

MEDICINE

New Evidence That Virus Is Linked With Cancer

► MOUNTING EVIDENCE that some human cancers are caused by viruses was reported at the American Association for Cancer Research meeting in Atlantic City, N.J.

Texas scientists have caused cancer in hamsters with the ordinary human adenovirus responsible for common respiratory disease. The experiments were carried on by Dr. John J. Trentin, who spoke at the meeting, and Dr. Yoshiro Yabe, both of the Baylor University College of Medicine, and Dr. Grant Taylor of M.D. Anderson Hospital, University of Texas, Houston.

The scientists injected the viruses (adenovirus, type 12) into the lungs of newborn hamsters. Five to 15 weeks later, 80% to more than 90% of the animals died of tumors.

The cancers were so malignant they continued to grow when transplanted into young adult hamsters.

Fluids from cultures not infected with the viruses produced no tumors.

Adenovirus-induced respiratory disease differs from the common cold in several respects. The onset usually is more gradual, the general symptoms, such as fever and chills, are more severe and the disease lasts longer than the cold.

About a dozen viruses are now known to cause a large variety of cancers in animals. So far, no virus has been implicated directly in human cancer.

Dr. Trentin and his associates have made the first of several steps toward a vaccine for adenovirus-caused cancers, if they exist in humans.

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METEOROLOGY

U.S., Russia Cooperate In Weather Space Studies

► THE UNITED STATES and Russia are already cooperating in space studies—in satellite weather research.

Official representatives of both Governments are meeting in Geneva to map out a report on the worldwide benefits to be obtained from weather satellites. Their meeting came to light at the World Meteorological Organization's commission for synoptic meteorology meeting in Washington, D. C., which is considering the use of weather satellite information in daily forecasts.

U.S. representative at the Geneva meeting is Dr. Harry Wexler, director of the U.S. Weather Bureau's office of meteorological research. He is assisted by Dr. M. Alaka, also of the Weather Bureau. Russian representative is Prof. V. A. Bugaev. They are acting as consultants to the Secretary-General of the World Meteorological Organization.

Their meeting is believed to be the first time that scientists designated by the Governments of the USSR and the U.S. have cooperated at the working level under the auspices of a United Nations specialized agency in the field of outer space research.

The cooperation results from a resolution adopted by the U.N. General Assembly on the peaceful uses of outer space.

The resolution recommends comprehensive study to advance the state of atmospheric science in order to provide greater knowledge of basic physical forces affecting climate and the possibility of large-scale weather modification. It also recommends development of existing weather forecasting capabilities through regional meteorological centers.

The WMO report on which U.S. and Russian representatives are cooperating will be submitted to the U.N.'s Economic and Social Council at its meeting in Geneva in July.

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GERONTOLOGY

Self-Financed Care For Aged Unrealistic

► IT IS NONSENSE to say that the majority of the aged can pay for their own medical care, the executive director of the National Association for Practical Nurse Education and Service, Inc., told SCIENCE SERVICE.

Miss Hilda M. Torrop of New York, who helped to found the NAPNES, largest and oldest national organization for practical nurses, said that anyone becomes needy medically when faced with a long illness.

"A person who becomes senile must have care until death," Miss Torrop said, "and no one wants to be a charity patient. Social Security gives the aging self-respect."

With 70,000 new hospital beds last year, and the need for an estimated 5,000 nursing homes (there are now only 2,500 in the country), more nurses are needed. Nurse aids, almost entirely untrained, must be prepared to help out, and NAPNES as an organization is planning to train them.

About 95% of the 25,000 practical nurse members of NAPNES work in hospitals. These licensed "nurses who nurse" still receive small salaries—\$275 to \$300 a month without maintenance—after a full year's training in an accredited nursing school. There are 700 of these schools in the 50 states, Puerto Rico and the Virgin Islands.

Instead of the R.N. after her name, the practical nurse has the letters L.P.N., meaning licensed practical nurse.

"Restorative nursing" is now being taught to those in training to become practical nurses, Miss Torrop said. "Too many old people give up and stay in bed when it is not necessary. With proper nursing help they can be encouraged to walk and become at least partially active physically." Restorative nursing is a miracle worker, and the gratitude of the patients gives practical nurses tremendous job satisfaction.

Age limits for practical nurses who wish to be licensed are usually 18 to 50, although some schools will accept a 17-year-old or a person over 50. A health examination is required at all approved schools.

Government officials and representatives of the nursing and medical profession participated in the NAPNES convention held in Washington, D. C.

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IN SCIENCE

PUBLIC SAFETY

Physicist Tackles Yellow Traffic Light Problem

► A PROBLEM that motorists meet every day—whether to stop or speed up when near an intersection and the traffic light turns yellow—has now been tackled by a physicist.

This decision is sometimes a matter of life and death, Dr. Howard S. Seifert of Stanford University, Palo Alto, Calif., reports.

He finds that the ability to accelerate is of limited help in trying to run through a stop light. Whether a driver makes it or not depends largely on his position and speed at the instant the light turns yellow.

Since most yellow lights are on about the same length of time, and most street widths are about the same, drivers develop an intuition concerning the possibility of successful run-through. Dr. Seifert notes that most "mature and still surviving drivers" have developed such intuition.

The ability to stop in time is much more variable since it depends on the condition of the vehicle and is limited by skid.

Dr. Seifert suggests that a formal speed limit should be established for cars approaching stop lights. He also suggests that signs could be posted along approaches to stop lights indicating whether or not it is safe to go through from that particular position.

Signs such as "Go from 50 miles per hour" or "Stop from 30 miles per hour" would inform the driver of his safety or hazard, and could eliminate the need to make an instantaneous decision, Dr. Seifert reports in the American Journal of Physics, 30:216, 1962, published by the American Institute of Physics.

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ASTRONOMY

New Developer Used In Astronomical Work

► EXPERIMENTS applying a new, commercially available developer, Acufine, to astronomical spectroscopic plates were reported to the American Astronomical Society meeting in Cambridge, Mass., by Dr. J. D. Fernie of the University of Toronto's David Dunlap Observatory, Ontario, Canada.

This developer effectively increases the emulsion speed by half a magnitude, compared to development in the chemical solution known as D-19, while simultaneously producing a finer grain. Contrast is moderate, and developing times are about six minutes at 70 degrees Fahrenheit.

Acufine appears to be stable and to have a long life. Costs, although slightly higher than for D-19, are negligible compared to the saving in telescope time.

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CE FIELDS

PSYCHIATRY

Therapy for Emotionally Disturbed Children

► CHILD GUIDANCE CLINICS, family agencies and mental health clinics are failing to meet the needs of an ever-growing number of seriously disturbed elementary school children from working class families. The policies of such agencies are geared to the needs of middle-class families.

A team of psychotherapists from Philadelphia made this charge at the meeting of the American Orthopsychiatric Association in Los Angeles. They described a new approach to the problem which seems to be filling the gap in Philadelphia.

A "club" was organized for these disturbed children and parents were approached to gain their permission for the child to join the club. After that the parents were only contacted when the psychotherapists had something favorable to report about the child.

Each club, which consisted of nine maladjusted boys who were behind in their school work, met twice each week, once at the school during school hours and once at a cooperating settlement house.

Meantime, a mental health program was conducted for the teachers—who needed one after the trying experience of grappling with such an unruly group of pupils and attempting to teach those unwilling or unable to learn.

All children who were in one of the clubs for at least two years improved so that they were able to learn and behave more acceptably in the classroom.

The program was worked out by Sol Gordon and Anne Wright of Public School District 3, Philadelphia, with the cooperation of Morris Berkowitz of Key School, Philadelphia, and Charles Cacace of St. Martha's Settlement House.

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MEDICINE

Hair Spray Inhalations Suspected in Deaths

► EXCESSIVE HAIR SPRAY inhalation is suspected of causing a sometimes fatal disease, a report in the New England Journal of Medicine, 266:750, 1962, reports.

Fifteen cases of storage disease (thesaurism) pointing to abnormal inhalation of hair spray have been reported since 1958. Three of the patients died, but the illness disappeared in the majority of patients when they stopped using hair spray.

One of the patients who died had used hair spray as often as 15 times daily for three or four years. Because so many women use hair spray for long periods without ill effects, the investigators pointed out that "significant inhalation and high suscepti-

bility appear to be necessary" to cause abnormal storage of the spray ingredients.

A common ingredient of hair spray, polyvinylpyrrolidone (PVP) was found in the lungs of the three cases autopsied, but the scientists were cautious in stating positively that this caused death.

Only two hairdressers were reported among the ill patients. Others had used spray on their hair in frequency varying from once a week to seven or eight times a day.

Investigations are now under way in an attempt to develop a technique that will identify PVP in the presence of the many chemical constituents of normal and diseased lungs.

Drs. Martin Bergmann, I. Jerome Flance, Ram A. Joshi and Herman T. Blumenthal, all of the Jewish Hospital of St. Louis, Mo., with Drs. Najeeb Klam, St. Francis Hospital, Monroe, La., Primitivo T. Cruz and Philip R. Aronson, both of Chenango Memorial Hospital, Norwich, N.Y. report the study.

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BOTANY

Gamma Greenhouse Built For Mutant Plant Studies

See Front Cover

► A UNIQUE GREENHOUSE, with the carefully polished floor marked off in rings from the deep concrete cave at the center, is being used by Rutgers University botanists to study forced changes in plants.

This gamma greenhouse, which houses a powerful radioactive "pill" in the cave, was built cooperatively by Rutgers and the U.S. Department of Health, Education and Welfare for \$50,000 to explore the ability of gamma radiation to multiply the rate of mutation or change in plants. It will serve research in a variety of fields from biology to agriculture and physics.

From behind a concrete shield, scientists will control the hoist in the center of the greenhouse which will lift a tiny pellet of radioactive cobalt, sheathed in a stainless steel capsule, from the six-foot-deep cave.

Radiation a million times stronger than that found under natural growing conditions will surge through plant specimens placed at various distances marked on the floor. The resulting changes will help scientists gain new knowledge of radiation hazards and aids.

According to the Report from Rutgers, cobalt-60 will emit its gamma rays 22 hours daily, allowing two hours to care for the plants.

The radiation will be halted as soon as the deadly "pill" is sunk into the hole, permitting scientists to work with the irradiated materials with no harm.

Health physicist Francis Haughey is seen in the greenhouse on the front cover using a portable measuring instrument to check radiation above the cave where radioactive cobalt is located. Concentric circles painted on the floor provide rough measurement of radiation emitted at various distances from the source.

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ASTRONOMY

Second Nearest Star Has Unseen Companion

► BARNARD'S STAR, the second closest to the sun, has an unseen companion that may be a planet or it may be a cool dark star.

A solution to the mystery of the object causing slight changes in the observed motion of Barnard's star is expected in the near future—optimistically in a year, pessimistically within five years.

This was predicted by Dr. Peter van de Kamp, director of Swarthmore College's Sproul Observatory, Swarthmore, Pa. He reported his observations on the motions of Barnard's star to the American Astronomical Society meeting in Cambridge, Mass.

The star was photographed using Sproul's 24-inch refractor. The star's position on 24 plates taken between 1916 and 1919 was compared with that on 2,316 plates taken from 1938 to 1961.

Barnard's star is six light years, or 36 million million miles, from the earth. (A light year is the distance light, traveling at 186,000 miles a second, covers in one year, or six million million miles.) Alpha Centaurus, the star closest to earth, is four and a third light years away.

Dr. van de Kamp reported that the measurements of Barnard's star's motion agreed very closely with the predicted motion.

Dr. Philip A. Ianna, also of Sproul Observatory, told the meeting that he had found "considerable variation" in the lens of the 24-inch refractor during the course of a night because of temperature changes. It takes about six hours, he reported, for the lens to come to equilibrium.

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SPACE

Electron Beams Planned For Outer Space Welding

► A HIGH ENERGY beam of electrons concentrated in a small area can be used for outer space welding by astronauts during space flights, the Society of Automotive Engineers learned in New York.

The electron beam is a ray-like form of high speed electrons, according to Robert Bakish of Alloy Electronics Corporation. In a near vacuum, a device using an electron beam permits previously unaccomplished feats in welding.

Since all of outer space is a near vacuum, this new welding technique is more practical than those requiring oxygen or heavy liquids. It overcomes many of the problems associated with high-temperature, highly reactive space-age metals and materials.

He predicted that it will not be long before structural components joined by electron beam will be probing the depths of space. Astronauts will be able to use lightweight equipment to make outer space repairs on their space vehicles or lunar bases.

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