Extensive experimental work remains to be done before the procedure is applicable to human surgery. The investigators are now exploring the generality of their finding by testing whether the transplant procedure is successful in hamsters and mice, as well as in rats. And in an experiment further afield, they are trying to transplant islets between different species. Perhaps some day cow pancreatic cells may produce insulin in humans.

If further work confirms the importance of white blood cells in stimulating immunity, the rationale that surgeons now use in doing transplants will need revision. Davie says that instead of tranferring a tissue as rapidly as possible and inhibiting the recipient's immune response, the best results may come from taking the time to modify the transplant by removing the stimulatory cells. "Then you may not have to immune-suppress the recipient," he says. The mighty immune barrier may never have gone up. □

Illinois patients: 'Guinea pigs'?

First came allegations that "scores" of Illinois mental patients in the 1950s and 1960s had been involuntary guinea pigs for experiments in which their adrenal glands were removed for research purposes. Now, Cook County public guardian Patrick Murphy says that in an expanded law suit he details a "history of experimentation" involving lobotomies and drug research on "probably thousands" of Illinois state hospital patients from the 1950s to the present.

Named in the expanded version of the suit, which Murphy said he planned to present to the court on April 23, are the Illinois Department of Mental Health and the University of Chicago, "and I may add the University of Illinois," Murphy told SCIENCE NEWS. Ultimately, he said, he plans to file four separate suits aimed at requiring a court order "before any experimentation is done on a DMH patient."

Murphy's original action, filed last week, alleged that at least 26 patients at Manteno Mental Health Center underwent "unauthorized and secret" adrenalectomies under the supervision of the University of Chicago's Charles B. Huggins, co-winner of a Nobel prize in 1966 for discovering uses of hormones in treating prostate cancer. University officials denied the charges and indicated that Huggins, who was not referred to by name in the suit, was involved in such operations, with full family consent, on only six schizophrenics, two of whom had cancer.

However, Murphy says, "from my sources, I understand there were more [than six]." At Murphy's request, a circuit court judge has already issued an order prohibiting the destruction of any records that might be related to the case. □

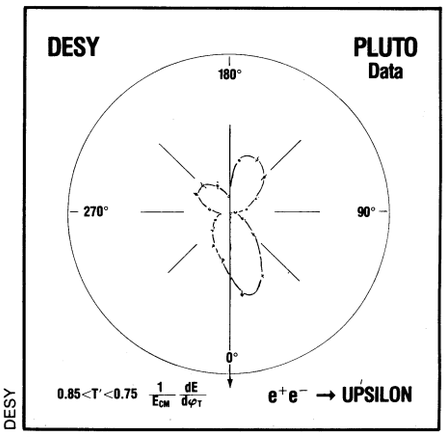
Squeezing out the universal glue

Deep in the heart of particle physics is a force called the chromodynamic force. Its function is to bind quarks to other quarks. Protons and neutrons are among the things that are made out of such bindings. All the matter in the universe is made of protons and neutrons, and so the chromodynamic force becomes fundamental to the structure of all matter. Without it, matter more complicated than single quarks could not be built. Since current theory also says that matter as simple as single quarks cannot exist, there's a paradox here that could put the universe out of existence. However, this story is not a philosophical piece, but a report on an experimental attempt, assuming the existence of the chromodynamic force, to see whether that force acts as theory says it should.

The theory, called quantum chromodynamics, prescribes that the chromodynamic force should be embodied by a field quantum, which is a special kind of particle called a gluon. If a force exists between two quarks, it means that they are exchanging gluons. This sort of thing is standard behavior for forces on the subatomic level. All of them have field quanta, the exchange of which produces the effects of the force. An experiment to test the existence of gluons is, among other things, an attempt to see whether chromodynamics conforms to this general rule in its own particular way. An experiment in the DORIS colliding beam facility at the DESY laboratory near Hamburg has looked for evidence of gluons. The first analysis of the data led the experimenters to say "maybe." A recently completed reanalysis prompts them to say "yes."

What the DORIS apparatus does is to produce head-on collisions of electrons and antielectrons (positrons). This causes a matter-antimatter annihilation, out of which many kinds of particles may form. Under study here were upsilon particles, a newly discovered, extremely heavy variety. Upsilons are supposed to be made of a quark and an antiquark, and when one of them decays, it should produce three gluons. The gluons do not last long. Each of them turns itself into a jet of various kinds of particles. These are the particles that finally come out of the whole process and get recorded by the detectors, and the jet structure should show up in the distribution of their energies and momenta.

The first analysis of the data, reported a few months ago (SN: 3/24/79, p. 186), showed strong evidence that the basic theory was correct but did not show the jets. Now a reanalysis has been done according to ideas suggested by theorists at DESY and at the CERN laboratory in Geneva. Mainly it involves including electrically neutral particles along with the charged particles in the analysis of the final products of upsilon decay. This permits a more complete reconstruction of an upsilon decay event. In addition, a more preferential way of locating the jet axes (using particles with high momentum to define them) was adopted. Now, the experimenters say, the jets appear.



Particle energies distribute into three lobes characteristic of the predicted gluon jets.

The result was communicated to a seminar held at DESY on March 30. The DESY announcement doesn't say how it was received, but as the report circulates, it is likely to come under sharp scrutiny from colleagues. This is hardly the first time that an experiment has been recalculated, but it may be the first time in recent memory that it has been done publicly in a field that is as fiercely competitive as this one. □

An antibody business

A new San Diego firm with just three full-time scientists, a few consultants and a legal and business staff has announced plans to produce pure, specific antibodies for medical, diagnostic use. Hybritech Inc. plans to cash in on the new technology of using hybrid cells as living factories for specific molecules (SN: 12/30/78, p. 444). Antibodies from animal blood are already used in some diagnostic tests, but the hybrid cells give purer, more reliable and less expensive material. The company's first product is antibodies useful for detecting hepatitis B. Because diagnostic materials are subject to fewer Food and Drug Administration regulations than are drugs, Hybritech expects to begin making money in its first year by selling antibodies to already established companies. Eventually it plans to branch into therapeutic materials, but probably not for at least five years.

Hybritech is organized by the same investors who started Genentech, a San Francisco firm developing recombinant DNA techniques (SN: 9/16/78, p. 195). Both groups are aggressively pursuing the payoffs of the most recent biological technologies. □