

## MEDICINE

## No Comment From American Scientists

➤ AMERICAN scientists are waiting for the smoke to clear before they comment on a report from France that a substance in cigarette smoke always causing cancer in mice has been found.

Cancer experts on this side of the Atlantic Ocean, who were questioned, were unanimous in their "no comment." They said that they must have Dr. Nguyen-Phoc Buu Hoi's scientific paper on the work he did in isolating the chemical 3-4-9-10 dibenzopyrene and his tests with it, before they can evaluate the findings.

The National Cancer Institute in Washington said, "no work has been done on this particular compound at the Institute and we have no comment on the work in France."

Dr. C. C. Little of the Tobacco Industry Research Committee in New York said he had no comment until his organization has seen the scientific paper.

The American Cancer Society in New York had "no comment."

The Sloan-Kettering Institute for Cancer Research in New York said that other forms of the chemical compound have been found before, but that there is no conclusive proof that they are cancer-causing in the amounts found in cigarettes.

Most experts agree that the report from France on Dr. Buu Hoi's work raises more questions than it answers.

Scientists do not know, for example, whether chemicals that cause cancer development in mice also cause cancer development in human beings.

They do not know whether carcinogenic or cancer-causing chemicals that are painted on a mouse's bare skin and which cause cancer growths mean that they will do the same on the human lung.

Meanwhile, scientists in the United States and abroad are continuing to pick apart tobacco, paper and cigarette smoke to try and find the answer to the often asked question, "Does smoking cause cancer?"

Science News Letter, February 16, 1957

## DENTISTRY

## Free Training Offered To Dental Assistants

➤ HIGH SCHOOL graduates will get a full year of free training as dental assistants beginning this summer at the University of North Carolina School of Dentistry, in Chapel Hill, N. C.

The new program has been developed to determine how dental assistants may best be trained by a School of Dentistry, and to train dental students how to use the services of an assistant.

The program is being paid for with matching funds supplied by the school and the U. S. Public Health Service.

Similar programs in the Dental Education Research Project, as it is called, are

also being started at the Universities of Alabama and Iowa.

The girls selected for training will have books, tuition and laboratory fees paid for them, and in addition they will receive a salary of about \$30 per week, the University reported.

The first three months of the training program will consist of lectures, laboratory procedures, and demonstrations with limited clinical work. Then the trainees will either begin working in a regular dentist's office or will spend an additional nine months working with dental students in the School of Dentistry Clinic.

Science News Letter, February 16, 1957

## MEDICINE

## Unborn Chicks Get Blood Transfusions

➤ EVEN unborn chickens are getting transfusions these days, the transfused blood coming from other unborn chicks.

To study the compatibility of skin grafts after the chicks have hatched, Drs. Paul I. Terasaki and Jack A. Cannon, University of California Medical Center, Los Angeles, have devised a way to carry out the ticklish cross-transfusion operation without damaging the developing chick.

The research may lead to better knowledge of why human skin grafts "take" in some cases but do not "take" in others, and are only sloughed off.

While the procedure has been done before, this is the first time it has been done for purposes which require normal hatching to take place afterwards, they reported in the *Proceedings of the Society for Experimental Biology and Medicine* (Jan.).

The cross-transfusion is an extremely delicate operation where the smallest slip may ruin the entire experiment.

First, two eggs containing nine- to 18-day-old embryos are candled by placing them in front of a bright light to locate the large vein used for the transfusion. Then a small window is cut in the shell with an abrasive disc, and a drop of sterile mineral oil is placed on the underlying shell membrane.

Next, the membrane is pierced with a fine gauge hypodermic needle which is directed into the vein in the same direction as the blood flow. A drop of paraffin placed over the point of needle entry prevents air from entering the shell membrane.

When both eggs have been pierced, the needles are attached to tiny plastic tubes and blood is transfused from one tube to another. Afterwards, the tubes are removed, the eggs labeled and then put back in the incubator with the needles still attached and held in place with paraffin. By letting the needle remain in the egg for several days, bleeding is prevented when the needle is removed.

This method caused "almost no increase in mortality over untreated control eggs," the researchers reported. In a trial of 567 eggs, 82% hatched, while 87% of the control eggs hatched.

Science News Letter, February 16, 1957

# IN SCIEN

## AERONAUTICS

## Pay Must Climb for Planes to Do Same

➤ HIGHER salaries for the government's aeronautical research experts are needed to keep American aircraft and missiles at least the equal of those of any other nation, Dr. J. C. Hunsaker, chairman of the National Advisory Committee for Aeronautics, declared in the agency's annual report sent to Congress.

As urgently needed as giant wind tunnels and other equipment are talented scientists and engineers. To hold them in competition with the higher salaries and fringe benefits paid by industry, Dr. Hunsaker advised Congress to authorize pay sufficient to recruit and hold the NACA research personnel.

"At stake are American scientific leadership and supremacy in the air," he warned.

New knowledge is imperative, the report said, to satisfy military requirements for ballistic missiles, for satellites to probe space, and for solutions to the strange and difficult conditions of aerodynamic heating.

Science News Letter, February 16, 1957

## ASTROPHYSICS

## Studying Meteorites Aids Missile Re-entry Problem

➤ SOLUTION to the challenging problem of designing intercontinental missiles so they will not burn up when re-entering the earth's atmosphere may be aided by studying meteorites, the fragments of meteors that have survived a fast journey through the air and fallen to the ground.

Dr. John S. Rinehart, assistant director of the Smithsonian Institution's Astrophysical Observatory, Cambridge, Mass., reported details on his studies of more than 70 meteorites at the American Physical Society meeting in New York.

He said that meteors enter the earth's outer atmosphere with speeds ranging from seven to 44 miles a second, but that most have a velocity of about 10 miles a second. At these extreme speeds, the material is rapidly dissipated "through aerodynamic heating and abrading forces," Dr. Rinehart reported.

As much as one-half of the material, he said, may be lost in flight. His study showed this wearing away frequently occurs roughly in a symmetrical pattern about an axis that is parallel to the direction in which the meteor fell.

Large meteorites, Dr. Rinehart reported, have deep pits, but small ones usually are smoothly sculptured. Heat from the surface penetrates only a fraction of an inch into the meteorite.

Science News Letter, February 16, 1957

# CE FIELDS

## MEDICINE

### Creosote Causes Cancer in Mice

► CREOSOTE OILS, sometimes used as germicides and preservatives, cause skin cancer in mice, Drs. William E. Poel and A. G. Kammer, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pa., report in the *Journal of the National Cancer Institute* (Jan.).

The oils are obtained from distilling coal tar at high temperatures and the heavier type, called "blended creosote," is used principally for the preservation of wood, the scientists reported.

The mice tested received a drop of the creosote oils on their skin three times per week. All of them developed papillomas, or skin tumors, and most of these became malignant, they reported.

Coal tar itself has long been known to contain the cancer-causing chemical benzopyrene, but this compound was not found in the creosote oils.

"The apparent absence of benzopyrene in the creosote oils tested confirms the impression that other potent carcinogenic (cancer-causing) agents are present in coal tar," they reported.

Tumors caused by coal distillants or by benzopyrene may regress, the researchers added. Cases of "tar warts" that regressed have been reported among people who work with coal-tar products.

Recent experiments indicate that non-malignant papillomas, malignant but localized papillomas, and "invasive" skin cancers are three different stages of the same thing, rather than being separate types of growths, they reported.

These findings emphasize the need for early detection of pre-malignant changes to help eliminate industrial cancer, the scientists explained.

Science News Letter, February 16, 1957

## ASTRONOMY

### World's Largest Radio "Dish" to Operate Soon

► THE WORLD'S largest saucer-shaped radio telescope, a steerable antenna 84 feet in diameter, will be operating in the United States within a few months.

Installation is being held up by rain-soaked ground at the 20-acre site the Naval Research Laboratory has selected for its Maryland Point Observatory at Maryland Point, Md., about 45 miles south of Washington.

Only two or three other locations east of the Mississippi are known to be as free from radio interference as the selected area. For radio astronomers who tune in on the very

faint radio waves broadcast by heavenly sources, man-made interference can cause many lost hours of observing time each week.

Another advantage of the Maryland Point location is its unobstructed view of the southern horizon. This is important because many objects of particular interest never rise very high in the southern sky.

The largest saucer-shaped radio telescope now operating, 80 feet in diameter, is in Holland. The Germans have a 75-foot one, and Harvard University has a 60-foot one.

The English are now constructing a radio antenna 250 feet in diameter, scheduled for completion by 1958.

Besides the radio telescope at Maryland Point Observatory, there will be an instrument building and a trailer for sleeping. Separate accommodations are being constructed for Miss Nancy Roman, the NRL's only female radio astronomer.

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## PHYSICS

### Examine How Sun Sends Out Radio Waves

► TWO ways in which the sun could send out radio waves were proposed to the American Physical Society meeting in New York by Dr. Leona Marshall of the University of Chicago's Enrico Fermi Institute for Nuclear Studies.

One involves a shock wave and the other the spiraling of electrons in the sun's magnetic field, so called "synchrotron radiation."

Radio noise from the sun received on earth ranges in frequency from about 20,000 megacycles to about 20 megacycles, Dr. Marshall reported. At high frequencies, the radio noise is emitted all the time, and agrees with the intensity expected from a source having a temperature of 10,000 degrees Fahrenheit, that of the sun's surface.

At low frequencies, there are large bursts of radio noise lasting from seconds to hours. When these occur, Dr. Marshall said, there is usually a sunspot visible on the sun. Special direction-finding experiments have shown the radio broadcasts are coming from the neighborhood of sunspots, particularly those with high magnetic fields.

To explain these solar radio broadcasts, Dr. Marshall proposed that bursts of high energy electrons, equivalent to temperatures of from 40,000 to 300,000 degrees Fahrenheit, are produced in sunspots. This is much hotter than the usual temperatures of sunspots, from 10,000 to 40,000 degrees Fahrenheit.

The magnetic fields around the sunspots cause the electrons to spiral as they move out from the sun. If they are emitted straight up from the spot, they emerge rapidly from the sun's atmosphere, Dr. Marshall reported.

However, if they are emitted in a direction almost parallel to the sun's surface, they must spiral many times, thus taking a long time to break free of the sun. As the electrons travel out, Dr. Marshall said, they emit radio noise.

Science News Letter, February 16, 1957

## MEDICINE

### Tobacco Chewing Affects Heart and Circulation

► TOBACCO chewing gives you higher blood pressure, faster pulse, and colder fingers and toes, Dr. David L. Simon, Dr. Arnold Iglauer, Dr. John R. Braunstein and Robert E. Rakel, Cincinnati General Hospital and Kettering Laboratory, University of Cincinnati, Ohio, reported in the *Journal of the American Medical Association* (Feb. 2).

Although 81,000,000 pounds of tobacco are chewed every year, there is practically no available information on its effects on the heart and circulation, they reported.

The researchers studied habitual chewers before, during, and after chewing both standard, commercial tobacco, and low-nicotine tobacco. The commercial type contains 1.53% nicotine and the low-nicotine type contains from .31% to .47% nicotine.

The subjects got a full mouthful of each type to chew every other day, and ranged in age from 34 to 71. Afterwards, all the commercial type chewers showed a definite rise in blood pressure and over half showed an average increase of 13.4 beats per minute in their pulse rate. About half of them also showed decreased temperatures in their fingers and toes. Among the low-nicotine group the effects were less pronounced.

The body changes were similar to the ones caused by smoking cigarettes except for an increase in the heart's thrust as it pumps blood, the doctors reported. This increase was not found in young cigarette smokers.

Science News Letter, February 16, 1957

## ZOOLOGY

### Raccoons Quicker Students Than Cats

► RACCOONS learn more quickly than marmosets and cats but less quickly than monkeys and chimpanzees, thus fitting the evolutionary groove, according to Dr. K. L. Michels of Purdue University, Lafayette, Ind.

Raccoons take 800 trials of comparable problems to achieve 75% success on the second trial of a given problem, Dr. Michels and Ph.D. Candidate John I. Johnson Jr. found. Monkeys and chimpanzees achieve 95% to 100% accuracy after only 400 trials. Marmosets require 5,000 trials to reach the raccoon peak of 75% accuracy, and cats need 7,000 trials to reach the same peak.

Before they could assess raccoon learning ability, the Purdue researchers had to teach their subjects to look, by rewarding them with special foods, then evaluate their visual acuity.

Raccoons are arboreal carnivores, sharing the tree environment with monkeys and other arboreal primates. This environmental factor may contribute in part to high intelligence in comparison with non-arboreal species, Dr. Michels hypothesizes.

Science News Letter, February 16, 1957