

MEDICINE

Cancer Cells Disappear After Heparin Injections

► **CANCER CELLS** have been found to disappear rapidly from the blood stream of laboratory animals after they were injected with heparin, a substance that prevents blood clotting.

A total of 1,592 rats were used in an experiment set up to determine the effect of heparin on the fate and survival of Walker carcinosarcoma 256 cells. When the anticoagulant was given after a single inoculation of 300,000 of these cells, the number and transplantability of the circulating cells was greatly decreased.

The results, described as "very striking and significant," are of importance in understanding the way tumors spread. But additional investigations are needed to determine the presence of tumor cells in the abdominal cavity and thoracic duct lymph.

Further experience with other easily transplantable tumors will be necessary before tests on humans can be considered.

The findings of Drs. D. Agostino and E. E. Clifton of Memorial Sloan-Kettering Cancer Center, New York, and Dr. C. E. Grossi of the National Institutes of Health, Bethesda, Md., are reported in the *Journal of the National Cancer Institute*, 27:17, 1961.

• *Science News Letter*, 80:136 August 26, 1961

PUBLIC HEALTH

Helmet Changes Urged To Lower Football Deaths

► **FOOTBALL HELMETS** should be redesigned in an effort to halt "a slowly progressive upward trend" in fatal gridiron injuries involving the head and spinal cord, two physicians and two athletic officials at the University of Michigan, Ann Arbor, believe.

They recommend replacing the hard plastic used in helmets with a material with more "give," such as leather or heavy sponge rubber. They also favor a shorter face guard and a chin strap that is either more elastic or is built with a safety lock designed to "break or open at given pressures."

Reporting in the *Journal of the American Medical Association*, 177:371 and 445, 1961, Dr. Richard C. Schneider, Dr. Edward Reifel, Herbert O. Crisler and Bennie G. Oosterbaan state their views are based on a study of 14 fatal head and spinal cord injuries in U. S. football during 1959.

In three of the cases, the spinal cord was injured when the player's face guard was thrust up and back, driving the helmet's sharp rear rim against the back of the neck.

The face guard, protruding three and one-half inches, makes a handy lever for tacklers to grab, the researchers noted. This is illegal in amateur football, but permitted in "pro" games.

If it continues to be used, the solid plastic guard should be shortened and placed closer to the face, they said. This would make the

bar less easy to grab, cut down the damaging leverage on a backward fling, improve vision, and provide less bar surface to injure an opponent's face.

Meanwhile, they agree that "the player with a long thin neck is a bad risk."

There were 208 fatalities in American football from 1947 through 1959. With an estimated 2,500,000 persons playing in 1959 (65,690 in college football), the researchers believe it is "remarkable" that "there are only an infinitesimal number of fatal injuries."

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PHYSICS

Ordinary Substances Give Off Soft Radiation

► **TINY PILES** of metal powder give off soft radiation.

Distinct radiation imprints were discovered on X-ray film exposed to such ordinary substances as zinc powder and aluminum filings. The imprints were probably formed by a soft electron flow from the metals, Dr. Stuart McLean of the General Electric Company's Lamp Research and Development Operation, Cleveland, Ohio, reports.

The powders, sometimes mixed with a medium, were inserted in holes gouged out of wooden blocks and X-ray films attached to the blocks were exposed for 48 hours.

X-ray patterns showed up even when the film was moved six inches away from the source, the scientist stated. The patterns varied with different pressures and temperatures, suggesting the radiation "producer" is closely tied with the kinetic condition of the source, Dr. McLean reports in *Nature*, 191:690, 1961. Similar effects on X-ray film were also obtained from organic mixtures.

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MEDICINE

Test to Detect Allergies Before Symptoms Seen

► **A POSSIBLE TEST** to detect allergies in persons before they develop symptoms was foreseen from research on the basophil, the rarest member of the blood family.

The role of basophil, which is a key factor in a variety of allergies and cardiovascular ills, is being studied by Drs. Lennart Juhlin, now at University Hospital, Uppsala, Sweden, and Walter B. Shelley, University of Pennsylvania School of Medicine, Philadelphia. They found that patients overly sensitive to cold react to release histamine from basophil, which carries nearly all of the histamine in the blood.

Since histamine can cause allergic reactions, basophil is of interest in all allergies. Persons having the acquired type of cold sensitivity caused by histamine that was studied by Drs. Juhlin and Shelley react to a drop in skin temperature regardless of how it is produced. The result is a red, itching skin rash, they report in the *Journal of the American Medical Association*, 177:371, 445, 1961.

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IN SCIENCE

GEOPHYSICS

Meteoric Showers Raise Density of Atmosphere

► **THE METEORIC** showers that occasionally rain down from the sky increase the density of the earth's upper atmosphere.

Meteoric particles streaming into the upper atmosphere heat its lower layers, causing a rise in the density of the thin air 200 to 400 miles above the earth. The density may increase as much as ten percent, Dr. S. I. Rasool of the Institute for Space Studies, New York, reports in *Science*, 134:385, 1961.

Data from satellites show that the earth's atmosphere collects more than 100,000 tons of interplanetary dust each day. This figure can skyrocket up to 100 times as much during a meteoric shower.

The tremendous energy generated by the hurtling particles is enough to raise the temperature nine degrees in the lower regions of the ionosphere, Dr. Rasool states.

The heating effect, which takes about six hours, occurs at altitudes of about 70 miles.

Meteoric showers occur when the earth crosses the path of a meteor that is orbiting around the sun. Most of the time the event is so un spectacular the man on the street never sees it.

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PHYSIOLOGY

Studies Brain's Role In Optical Illusions

► **SO-CALLED** "optical illusions" may result "at least partly" from central processes involving the brain, rather than just the retina, the eye's image-receiving membrane.

Scientists of the National Physical Laboratory, Teddington, Middlesex, England, say recent experiments bear out this theory.

A standard geometrical illusion, giving the appearance of depth with an arrangement of dotted lines on a flat surface, was drawn on a sheet of glass. A second glass sheet was covered at random with dots. The sheets were then placed a few inches apart in parallel positions.

With the head in a rigid position and shadows eliminated to provide no clues to distance, an observer using only one eye would see the two planes as merged, and could not distinguish the illusion figure. But the use of both eyes separated the two planes and made the illusion clearly distinguishable.

S. Papert, reporting in *Nature*, 191:733, 1961, states more elaborate research is in progress. Items in use include stereoscopic designs built by an electronic computer, and colored dots at the end points of the illusion figure to determine changes in distance judgments under differing visual conditions.

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E FIELDS

PSYCHOLOGY

Culture of "Uninvolved" Will Succeed Beatniks

► THE "LONELY CROWD" will probably give way to the "uninvolved one," a New York psychiatrist has predicted.

The Angry Young Men and the Beatniks will be followed by a generation that does not protest any more because it will no longer have a need for deep permanent relations.

Dr. Leopold Bellak of City Hospital at Elmhurst, New York City, said that by adapting to a constant flow of changing stimuli, modern man is losing his identity. He sees a character structure developing in American society that has no strong identification, similar to children reared in many different foster homes and orphanages.

"This type of character has also been seen in people exposed to overwhelming experiences, such as in former inhabitants of concentration camps.

"They may appear well functioning enough, but hardly anything seems to go more than skin deep; there is a strong armor that wards off all more intense feelings."

Dr. Bellak foresees amiable relations, a kind of "cocktail party" sociability, with greater interdependence alongside a "probably still higher standard of living." But this smooth, urbane culture will be uninvolved, with no sense of belonging, he said in the Archives of General Psychiatry, Aug., 1961, published by the American Medical Association.

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NATURAL RESOURCES

Proposed Hotel in Grand Canyon Will Not Be Built

► THE NATIONAL Park Service has strongly denied that a hotel will be built in the Grand Canyon.

D. E. Lee, Park Service land expert, made the denial after a recent announcement by a mining firm of a proposed plan to build an 18-story hotel in a Grand Canyon wall. The hotel would be built on the few acres of private land remaining in the canyon.

A bill is now pending in Congress to prevent the structure from going up. If that does not pass, the National Park Service will "undoubtedly" step in and buy the land, Mr. Lee stated.

The hotel would be built on the south rim of the canyon in full view from virtually any vantage point. The gleaming white hotel, standing boldly against the many hues of the canyon walls, would descend like steps down one canyon wall.

An oval pool is planned at the base of the hotel.

More than 20 acres of the south rim—

the only rim land not in Government hands—is owned by Western Gold & Uranium, Inc., which is studying the feasibility of building the hotel.

The Senate bill, scheduled for public hearings soon, would permit the National Park Service to obtain surface rights, including the hotel site, to the mining company's land. In return, the company can burrow into uranium veins that extend underground on land owned by the Government. Royalties would be paid to the Government.

The Park Service could also buy the land from funds appropriated for purchasing the thousands of acres within national parks now in private hands, Mr. Lee stated. More than \$5,000,000 was allocated this year, but more than 490,000 acres of private land are in national parks.

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MEDICINE

Arteries More Elastic Up to 20 Than in Aging

► AUTOPSIES on 16 males up to 20 years of age, normal at death, showed a "highly significant increase in elastin content" of the aorta, the large trunk artery that carries blood from the heart.

Previous studies lacked adequate statistical data to show why elastin, which supplies the elastic quality of gross arteries, declines during the aging process. Dr. V. Scarselli of the Italian Institute of Biochemistry, Milan, Italy, used a new direct color method for estimating elastin without destructive processes that formerly occurred.

Samples of aortic tissue free from fat accumulations were treated with orcein, a coloring matter prepared by oxidation of orcein in the presence of ammonia water. All free stain was removed and the stained orceinelastin compound combined with pancreatin. Orceinelastin, "which is brought in this way into solution," Dr. Scarselli reports in Nature, 191:710, 1961, "is then estimated photometrically."

Dr. Scarselli states investigations, in progress in his laboratory, seem to demonstrate a significant decrease of elastin content in aorta after 20 years of age.

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TECHNOLOGY

Accelerator Uses Hand-Stitched Cloth

► PADS AND WRAPPINGS made up of 25 to 70 layers of glass fiber cloth cut and quilt-stitched together by hand will become an integral part of the 12.5 billion electron volt "atom smasher" under construction at Argonne National Laboratory.

About 200 square yards of this cloth will be used for each of the vacuum transition chambers within the accelerator. The glass fiber material molded and hardened with epoxy resin provides a high-tensile strength, non-magnetic substance that will withstand the very low pressure of the vacuum inside the chamber and normal atmospheric pressure on the outside.

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OCEANOGRAPHY

Miniature Instruments Needed for Ocean Study

► THE WORLD of miniaturization must come to oceanography in order to adequately explore the oceans.

Compact sophisticated instruments that can be left in the oceans without a ship staying nearby must be developed to chart and explore the huge body of water surrounding the continents. The information gathered would be highly valuable for military and scientific purposes.

An oceanographic network blanketing the oceans is needed to observe the "sub-surface weather." The network already has its counterpart on land where nearly 5,000 U. S. Weather Bureau stations are scattered throughout the United States.

The instruments could be dropped into the oceans by airplane or ships, and information would be telemetered back to a receiving station.

Daily observations from these stations would help fill in the missing links on the ocean's effect on the weather, James M. Snodgrass, Scripps Institution of Oceanography, La Jolla, Calif., reported at a symposium on oceanographic instrumentation in Washington, D. C.

"The pitifully few measurements now taken by the few oceanographic ships that infrequently crisscross the oceans is totally inadequate" the scientist said. "It is just as if the Weather Bureau was given three or four trucks filled with weather gear and then asked to give a true weather picture for the entire United States."

More data at a faster pace are needed for oceanographic research. U. S. industry, world leaders in production and miniaturization, must divert some of its energies towards this goal, Mr. Snodgrass emphasized.

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BIOLOGY

Mixture of Amino Acids Checks Blood Ammonia

► A MIXTURE of two amino acids has been found to reduce dangerous levels of blood ammonia in laboratory animals.

L-ornithine and L-aspartic acid administered to ammonia-intoxicated rats by two University of Naples scientists resulted in survival of 95% of the animals, it is reported in Nature, 191:705, 1961. Dr. Francesco Salvatore, who is now working at Argonne National Laboratory, Argonne, Ill., in collaboration with Dr. Vincenzo Bocchini, found that injecting aspartic acid alone had almost no effect.

These amino acids have not been tried yet with humans, but L-arginine, another amino acid, classified as essential to the growth of rats, has been successful clinically.

Several investigators have pointed out a relationship between the high levels of blood ammonia and mental disturbances associated with heart failure, tumors and jaundice. In some cases, the scientists state, a reduction in the level of ammonia has reduced these pathological symptoms.

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