

that 35 percent of the women had abnormalities in the cells lining the vagina. Leonard T. Kurland of the Mayo Clinic in Rochester, Minn., the project coordinator, told the advisory committee of the National Cancer Institute's Division of Cancer Control and Rehabilitation that it is unknown if these changes portend a greater risk of cancer in later life. The study was begun in 1974 and will run through 1983.

Medical authorities estimate that between 500,000 and two million pregnant women were exposed to DES, mostly in the 1940s and 1950s. About 200 cases of vaginal cancer in their daughters were recorded by the National Tumor Registry. □

Girth of the earth has not changed

A number of cosmologists and geophysicists have floated the suggestion that the size of the earth may have slowly increased as millions of years went by. Cosmologically such a result is expected by those who believe in theories of the universe in which the force of gravity weakens as time goes on. If gravity weakens, the attraction of the different parts of the earth for each other lessens, and so an increase in size results. In the view of some geophysicists such an expansion would be welcome in explaining the continental motions apparent in plate tectonics.

A study of paleomagnetic data, reported in the Jan. 26 *NATURE* by M. W. McElhinny, S. R. Taylor and D. J. Stevenson of the Australian National University has determined, they say, that the expansion hasn't happened. Paleomagnetic data concern the orientation of the earth's magnetic field in past epochs. The orientation of the field that happens to be present when rock is liquid gets frozen in as the rock solidifies and can be determined millions of years later. Such data are used to trace the wanderings of the magnetic poles and with enough of them, the change over time of the difference in latitude between two points on the same ancient magnetic meridian can be calculated. Such a change should occur if the earth's radius has changed, and by using all the data from a given continental block in one calculation, the investigators could discount any changes due to plate motion.

Their conclusion is that the earth's radius has changed by less than 0.8 percent in the last 400 million years. Furthermore, the results of the lunar exploration program and spacecraft studies of Mercury and Mars indicate no significant change in size for the moon, a small contraction for Mercury and a small increase for Mars. The earth data would seem to rule out any current theory of earth expansion. The Mercury data taken alone would rule out two of the five cosmologies with decreasing gravity and set stringent limits on the other three. □

Drug halves 2nd heart attack deaths

Of the 400,000 Americans surviving their first heart attack this year, approximately 12 percent would be expected to die of some heart-related problems in the perilous first year after the heart attack. But this situation soon may change. A drug used to relieve gout apparently reduces by almost one-half the risk of dying from a second heart attack in the months following the first. Patients who began using the antigout drug Anturane (sulfapyrazone) four to five weeks after their first heart attack had a death rate of 4.9 percent a year compared with 9.5 percent a year for patients taking a placebo.

Reports that Anturane prevented blood platelets from clumping together to form clots led to speculation that this drug could be beneficial in combatting recurrent heart attacks. Although blood clots haven't been shown conclusively to be the culprits in heart attacks, they are prime suspects. Blood clots could cause or worsen heart attacks by clogging an artery that nourishes the heart or by haywiring the heart's complex microcircuitry.

In 1975, researchers began a still-ongoing study in 26 U.S. and Canadian medical centers involving 1,475 patients—733 took Anturane, 742 the placebo. The patients have been receiving the treatments an average of 8.4 months. Placebos looked like Anturane. Neither patients nor physicians

knew which treatment was being given.

In a preliminary report of the study, published in the Feb. 9 *NEW ENGLAND JOURNAL OF MEDICINE*, the rate of decrease for sudden deaths—deaths occurring within one hour of the onset of symptoms—was even greater than the overall death rate. The sudden death rate among the Anturane patients was equal to just 2.7 percent a year compared with 6.3 percent for patients taking placebos.

Anturane didn't significantly reduce the incidence of a second heart attack or attacks of angina (a condition whose symptoms are sharp pains in the heart when its muscles are starved for oxygen); it only significantly reduced the chance of dying of a second seizure. But while it did not achieve statistical significance, Anturane treatment did tend to reduce the chances of a second attack. There were 41 nonfatal heart attacks among those taking the placebo and 31 among those taking Anturane. Further, only 14 patients taking the drug were hospitalized for heart rhythm abnormalities, compared with 25 in the placebo group.

The international group of researchers, led by Sol Sherry of Temple University Medical School in Philadelphia, decided to publish when they had amassed enough evidence that Anturane was beneficial to allow any patients to withdraw from the study. Since patients don't know whether they are receiving the drug or placebo, the medical investigators are giving the patients the option of withdrawing from the study to receive Anturane for sure. □

Foster children: Out of 'limbo'

Foster care is generally thought of as a desirable, in some cases life-saving, alternative for youngsters whose natural family situations place them in unbearable emotional turmoil. Behavioral investigators are now confirming the positive effects of foster placement, but at the same time are identifying factors that make some placements more successful than others.

In perhaps the most in-depth longitudinal study of its kind to date, a Columbia University research team has followed 624 New York City children over a five-year period. The youngsters—black, Hispanic and white—ranged from infancy to 12 years of age when they entered foster care.

Among the results are findings that challenge some widely held beliefs about foster care. The Columbia group found that foster children who are visited periodically by their natural parents—even when such visits may generate tenseness and anxiety—develop better intellectually and emotionally than youngsters who have essentially no contact with their natural mothers and fathers.

"We were looking for certain predictors of IQ and emotional adjustment," Columbia social work professor David Fanshel,

director of the study, said in an interview. IQ was recorded when each child entered a foster home, and at two and one-half and five years later. Emotional factors, measured by figure drawing and projective tests, as well as by social workers' and teachers' behavioral ratings, were also evaluated at the same points.

"Overall, we found a fairly remarkable stability of IQ [among those who had been visited]," says Fanshel, who co-authored the report with Hunter College professor Eugene B. Shinn. Many of the nonvisitees showed a drop in measured intelligence level. Emotionally, those children visited by their natural parents grew more responsible, responsive and less surly than their counterparts both at home and in school, report the researchers. And the more frequently the visits occurred (visits averaged about once a month), the more accelerated the youngsters' development, Fanshel says.

The social worker says his results question certain aspects of a 1973 Yale University study, which he calls "the most influential policy document [on foster care] to come out in the last decade." In that study, Yale researchers Albert J. Solnit and

Joseph Goldstein, along with British psychoanalyst Anna Freud, emphasized the rights of foster parents over natural parents and advocated in appropriate cases the possibility of foster parents prohibiting natural parents from visiting the child. "We challenge that point of view," says Fanshel. "The child needs to see his parents, even if they are 'flawed.' It is better ... than to reckon with *fantasy* parents who play an undermining role on the deeper level of the child's subconscious. Natural parents should not be exiled."

Responding to the Columbia findings, Solnit told SCIENCE NEWS that he and Fanshel are essentially "not in conflict. If the visit by the natural parents is congenial and harmonious with the care from long-term foster parents, there is no reason why this [visitation] shouldn't be supportive." His "disagreement" with Fanshel's conclusions is that they are "not individualized enough ... [and] too sweeping."

Natural parents should be excluded "under certain conditions," says Solnit, a psychoanalyst. "When they [the visits] are forced upon foster parents, that ... raises problems. And where natural parents haven't visited the child for two or three years, then the parents *are* the foster parents. We are not in favor of children leaving their natural parents," he says, "but if they do, they have the right to continuous care."

The Columbia results, at least in the cases of black and Hispanic youngsters, also question the 1951 findings of British psychiatrist John Bowlby who linked foster care to a lessening of mental abilities. However, black and Hispanic children who remained in care for the entire five-year period of the Columbia study achieved greater IQ gains than those who returned to their natural families. In contrast, though, white children who remained in foster homes showed significant declines after two and one-half years, compared with those who returned home. Fanshel attributes the difference to the "relative calm and stability" of foster homes as compared with the often "catastrophic" home environments of minority youngsters. White children, on the other hand, were more apt to come from intact homes, where the problems centered more on the child's own lack of adjustment than on family disintegration. He also reports that children seem to develop better under "democratic and permissive" foster parents than they do under "authoritarian" ones.

Fanshel concedes that contact with a natural parent can be detrimental to a child in certain cases, but he says not enough avenues toward the reuniting of natural families have been explored. "If society will invest the appropriate resources to restore the family, and *then* it doesn't work, then you move on to ... termination of [natural] parental rights and an early adoption process. The child shouldn't be left in limbo." □

ACTH and endorphins: A common origin?

During the past several years, an increasing number of brain proteins have been found to exert dramatic and unexpected effects on various emotions and behaviors. For instance, an amino acid sequence common to two different pituitary gland hormones — MSH (melanocyte-stimulating hormone) and ACTH (adrenocorticotrophic hormone) — has been found to enhance attention and to improve memory in the mentally retarded (SN: 9/25/76, p. 202). Tiny proteins called enkephalins appear to be the brain's own natural opiates (SN: 6/26/76, p. 406). Brain proteins called endorphins may help schizophrenics (SN: 10/30/76, p. 282).

Now it appears that all these behaviorally active brain proteins may derive from the same common precursor molecule, according to research reported in the December PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES by James L. Roberts and Edward Herbert of the University of Oregon at Eugene. The apparent precursor molecule is located in the pituitary gland.

Under certain cell culture conditions, messenger RNA from mouse pituitary gland cells is translated into an ACTH with a molecular weight of 28,500 daltons. The regular ACTH weighs only 4,500 daltons, however, suggesting that it must come from the larger molecule. Still other research has shown that the enkephalins

and endorphins both derive from a larger molecule called beta-lipotropin, and that both the 28,500 ACTH and beta-lipotropin are present in the same cells in the pituitary gland.

Might the 28,500 ACTH be not only the parent of regular ACTH but also the parent of beta-lipotropin and, in turn, of its offspring, the endorphins and enkephalins? Roberts and Herbert conducted protein analyses on proteins in mouse pituitary cells, and they report in the PNAS that the 28,500 ACTH indeed appears to be a common source of both ACTH and the beta-lipotropin molecule.

Whether all of beta-lipotropin comes from 28,500 ACTH has not yet been demonstrated, however. Nor is it known whether the 28,500 ACTH is the same as an apparent precursor of beta-lipotropin discovered recently by Roger Guillemin of the Salk Institute in LaJolla, Calif., and by Sidney Udenfriend of the Roche Institute of Molecular Biology in Nutley, N.J. (SN: 7/2/77, p. 6). Still to be shown is whether MSH, or at least the behaviorally active sequence in it that is identical to that in ACTH, also derives from the 28,500 molecule. Still other challenges: Determine whether the molecule spawns any other behaviorally active proteins, and find out why and how the brain makes one big protein behavior molecule, only to lop it off into smaller bits. □

Robert R. Wilson resigns in protest

For years the United States budget for basic science has been relatively static or even in decline. Exactly how one assesses the raw amounts depends on how one defines basic research and how one values a dollar (how one allows for inflation, etc.). But it is clear that the days of regular and generous increases are over.

The budgetary crunch has been hardest in astronomy and physics; the life sciences tend to benefit from the pains of cancer and heart disease and the pitiful pictures of sick children on posters. In scientific terms the budgets have meant a slowing of research; in human terms they have meant numerous career disappointments. Now there has been a resignation in protest of this situation by one of the leaders of the country's physics establishment, Robert R. Wilson, director of the Fermi National Accelerator Laboratory.

Wilson is resigning, because, he says, his laboratory is underfunded. To quote Wilson's letter to Norman F. Ramsey, president of the Universities Research Association, which operates Fermilab for the Department of Energy, "... the future viability of Fermilab is threatened because the funding has been below that necessary to operate the existing facilities responsibly;

presently we are operating at about half of our capacity to do physics experiments...." Another discontent is the slowness of the funding of the Tevatron, the project to double the energy of Fermilab's proton synchrotron, which at 500 billion electron-volts, is now the world's most energetic, and the cool governmental response to the laboratory's proposal to build colliding beams of ultrahigh-energy protons. Wilson points out that the financial resources of Fermilab's European counterpart, the international CERN laboratory in Geneva "are considerably more than double our own. ... Such considerations led me, in desperation, to the conclusion ... that I should not continue to give the impression that I could responsibly direct Fermilab without a substantial increase in the funding."

The only public response to the resignation so far is Ramsey's, who says, "... science at Fermilab, in America and throughout the world will suffer a great loss." It seems too late in the budgetary process for Wilson's resignation to have much effect on Fermilab's funds for fiscal 1979, but it is possible that Congress might increase the laboratory's funds without a request to do so from the administration. □