MEDICINE

## Cite Ten Major Gains In Fight on Cancer

➤ THE FOLLOWING ten major gains in the fight on cancer during the past two years are cited in the 1952 to 1954 biennial report of Memorial Center for Cancer and Allied Diseases with its research unit, the Sloan-Kettering Institute, New York:

1. The mass and sustained growth, for the first time, of human cancers in laboratory animals.
2. An improvement from six percent to 39.5 percent in cure rates for soft tissue sarcomas over the past 20 years.
3. The synthesis by the Wellcome Research Laboratories of 6-mercaptopurine, a chemical that appears from tests at Memorial to be one of the most effective in restraining acute leukemia.
4. An increase through the years from 10% to 75% in the number of patients with cancer of the stomach who can be treated surgically.
5. The establishment of circumcision of male infants as a practical means for partial prevention of cervical cancer in women.
6. Improvement in techniques of surgery of the liver permitting removal of cancer in this vital organ in some selected cases.
7. The development of effective treatment for formerly uncontrollable small blood vessel tumors (hemorrhagic telangiectasia).
8. The adaptation of a virus to destroy, rapidly and completely, human cancer cells of one type in the test tube.
9. The definition of two types of breast cancer, requiring different treatment.
10. The discovery that cortisone as well as sex hormones will temporarily control some advanced breast cancer.

Science News Letter, January 8, 1955

BIOCHEMISTRY

## Find Chemicals Help In Causing Cancer

➤ DISCOVERY OF a new group of chemicals that help to cause skin cancer in mice, although they do not cause it by themselves, is announced by Drs. Kai Setala, Heikki Setala and Paul Holsti of the University of Helsinki, Finland, in *Science* (Dec. 24).

The chemicals are synthetics, including some detergents and carbowaxes. They got into the cancer picture because they were being used as "vehicles" for known cancer-causing chemicals being applied to the skin of mice.

During the studies, the scientists found that some of these chemicals delayed the development of cancers while others greatly enhanced cancer development. Some caused different types of changes in skin structure.

Some of these changes "astonishingly closely resemble" those described as the early response of the mouse skin to cancer-causing chemicals, the scientists state.

They believe from this finding that the early response changes to cancer-causers reported by other scientists are for the most part non-specific phenomena running parallel to the "still unknown process" of cancer production, or are merely a reflection of cancer production.

The mechanism of the physicochemical and structural changes in the skin is now being studied with special attention to the property of the nonpolar-polar co-cancer-causing chemicals to change and degenerate various proteins as well as to bind water, which seems to be one of the features of the induced change.

Science News Letter, January 8, 1955

PSYCHOLOGY

## Planning Requires Eight Different Abilities

➤ EIGHT DIFFERENT human abilities go to build up a talent for planning, a team of psychologists from the Aptitudes Research Projects of the University of Southern California told the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

The eight abilities were spotted as a result of giving 50 especially designed tests to nearly 400 Air Force aircrew trainees. The abilities are:

1. Ordering—the ability to arrange objects or events in a series that is chronologically or logically meaningful.
2. Elaboration—the ability to round out a plan by supplying many details.
3. Perceptual foresight — the ability to trace one's way through a maze-like pattern.
4. Conceptual foresight—the ability to anticipate needs or consequences in a given problem situation.
5. Ability to see relationships.
6. Originality.
7. Fluency of ideas.
8. Judgment.

The psychologists reporting this research were Raymond M. Berger, Dr. J. P. Guilford and Paul R. Christensen.

Science News Letter, January 8, 1955

STATISTICS

## Lowest Death Rate, Most Babies in 1954

➤ A RECORD number of new Americans, 4,000,000 of them, arrived in 1954. Along with this bumper baby crop, the year set another record: the lowest death rate in the nation's history.

These figures were announced by Dr. Leonard A. Scheele, Surgeon General of the Public Health Service of the U. S. Department of Health, Education, and Welfare, on the basis of vital statistics reports for the first 10 months of the year.

The marriage rate declined to 9.2 per 1,000 population. Low birth rates in the depression 1930's are responsible.

Divorces were also on the decline, according to the figures for the first nine months of 1954. Since the 1946 peak, these rates have dropped over 40%.

Science News Letter, January 8, 1955

## IN SCIEN

HERPETOLOGY

## Tortoise, Gift in 1777, Still Lives in Palace

➤ A GIANT tortoise that Capt. James Cook presented to the king of Tongatabu, principal island of the Tonga group, in 1777 is still a household pet of the royal family.

Crown Prince Tugi, premier of the Pacific monarchy and heir to the throne of Queen Salote, recently visited the Bishop Museum in Honolulu, T. H., to inquire how to preserve the tortoise when it dies. Prince Tugi says the pet is still very much alive and strolls around in the same compound built for him 177 years ago, but that he cannot be expected to live forever.

The tortoise is called King of Malila, after the ruler to whom he was presented by Capt. Cook.

The director of the Museum, Dr. Alexander Spoehr, has written to mainland experts to find out how the preserving job should be done, but there is no hurry about it because the tortoise is expected to live at least several more generations. It is not known how old he was when Capt. Cook took him on board at the Galapagos Islands as part of his ship's food supply.

Capt. Cook made the presentation a year before he discovered the Hawaiian Islands.

Science News Letter, January 8, 1955

PHYSICS

## Aluminum Foil Used To Trap Cosmic Rays

➤ ALUMINUM FOIL such as used by housewives for cooking and storing foods can be used by scientists to trap the mysterious cosmic ray particles bombarding earth from somewhere in space.

Dr. W. W. Brown, a physicist at North American Aviation, Inc., Downey, Calif., has built an instrument for counting cosmic ray collisions, using aluminum foils of various thicknesses in a cloud chamber.

He described the apparatus and his results with it at the joint meeting of the American Physical Society and the American Association for the Advancement of Science in Berkeley, Calif.

The aluminum foils are mounted horizontally in a cloud chamber, forming the cathodes of the counting system. Thin tungsten wires strung between the pieces of foil form the anodes. The cloud chamber is filled with a gas, argon saturated with isoamyl alcohol, in which the cosmic rays colliding with atoms in the foils and in the gas leave their tracks.

The device was built by Dr. Brown when he was working at the University of California.

Science News Letter, January 8, 1955

# CE FIELDS

BIOCHEMISTRY

## Body Enzyme Effective Against Mice Cancers

➤ AN ENZYME chemical found in many body fluids and having some anti-germ property can also check the growth of certain cancers in mice, Drs. Otto E. Lobstein and S. I. Dulkin of Chem-Tech Laboratories, Beverly Hills, Calif., reported to the American Association for the Advancement of Science meeting in Berkeley, Calif.

The enzyme, called lysozyme, was injected directly into the cancers. In many instances, the cancer regressed completely after the injections.

Survival time of the mice was "significantly increased," the scientists reported, stating that "healing" in some of them was "complete."

Under the best conditions, however, only about half the mice with tumors were affected by the enzyme chemical.

"Possibly a mixture of different enzymes may help in these instances, and is under investigation at the moment," the scientists said. "In the control group where no lysozyme was injected, all mice were eventually killed by tumors."

This work was suggested by a previous study of Dr. Lobstein's, showing that proved cancer patients had a statistically significant, higher blood lysozyme level than normal individuals. It was concluded that this lysozyme elevation may be one of the defense mechanisms by which bodies fight cancer.

Science News Letter, January 8, 1955

ICHTHYOLOGY

## Light Barriers Keep Fish In Specified Channel

➤ LIGHT BARRIERS may be the key to the unsolved problem of getting young salmon and steelhead trout safely downstream to salt water.

"The increased competition for water for electrical power, irrigation and industrial uses has resulted in a precarious condition of the salmon and steelhead fisheries," Paul E. Fields, Gary L. Finger and Ronald J. Adkins of the School of Fisheries at the University of Washington reported at meeting of the American Association for the Advancement of Science in Berkeley, Calif.

Each year, dams and polluted water have taken a high toll of the young migrants. A recent study showed that at Baker Dam, 250 feet high, 64% of the sockeye and 54% of the silver salmon passing over the spillway were killed, as were 34% of the sockeye and 28% of the silver salmon passing through the turbines.

The three Washington State scientists reported that patterns of light were found to be a very important sensory stimuli for the fish. Light was used as a negative stimulus to repel and keep salmon out of certain areas, rather than to attract them.

Patterns of light were used in this manner successfully to guide more than 90% of the silver, chinook and sockeye migrants studied into a specified channel.

The laboratory results have to be validated, the biologists pointed out. However, the success to date makes it plausible that the proper application of light barriers may provide a partial answer for guiding migrant salmon.

Science News Letter, January 8, 1955

EDUCATION

## Propose Criminalist as Specialist in Many Fields

➤ A NEW profession — criminalist — was introduced to scientists at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

A criminalist is a specialist, but not in any one scientific field. He must be qualified as an expert to identify any of a large number of different kinds of evidence from blood groups to ink, from textiles to metals, from vegetation to soils.

The qualifications of a criminalist and an outline of the kind of training he must have were described by Dr. Paul L. Kirk, professor of criminalistics at the University of California.

In a single case, Dr. Kirk told the meeting, five or six experts, had they been available, might have been called on to examine the evidence.

The case was a crime in which a young lady was kidnapped, assaulted and robbed. The significant evidence included blood which had to be typed and tested for syphilis since a suspect had this disease, hairs and fibers from both victim and suspect, dog hairs found on both and at the scene of the crime, vegetation found on the suspect along with broken glass, sand, concrete, wood fragments and other residues.

Police departments, Dr. Kirk pointed out, do not have such specialists available, nor the funds to hire them. A single well-trained criminalist is entirely competent to make all the identifications and, in addition, he understands the practical side of crime investigation and the legal requirements of courts with regard to evidence.

A criminalist, like a general physician, must begin his training with a broad knowledge, especially in science. The criminalist's course closely parallels that of a premedical student's, in fact.

On this, he must build with study of microscopy and microchemistry, and their application to microscopic evidence. He must study examination of crime scenes, laws of evidence, personal identification and the special instruments of the crime laboratory.

Altogether, the criminalist's training requires a minimum of five years of college study.

Science News Letter, January 8, 1955

RADIO ASTRONOMY

## Reveal Plans to Build Large Radio Telescope

➤ THE LARGEST saucer-like radio telescope in the United States, a giant "dish" 60 feet in diameter, will be built at the Agassiz Station of Harvard College Observatory.

The National Science Foundation is expected to help support its construction, scheduled to begin shortly. An anonymous benefactor will also contribute to the proposed new radio telescope, which will be a steerable parabolic antenna.

To record and study the radio radiation being received on earth from outer space, large antennas and sensitive electronic recording instruments are required. The largest radio telescope of the saucer variety now in use, operated by the Naval Research Laboratory, is 50 feet in diameter.

Two larger antennas of the same kind are now being built abroad. The Dutch are constructing a 75-foot instrument, and the British are building a giant 250-foot antenna, scheduled for completion next year.

Radio astronomy, only about 20 years old as a science, has given astronomers a new "eye" with which to learn more about the sun, and the structure of the Milky Way galaxy of which the sun and its planets are a part.

U. S. astronomers are also discussing the possibility of cooperating to build a large radio astronomy observatory from which radio waves could be bounced off Mars and other planets as well as the sun. (See SNL, July 31, 1954, p. 67.)

Science News Letter, January 8, 1955

MEDICINE

## Trypsin Dissolves Clots in Hearts

➤ IN ANIMAL experiments, trypsin has been used to dissolve clots in vessels that feed blood to heart tissue, holding out hope that a similar chemical may do the same for human beings.

If so, it might help two heart conditions that are often fatal: damaged heart tissue resulting from the blocking of blood flow by the clot, and coronary shock that results from a sudden drop in blood pressure.

The study, carried out under the direction of Dr. Clarence Agress, was supported by grants from the U. S. Public Health Service and Los Angeles County Heart Association.

Although trypsin has been used to dissolve blood clots in other parts of the human body, its effectiveness in dissolving those in human heart blood vessels has not so far been demonstrated. An anti-enzyme in humans neutralizes the chemical before it acts on the clot, scientists believe.

However, the animal experiments give hope that some similar chemical may be found to be effective or that ways may be found to block the anti-enzyme action.

Science News Letter, January 8, 1955