out, no one has yet attempted to see whether aluminum damages nerve cells in the brain, and if so, how. "This is an area that is really fertile," he says. Also yet to be answered is whether areas rich in aluminum produce an excess of senile dementia, as they have already been shown to do for dialysis dementia and parkinsonism-dementia.

—J.A. Treichel

## Making solar cells in the sunlight



Set in what was once a cornfield near Frederick, Md., a new factory is getting ready to use sunlight to manufacture solar cells. Dedicated last week and billed as the world's first "solar breeder," the facility built by the Solarex Corp. is due to go into full production next year. An array of 224,640 solar cells, mounted on a steeply pitched roof facing south, provides the 200 kilowatts of power necessary to meet all the plant's needs, including electricity for production equipment for making solar cells, lighting, air conditioning and even typewriters. A bank of 480 special lead-acid batteries stores the energy generated by the roof array and provides power for rainy days. The \$6 million demonstration project is the first solar cell-powered factory totally independent of a utility, company officials say.

Although it would be cheaper to buy electricity from a utility, admits Joseph Lindmayer, Solarex president, the plant is a model for future factories in remote areas like mountaintops or deserts where power is not readily available. The company is prepared to sell the concept of solar-powered factories because the factories could produce any kind of product and are economic now in many parts of the world. Lindmayer says, "In most cases, we will provide an industrial shell, like a prefabricated building with its own power supply attached." □

## U.S. export controls snag spacecraft filters

As Comet Halley sails into view (SN: 10/30/82, p. 277), the European Space Agency is racing to ready a rendezvous spacecraft for launch in July 1985. Last month, however, preparations for one of the spacecraft's 10 instruments hit a snag when U.S. Customs delayed the shipment of a set of optical filters from a U.S. company to the Max Planck Institute for Aeronomy in West Germany. The three-week delay ended last week when the Department of Commerce finally decided that high-technology export controls were not being violated.

The action is the latest in a string of incidents reflecting the Reagan administration's clampdown on the flow of certain scientific information and sophisticated technology out of the United States (SN: 3/20/82, p. 204; 4/3/82, p. 229; 9/4/82, p. 149). Customs officials concede that delaying the filters was part of a general "tightening up" aimed at catching illegal high-technology exports that could end up in Soviet-bloc countries.

W. Alan Delamere of Ball Aerospace Systems Division in Boulder, Colo., part of the international team building the multi-color camera for which the filters are needed, told SCIENCE NEWS, "The delay is significant . . . and it's going to hurt for the next three months."

Delamere adds, "But that's the side you can see; that's tangible. The intangible is the total manhours that have been spent in overcoming a difficulty like this, readjusting planning, time talking on the phone. It really becomes a terrible inefficiency if you've got people that are fully occupied."

The fuss centers on a set of 13 glass filters mounted in a fiberglass wheel, 50 millimeters in diameter and 2 mm thick, manufactured by Omega Optical, Inc., in Brattleboro, Vt. Robert Johnson, Omega Optical president, says his company was chosen to produce the filter wheel because it could do the entire operation quickly while meeting stringent specifications. The \$75,000 contract calls for a prototype wheel, five flight wheels plus backups and five ground observation sets.

Johnson says the prototype wheel left the plant on Oct. 8. "On the 12th we were notified that Customs in Boston was holding the package for a decision on whether it was possibly a military project," he says. The action came as a surprise. "We've been exporting optical interference filters worldwide for over 10 years and have never required an export license," Johnson says.

Edward Goggin, assistant regional commissioner for U.S. Customs, says this particular shipment was new to the inspectors at Logan International Airport in Boston. "We did not know whether or not it needed a license," Goggin explains. Customs referred the matter to the Commerce Department for a ruling.

For Johnson the following weeks were a

frustrating time. In a telephone interview before the matter was resolved late last week, Johnson told SCIENCE NEWS, "The most disheartening thing is that we are having a very difficult time communicating with anybody in adequate authority to release the package. We've made well over 100 phone calls and just get shifted from person to person."

When the Commerce decision that released the package finally came, the ruling also specified that future shipments would not be automatically released. "They want to have the technical data on those shipments for examination prior to authorizing their export," says Johnson. "It appears that we are essentially doing what you would have to do to get an export license."

Johnson says that the project is now behind schedule. The first flightworthy filter wheel, originally due on Dec. 1, requires six weeks of work after the company hears from the institute whether any modifications to the prototype filter wheel are necessary. "Everybody seems to be really understanding about the problem but very nervous about the time lost," Johnson says. "We're pretty well set now. I'm hoping that before we're ready to ship again we can resolve any questions so that there isn't a holdup."

Delamere has studied the high-technology export regulations carefully. He notes that the regulations contain a "catchall" that can be interpreted to mean that anything to do with a spacecraft needs an export license. "You could interpret that a screw that's used on a spacecraft is subject to export license," he says. The problem is deciding at what point an export license is applicable. "My interpretation is that it's really applicable only when you put together a complete system that is unique in some manner," says Delamere. "The safe thing to do is, when in doubt, apply for an export license, and apply for it a long time before you ever need it."

Goggin says, "We're just tightening up on procedures. As companies become more familiar with what our requirements are, and we become more familiar with what the Department of Commerce's requirements are, things will run much smoother. It's a kind of learning process, both for us and for the companies."

William Brunk, acting chief of the National Aeronautics and Space Administration's planetary science branch, says the bulk of U.S. involvement in the European mission to Comet Halley is to provide expertise in particular fields and certain types of instrumentation. However, European scientists are finding that the United States is the best, and sometimes only, source of components they need for the spacecraft. Johnson worries that the Europeans will be much more cautious in the future about dealing with U.S. companies.

—I. Peterson