MEDICINE

Clue to Tissue Repair In Mysterious Protein

➤ THE ANSWER to how the body responds to damage and initiates the repair process may come from a study of mysterious proteins that regularly turn up following a tissue injury.

Drs. Henry E. Weimer and David C. Benjamin of the University of California at Los Angeles Medical School described such a protein, recently discovered in rats. Other proteins which appear to have similar roles have been found in men, monkeys, rabbits, dogs and chickens.

The UCLA scientists found that the protein was not present in normal rat blood serum but always appeared following tissue injury.

They also found that the protein was synthesized in the liver and that this synthesis was regulated by the adrenal gland. No matter how remote the area of injury was from the liver, the production of the protein was initiated by the liver.

The fact that the liver starts producing the protein in response to tissue injury suggested some substance released by a dead or damaged cell may signal the liver for help.

It seems that the protein is involved in tissue repair and proliferation. However, there is no evidence to date that directly links it with tissue repair.

The appearance of the protein in pregnant rats was also reported. Considerable cell death accompanies the development of the fetus, and this might account for stimulation of production of the protein during pregnancy.

Dr. Weimer has labeled the rat compound "acute-phase protein." It is similar to a human substance known as C-reactive protein, which is not present in normal human blood serum but appears immediately after tissue damage.

• Science News Letter, 89:120 February 19, 1966

PSYCHOLOGY

Adopted Children More Prone to Mental Illness

➤ ADOPTED CHILDREN evidently struggle with special family conditions that make them more prone than others to psychiatric illness.

This was the case, at least, in a three-year study of children and adults at the Jewish Hospital of Saint Louis. Both in-patients and out-patients were included in the study.

Emotional ills fell primarily in the area of antisocial behavior such as stealing, lying and open aggression. Dr. Nathan M. Simon and Mrs. Audrey G. Senturia found a higher incidence of these personality disorders among adopted children than among others referred for treatment.

Sometimes these problems could be explained by hostility between the adopting parents. Each parent blamed the other for their childless state and the animosity overflowed on the adopted child.

In other cases, the adopted child upset a precarious balance in the marriage. He became either a competitor or a weapon in the interpersonal conflicts of the two adults.

Besides these possible handicaps, adopted children face a major identity problem in having two sets of parents, reported the scientists in the American Journal of Psychiatry, 122:858, 1966. In an apparent attempt to explain why their natural parents had abandoned them, children at the hospital usually imagined them as bad people—prostitutes, drunks, crooks.

Identification with these "bad" parents was strong. Consequently the children would try out a series of identities, attempting to be like their imagined parents.

Only 35 of the 1,371 mental patients studied were adoptees but that figure represents more than twice the rate of adoption in the community from which the sample was drawn. The high rate was due entirely to children under 14. The number of admissions of this group to the hospital was four to five times greater than that of adoptees in the community.

• Science News Letter, 89:120 February 19, 1966

PUBLIC HEALTH

Invisible Particles In Air Cause Cancer

➤ ACTIVE, SMOKING CITIES, as well as smoldering cigarettes, are being accused of of causing cancer.

Irritating chemicals that whirl skyward from exhaust pipes, half-lit incinerators, burning chimneys and even dusty asphalt streets are held responsible for causing cancer of the lungs.

These culprits in the air are being tracked down, Dr. Benjamin L. Van Duuren of the New York University Medical Center reported in Scientist and Citizen, Feb. 6, 1966.

A prime source of these airborne chemicals has been with us since man first struck fire, Dr. Van Duuren said. Incomplete burning of wood, coal and other organic material forms harmful hydrocarbons, large amounts of which drift in the atmosphere and are breathed into man's lungs.

In laboratory tests cancer has been produced from these compounds, including the potent benzpyrene and dibenzanthracene which have also been found in cigarette smoke. Harmul nitrogen chemicals have been found in air samples, as well as inorganic elements which help contribute to occupational cancers in industrial workers—iron, lead, germanium, arsenic and calcium.

The hydrocarbon content of city air varies with the seasons, Dr. Van Duuren pointed out. In winter the concentrations are higher because of increased need for heat and light.

Other airborne irritants such as ozone, nitrogen monoxide and sulfur dioxide do not induce cancer by themselves, but play a role by acting with chemicals which do.

Routine monitoring of city air for the hydrocarbon chemicals is not being carried out in the United States, in spite of the fact that rapid analytical methods are available.

• Science News Letter, 89:120 February 19, 1966

IN SCIENC

MEDICINE

Another Advance in Hunt For Anticancer Material

➤ ANOTHER STEP has been taken in the long search for anticancer substances in the body.

A highly purified enzyme called asparaginase has been found effective against lymphosarcoma in experimental mice. The American Chemical Society middle Atlantic regional meeting was told that while there is hope, one must not expect a substance effective in human cancer in the near future.

Although lymphosarcoma, which is a malignant tumor of the lymph nodes or lymph tissues, does attack humans as well as animals in which it is transplanted, it is not identical to transplanted cancer.

Drs. Tobias Yellin and John Wriston of the University of Delaware, Newark, obtained the enzyme from guinea pig serum, building on previous work by others at the Cornell University School of Medicine.

The effectiveness of their purified enzyme against tumors in animals that had been irradiated with cobalt 60 was explained as proof that immunological phenomena are not involved. Cobalt 60 prevents antibody formation.

A breakthrough in the search for anticancer agents will follow a different road from that of antibiotics, but a practical solution for human cancer problems has historical precedent, the researchers said.

• Science News Letter, 89:120 February 19, 1966

PHYSICS

Headphones for Divers Spot Underwater Sounds

➤ A PERSON hearing a horn from behind can dodge a car bearing down on him because his brain tells him the direction of the horn. Underwater, however, a diver has no such sense of direction.

The difference in time a sound takes to reach the ear is translated by the brain into a direction. Since sound travels four and a half times faster under water, however, the time difference is too short for the brain to interpret correctly.

To overcome the problem, two scientists at CBS Laboratories in Stamford, Conn. have invented a headphone for divers in which sounds from different directions produce signals of different intensities. The signals pass through electronic "delays" that simulate the time lag of sound waves traveling through air.

The device is described by Benjamin B. Bauer and Emil L. Torick in the Journal of the Acoustical Society of America, 39:25, 1966.

• Science News Letter, 89:120 February 19, 1966

E FIELDS

PUBLIC HEALTH

'Get Tough' for Fluoride Dental Assembly Urged

➤ THE NATIONAL Dental Health Assembly was urged to "get tough, play rough," and use the modern weapons of today's political campaigns in the fight for fluoridation.

This statement came from Louis Harris, well-known polltaker and participant in more than 260 political campaigns.

Mr. Harris pointed out that 70% to 80% of the people of the United States have a favorable opinion of fluoridation. Nevertheless, two-thirds of the local referendums have gone against fluoridation.

Public health authorities and officials have been too "defensive and technical" while the forces of opposition have used emotional appeals.

In summing up the recommendations of the Assembly, Dr. Fredrick J. Stare, Harvard University School of Public Health nutritionist, said that information on fluoridation must be presented to the public in easily understood terms. He said that children in high school can help to educate their parents through debates on fluoridation.

Among recommendations made in group sessions, was one reported by Mrs. Rollin Brown, former president of the National Congress of Parents and Teachers. She said that seminars and workshops should be set up and that the American Medical Association, which supports fluoridation, should participate in state meetings.

The state of Washington has scheduled a dental health meeting on fluoridation for April 22 of this year. Washington is one of the first states to schedule such a follow-up conference.

Federal funds are already available to help the states on a matching basis, but the Assembly recommended that private funds from business concerns be solicited.

• Science News Letter 89:121 February 19, 1966

EDUCATION

Proposed Fund Cuts Stun Land-Grant Colleges

➤ THE PROPOSED 1967 Federal budget cut of more than $20 million directed toward U.S. land-grant institutions has drawn shocked protests from committee members of the National Association of State Universities and Land-Grant Colleges.

The cut represents the salaries of more than 2,000 faculty members. If put in terms of endowment it represents a capital of $400 million. The 1967 Federal budget also proposes a shift of $10 million from institutional to Federal allocation—an unnecessary and undesirable method, the committee stated.

Land-grant institutions were established over a hundred years ago, in 1862, in order to instruct students in agriculture, veterinary medicine and engineering, to foster research through experimental stations and to carry on cooperative work through county agriculture, home demonstrations and young people's clubs. They were started by donation of public lands to states. The proceeds from the sale of these lands became the basis of perpetual funds.

In 1890 Congress began making regular appropriations for the support of the highly successful institutions. It has been said that no other nation so generously supports agricultural education, research and extension work as does the United States through these land-grant colleges, universities and institutions.

Today there are 97 major state and land-grant universities located in all 50 states and Puerto Rico.

• Science News Letter 89:121 February 19, 1966

MEDICINE

Medicare Will Provide Home Health Services

➤ ELDERLY CANCER patients who are best cared for at home instead of in an institution can look forward to health services from persons trained through Medicare funds. Housewives will probably welcome this aid as much as the chronically ill.

The way new home care programs in urban and rural areas will work was described in New York by Eileen Lester, medical and social consultant, representing the United States Public Health Service.

Whether a cancer patient should be cared for by relatives or in a hospital or nursing home is often a matter requiring careful evaluation, Miss Lester said at a meeting of 450 social workers sponsored by the American Cancer Society's New York City division in cooperation with its Social Advisory Committee.

Kentucky and Arkansas have excellent leadership and community interest, Miss Lester told SCIENCE SERVICE, making their programs for rural cancer patients almost as encouraging as those in New York. More than 100 New York City hospitals provide assistance such as transportation to and from clinics, special drugs, surgical dressings, information and counseling to patients and their families.

"If constant 24-hour care of a cancer patient is necessary, he may get along better in an institution," Miss Lester said. "We are hoping he can improve to the point where he can return home for long-term care, however, if he prefers to be at home and the family can arrange to have him there."

To assist families and patients choosing home care, health aides will come to the home to prepare lunch for ill persons. Physical and occupational therapy, and visiting nurse service can also be provided.

The professional medical social worker, usually thought of as working only inside hospital walls, is needed for home consultation, Miss Lester believes.

• Science News Letter 89:121 February 19, 1966

SOCIOLOGY

Many Delinquent Boys Follow Dads' Footsteps

➤ THE ANTISOCIAL attitudes of delinquent middle class boys can often be traced to the somewhat dishonest values of their fathers.

Norman Epstein of the Brooklyn Psychiatric Centers, Inc., reported this to the 23rd annual meeting of the American Group Psychotherapy Association in Philadelphia.

In his work with 49 teen-age boys referred for treatment by school psychologists, Mr. Epstein found that one factor contributing to delinquency was the father's need to be a pal or an equal to his son.

Instead of setting standards and offering mature guidance, fathers of these delinquents often subtly accepted their sons' behavior, especially in the case of school truancy, reported Mr. Epstein.

Few of the delinquents came from families with incomes of less than $5,000 a year and $20,000 was not unusual, Mr. Epstein said.

During interviews the fathers usually described attempts to teach their sons the value of hard work, honesty and social responsibility.

However, the teen-agers themselves gave a different picture. They revealed how the father would boast of his business conquests, which often bordered on the delinquent.

During the first group therapy sessions, the boys' attitude toward the therapist implied that "under a seemingly respectable exterior one would find a manipulator and seducer who probably enjoyed the tales of delinquent power." Later the boys began to see the therapist's underlying standards.

• Science News Letter 89:121 February 19, 1966

PUBLIC HEALTH

Lobster Shells Rapidly Absorb Plutonium 239

➤ THAT LORD of the sea, the lobster, has more than spines on its shell—it also has plutonium 239, one of the hazardous man-made radioelements.

Experiments on the absorption of radioactive plutonium by lobsters were conducted by Eileen E. Ward of the U.K. Atomic Energy Authority, Windscale Works, England. She reported in Nature, 209:625, 1966, that the calcifying shell of a lobster accumulates plutonium 239 at a rapid rate and can accumulate a very high proportion—89.5%—of the total radioelement found in a lobster. The flesh, which is about 28.7% of the total body weight of the lobster, contains only 1.2% plutonium. The lobsters used in the study were *Homarus Vulgaris,* supplied from a marine laboratory at Aberdeen, Scotland.

Plutonium is released in exceedingly small amounts from nuclear fuel reprocessing plants and in nuclear weapons tests. It has a long effective half-life and is deposited in bone, hence is hazardous.

• Science News Letter 89:121 February 19, 1966