chologist Stephan Chorover of the Massachusetts Institute of Technology contend such control measures attempt to invalidate unwanted behavior by calling it "sick." They warn against what they consider a growing belief in the last 10 years that criminal behavior, violence, homosexuality, low I.Q. and other types of so-called social deviance are the result of genetic defects.

The growing interest in researching the physiological bases for deviant behavior is due, in large part, to the eagerness of law enforcement agencies such as the Department of Justice and the Law Enforcement Assistance Administration to fund it. There has been a shift in support to targeted or applied research in the field, Chorover says, and the availability of funds is increasing in a few areas while the support for basic research dwindles. The roots of crime and deviant behavior lie mostly in the structure of society rather than in medical problems, Chorover says. But researchers who shift to the "approved" areas are "legitimized with funds" while other researchers must "go cold turkey," or find other funds.

The panel cited some examples of targeted research aimed at controlling behavior. The theory that extra X or Y chromosomes can cause criminal tendencies has led to proposals that children be screened for the genetic abnormality. A recent review article on extra chromosome research concluded that the frequency of antisocial behavior in persons with extra sex chromosomes is not significantly different from the frequency in persons with the normal number of sex chromosomes. Yet, Beckwith says, chromosome screening programs have been funded and initiated and may be seriously jeopardizing the normal development of children found to have the "defect."

Beckwith cited another example. A center for the study of neuropsychiatric research at the University of California in Los Angeles proposed to study the effects of kwashiorkor (a syndrome produced by severe protein deficiency) on impulse control, following the theory that protein deprivation can be linked to violence. Student protests over the proposed research led the LEAA to retract funding. The controversial theories of Shockley and Jensen on the genetic basis for I.Q. are other examples, Beckwith says. Although over time, the scientific community has totally refused their work, it had done "damage that will never be totally rectified."

What can be done to prevent the funding of such research? Right now, Chorover says, "I see my role as consciousness-raising." The problem is so large and tied to politics and traditional funding methods that the logical place to begin, he says, is by making the problem known. □

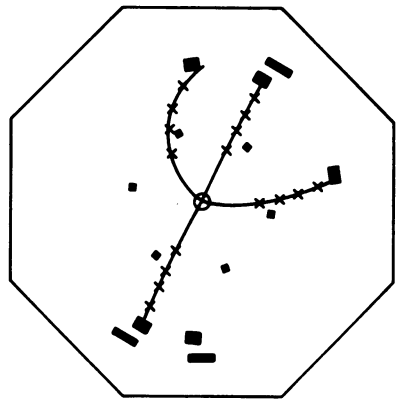
The new particles: Subtleties mount

As the captions in the old silent movies used to say, "the plot thickens." The situation regarding the odd extra-heavy new particles that physicists have been finding recently gets curiouser and curiouser. Several laboratories are looking at various aspects of the problem, and the latest from five of them was presented at last week's meeting of the American Physical Society in Anaheim, Calif. The five laboratories are the Stanford Linear Accelerator Center (SLAC), Brookhaven National Laboratory (BNL), at Upton N.Y., the Fermi National Accelerator Laboratory (FermiLab), at Batavia, Ill., the Deutsches Elektronen-Synchrotron (DESY) at Hamburg and the Adone Storage Ring at Frascati, Italy.

Meanwhile the count of theorists whose opinions have been delivered to PHYSICAL REVIEW LETTERS has reached 53 (not all yet published). Experiment does not seem to be proceeding an any clear-cut congruence with theoretical expectations (themselves quite various). Roy F. Schwitters of SLAC sums up a growing uneasiness: "It may be a far more subtle problem" than the first rush of opinion tended to make it seem.

The first important question is how many new particles are there? Everyone agrees that there is one, called psi or J, with a mass about 3.1 billion electron-volts (3.1 GeV), the existence of which was announced in November. Shortly after the first, SLAC announced a second at 3.7 GeV, but the data are not very pointed, and the SLAC people are not sure it is a particle instead of something else. But not all other experimenters see the 3.7, let alone the 4.1. Meanwhile the Brookhaven experiment, which is done by an MIT-Brookhaven collaboration, is finding evidence for the possible existence of a whole new class of possibly related particles. The Brookhaven experiment basically strikes a proton against a proton to produce the J (as they call it), which then decays into an electron and a positron. The MIT-Brookhaven group are now searching for analogous objects that would decay into proton and antiproton or negative and positive K mesons. There are various suggestions that such things may exist over a mass range between 2 and 5 GeV, says Samuel C. C. Ting of MIT, but it is "too early to pin down the nature of these particles or if they indeed exist." If they do, they would be an entirely different family from those already found with different spins and parities.

Meanwhile the SLAC-Lawrence Berkeley Laboratory group doing the experiment at SLAC have been studying the properties of the two psi's they see.



Roy F. Schwitters/SLAC

Computer reconstruction of the paths taken in the SLAC-LBL apparatus by two pions (curved tracks) decaying from the psi3700 and two electrons (straight tracks) that emerged shortly thereafter from the decay of the psi3100. By coincidence the result of the four tracks is in shape of the Greek letter psi.

They have determined that the psi has one unit of spin and negative parity. Their results also indicate its hadronic nature, that is, that it responds to the strong interaction, the force that holds atomic nuclei together. This is indicated by the finding that it decays radioactively to states that contain only other hadrons. The SLAC work also shows that the psi at 3.7 GeV decays into the 3.1 GeV psi roughly half the time, evidence for a close relationship between the two. The FermiLab work which is a collaboration of Columbia, Cornell, the University of Hawaii, the University of Illinois and FermiLab, also indicates a hadronic nature for psi-J. According to Thomas O'Halloran Jr. of the University of Illinois, the results indicate a hadronic type of cross section for the interactions of the psi-J with other matter. This seems, he says, to rule out one of the early theoretical suggestions, namely that the psi-J is the intermediate vector boson, the particle that is theoretically supposed to embody the forces of the weak interaction.

Many theorists believe that the psi-J may be an example of particles made up of a new kind of elementary building block, a quark with a new property called charm (SN: 1/25/75, p. 58). The DESY results may be bad news for this opinion. As Gunter Wolf puts it, "If the 3.1 consists of charmed quarks, it should decay into a meson with the spin of a pi meson, called ETA, and a photon." The DESY experimenters have looked for such events and find none. It is still too early for any definite statements, however. The mystery continues to deepen, and subtlety piles upon subtlety. □