

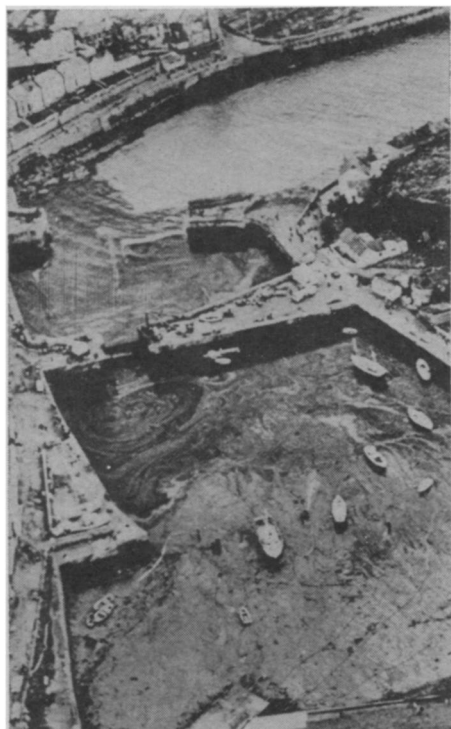
on the mass of a molecule and its velocity. This means that the lighter U-235 molecules move faster than the heavier U-238 isotope. Under a slight pressure, they will be more likely to move through a membrane so they can be drawn off. As in the centrifuge, the process is repeated until the needed concentration of U-235 is obtained.

The centrifuge's advantage as a clandestine source of fission material is offset by the fact that bomb uranium has to be highly enriched—about 90 percent U-235. It is this high refinement that gives the centrifuge system the most trouble; the size this requirement imposes on them strains existing materials technology. On the other hand, nuclear power stations can use uranium in which the U-235 content is only a few percent. In this range the centrifuge system might become valuable.

## Oil, Oil Everywhere

The water pollution problem posed by the breakup of the oil tanker *Torrey Canyon* on a rock near Lands End, England, is apparently unprecedented.

Although some floating oil washed up onto beaches during World War II from torpedoed ships, it was never anything like the 118,000 tons of raw petroleum that poured squarely onto



UPI

Oil blackens Porthleven harbor.

English beaches from the sinking tanker.

**Had it happened on** a United States beach, we would probably be as ill-prepared as the British, according to a

spokesman for the U.S. Army Corps of Engineers Coastal Engineering Research Center.

Eventually, the oil will probably either evaporate or disappear naturally, he noted, but there seems to be no way to calculate how long this will take. The problem has apparently never been foreseen. "I don't know of any report in print," he said.

In the meantime, attempts to fire-bomb the floating oil and burn it up were proving as unsuccessful as local efforts to dissolve it with detergents.

While oil released from the tanker's holds caught fire when the hulk was bombed by the Royal Air Force, it went out after consuming the oil's lighter components, leaving the blackest, stickiest, messiest part of the oil to float up onto the resort beaches in the area.

## Nurture, not Nature In Schizophrenia

A Norwegian scientist is placing schizophrenia squarely back in the hands of psychologists. But there is no indication it will stick.

In one of the largest twin studies ever undertaken on this mental disease and its origins, Dr. Einar Kringlen of the University of Oslo has found environment more to blame than heredity.

**If his interpretation** is correct, says Dr. Kringlen, then the "so-called solution of the schizophrenia riddle will not come from any biochemical breakthrough," and expensive research "will most likely be worthless."

Dr. Kringlen's results, reported to an international conference on schizophrenia at Rochester University in New York last week, challenge those scientists searching for an inherited biochemical defect in schizophrenics. There are many, and at this point, the contest looks like an equal match.

Schizophrenia occurs in every population at a rate of about one percent. It "remains the central core of what we consider madness or unreason," according to Dr. John Romano, chairman of psychiatry at Rochester, and "constitutes modern psychiatry's greatest challenge."

The term schizophrenia covers a wide variety of diseases. No one knows for sure whether its many forms are even related. Some may be environmentally induced, by a bad home for instance; others may be genetic in origin.

Most recently, Tulane University researchers produced evidence that acute schizophrenia is an autoimmune disease, in which the brain manufactures

antibodies against its own cells (SN: 2/11).

Still other recent work has attributed the disease not to genes, not to a bad home, but to poor conditions in the womb.

Dr. Kringlen does not rule out heredity as a cause, since his study of identical twins—who share the same genes—clearly indicates a genetic factor. But the factor was weaker than previous reports have claimed, he says.

**If schizophrenia** were entirely determined by heredity, then identical twins would have to show 100 percent concordance—that is, one twin could not be schizophrenic and the other normal. Instead, Dr. Kringlen found the twins to be concordant in only 25 to 39 percent of the cases.

The rate was higher than that found with fraternal twins—whose genes are not the same. They were both psychotic in 10 percent of the cases. Nevertheless, the difference is not great enough to make a strong case for heredity, Dr. Kringlen believes. That leaves environment as the more potent cause of madness, in his opinion.

His second major finding poses problems no matter which theory the scientist favors. "A normal twin," says Dr. Kringlen, "may be paired with any type of schizophrenia." Reason would dictate that whether a bad home or genes cause the illness, twins would fall somewhere in the same ballpark, a borderline psychotic with a neurotic, for instance. But that was not the case.

Moreover, birth order, birth weight, difficult birth, physical strength in early childhood and psychomotor development were, on the whole, of "practically no significance for later schizophrenic development," he concludes.

There was, however, a link between childhood personality and psychosis. In both identical and fraternal twins, the schizophrenic twin had been most often the lonely, reserved, submissive, dependent and obsessive one. What made him that way? Probably environment, says Dr. Kringlen.

## Cryogenic Detector

As has been known for some 50 years, superconducting materials show no apparent resistance to the flow of an electrical current when cooled to temperatures near absolute zero—459.7 degrees below zero F.

Another, more fundamental property of superconductivity, discovered several years ago, is that each piece of superconductor behaves as if it were a single giant atom. This recently recognized property is related to the behavior of the electrons in the superconductor. These electrons all move in a precisely ordered way relative to one