

## VIROLOGY

**Radiation Sensitivity May Hinge on Virus Bonding**

► DIFFERENCES in the nature of bonding between components may be the reason some viruses are protected from damaging radiation effects while others are easily killed, Drs. Albert Siegel, S. G. Wildman and William Ginoza, University of California at Los Angeles scientists, suggest.

Two closely related strains of tobacco mosaic virus differ about five times in the ease with which they are killed by ultraviolet light.

These viruses consist of two chemical components, a nucleic acid core surrounded by a protein sheath. The nucleic acid core, by itself, can infect tobacco plants, recent studies have shown.

It was found that, without their protein sheath, the nucleic acid cores are killed by ultraviolet light at the same rate. This rate is the same as that of the intact virus of the more sensitive strain.

Since the ultraviolet light is absorbed mostly by the nucleic acid and not much by the protein, it was concluded that the resistant virus strain was protected from radiation by the way its nucleic acid core is bonded to the protein sheath.

This bonding may afford protection in either of two ways, the investigators said. Energy absorbed by the nucleic acid can be transferred into the protein where it may have little effect on biological activity, or the protein may hold the nucleic acid in such a configuration that damage to the nucleic acid is easily repaired.

Science News Letter, October 6, 1956

## PEDIATRICS

**No Football For Pre-Teens**

► BOYS not yet in their teens should not play tackle football. Wrestling, boxing and other body contact sports should also be avoided in sports programs for this age group.

This is the opinion of the American Academy of Pediatrics, an organization of physicians specializing in and specially trained for the care of the health of babies and children.

Children of this age, the specialists point out, are particularly susceptible to bone and joint injury. This is because the growing ends of their long bones have not yet calcified, or hardened, as the layman thinks of it.

Pre-teen age children do not have the protection of grown-up muscles, either. Injury to their bones and joints during the growing years, the pediatricians further point out, may interfere with normal bone growth.

Girls as well as boys should have a chance at sports, although problems of growth and development are more evident in girls because some begin normally to mature before the age of 12.

Sports programs which include calisthen-

ics, folk dancing, kickball, baseball, swimming, skating, tennis, golf, archery and similar activities should be encouraged for both boys and girls in their pre-teens.

Although baseball is a good game in itself, it often becomes highly competitive and this tendency should be guarded against in the pre-teens.

Competition, the pediatricians state, is a natural, healthy process. The young child competes with his playmates, himself or with his environment. This drive should be understood and helped to develop normally and not suppressed or over-stimulated.

Athletic activities, whether part of a school program or outside the school program, should include competent medical supervision of each child. Teachers and athletic directors should be encouraged and helped by the physician to watch the health of each child.

Children should be helped to learn to play games for the fun of playing. Too much stress on winning should be avoided.

Science News Letter, October 6, 1956

## WILDLIFE

**Surplus Big Game Animals for Sale**

► A BUFFALO for \$150 or an elk for \$90 are offered in a special Fish and Wildlife Service sale.

The sale, held annually as a wildlife management measure, includes more animals than usual this year. Animal populations have reached their optimum levels on most refuges. Drought in many southwestern areas has necessitated selling a greater percentage than in past years.

The animals may be purchased alive or butchered, dressed and quartered. Preference is given to buyers who want live specimens.

In announcing the sale, Fish and Wildlife Service director John Farley said big game hunters need not fear that herds are being discontinued. He said the sale is a control measure to prevent overgrazing.

The animals being sold include 500 buffaloes, 76 elk, 110 mule deer and 151 longhorn cattle.

A mature buffalo not under two years old sells for \$150. A buffalo under two years old costs \$125. A butchered, 450-pound animal costs \$125 to \$150 depending on where purchased, and a half-carass can be purchased for \$62.50 to \$75.

A full grown elk costs \$90 or \$110, depending on the place of purchase, and an elk less than two years old costs \$80. Butchered, a 250- to 300-pound elk costs the same as a mature live animal.

Prices include the cost of shipment. In most cases, the nearer the purchaser is to a source of animals, the less the animals cost. Prices this year are a little lower at the Wichita Mountain Refuge at Cacha, Okla.

A leaflet with further details may be obtained by writing the director of the Fish and Wildlife Service, Washington, D. C.

Science News Letter, October 6, 1956

**IN SCIENCE**

## PUBLIC HEALTH

**Hospital Costs More Than Double in Ten Years**

► HOSPITALS are spending more than twice what they did ten years ago for care of each patient each day.

In hospitals of all types in the United States, expenditures per patient day rose from an average of \$5.21 to \$11.24 between 1946 and 1955, reports Ray E. Brown, president of the American Hospital Association, Chicago, and superintendent of the University of Chicago Clinics.

Expense per patient day in the nonprofit short-term general and special hospitals increased from \$10.04 to \$24.15.

"Hospital care has become more expensive as it has offered more diversified services for treating and caring for patients," Mr. Brown says. The increase in hospital expenses also reflected the rise in payrolls and the increased cost of supplies and equipment.

Science News Letter, October 6, 1956

## BIOCHEMISTRY

**Green Scum on Ponds Could Improve Bread**

► CHLORELLA, best known as the green scum on ponds, could make bread more nourishing, it appears from studies by Drs. J. M. Hundley and R. B. Ing of the National Institutes of Health, Bethesda, Md., and Dr. R. W. Krauss of the University of Maryland, College Park, Md.

The green algae called chlorella would help by providing a cheap source of two protein building amino acids, lysine and threonine. Adding these two amino acids has previously been shown to improve the nourishing quality of enriched bread by adding to its protein value.

Laboratory rats given one of these algae plus enriched bread or flour gained much more weight in a 27-day period than rats on the same diet without the chlorella.

One of these amino acids, lysine, can be produced synthetically at "modest cost," the scientists point out in *Science* (Sept. 21). A lysine-enriched bread is being marketed experimentally.

Threonine, however, is still very expensive. So the scientists made further experiments to see how the algae would act as a source of threonine in supplementing enriched bread.

Judged by both growth of the rats and food efficiency, that is, weight gained in relation to the weight of food eaten, chlorella was an effective source of threonine, better than purified soya protein, and equal to several animal-protein foods of high biological value, such as eggs and liver.

Science News Letter, October 6, 1956

# CIE FIELDS

## NUTRITION

### Link Cleft Palate With Stress in Early Pregnancy

► CLEFT PALATE and harelip in a baby may be caused by stress to the mother during the first months of the baby's life before birth. Vitamins B-6, B-12 and C and other essential nutrients given the mother may prevent the condition.

Studies suggesting this are reported by Drs. Lyon P. Strean and Lyndon A. Peer of St. Barnabas Hospital, Newark, N. J., and the Merck, Sharp and Dohme Research Laboratories, Rahway, N. J., in the *Journal of Plastic and Reconstructive Surgery* (July).

The eighth to tenth week of pregnancy, they point out, is when the upper jaw bones in the unborn baby fuse. Investigation of 232 cases of cleft palate and harelip showed that most of the mothers had suffered stress during this period.

Severe emotional stress such as death in the family or loss of employment, especially when associated with excessive vomiting, seemed the most important single stress. It was reported in 68% of the mothers.

Physiologic stress, such as chickenpox, measles and diabetes, and injury stress from injuries and accidents were also significant in some cases.

Turning to the laboratory, the scientists found they could produce cleft palate in the offspring of 87% of the mice subjected to stress during the time when the unborn mice should be having their upper jawbones fused.

When the mouse mothers were protected against the stress by getting massive doses of vitamins B-6, B-12 and C, and of other essential nutrients, the number of offspring with cleft palate was reduced.

Science News Letter, October 6, 1956

## BIOCHEMISTRY

### Printers' Trouble May Lead to Alcoholism Cure

► BECAUSE PRINTERS working on color presses developed a violent reaction after drinking as little as six ounces of beer, medical science may have "a new cure for alcoholism."

The new "cure" would be like the famous Antabuse cure and would work in the same way and for the same reason.

The chemical that would be used instead of Antabuse would be N-butylaloxime. Persons who get this chemical into their bodies have a marked reaction, consisting of red, swollen face, red ears, stuffy nose and increased skin temperature on the face, after drinking alcoholic beverages.

The reaction starts within 10 or 15 min-

utes after a half ounce of whisky and increases if more whisky is taken.

Discovery of the reaction and the chemical responsible for it is announced by Drs. William Lewis and Louis Schwartz of Washington, D. C., in *Medical Annals* (Sept.), official journal of the Medical Society of the District of Columbia.

Their medical detective work in turning up the new potential "cure" for alcoholism started when all the men on the second floor of a large printing company complained to the management about the unpleasant reactions they developed if they drank alcoholic beverages.

Besides the blotched, red faces, the men were drowsy, short of breath and had palpitations. Because of these unpleasant symptoms, most of the men on the second floor stopped drinking.

The second floor was the press room, containing black and color presses. Careful investigation finally pinned the trouble to an anti-skimming compound in the inks, especially the yellow ink. Men at the ink manufacturing plant, it turned out, also had similar symptoms especially when mixing yellow ink.

Science News Letter, October 6, 1956

## BIOCHEMISTRY

### Try Rancid Fat Chemical To Aid Cancer Diagnosis

► A CHEMICAL found in rancid fat may help in early diagnosis and perhaps treatment of breast cancer, a report to the Canadian Medical Association states.

The chemical is heptaldehyde, and its potential value in breast cancer is announced by Drs. R. N. Lawson, A. L. Saunders and R. D. Cowen of Montreal.

Within minutes after the chemical was given to breast cancer patients, 80% felt a "tight sticking feeling" in the region of the cancer. In all of them, the elevated skin temperature over the cancer dropped suddenly. Heptaldehyde had no effect when the tumor was not cancerous.

Discovery that the temperature of the skin over a breast cancer is higher than that of neighboring skin was reported recently by Dr. Lawson. The drug together with skin temperature measurements may, the doctors state, give the long-sought "simple, reliable clinical test" for breast cancer at an early stage.

They believe the test would make "at least 95% of breast operations unnecessary," by eliminating the need for surgical removal of a bit of suspected cancer tissue for examination.

Use of the drug in treatment has not yet been confirmed, the medical association report states, although research by other scientists showed that breast cancers in animals could be reduced in size by the drug.

Investigation of the drug was prompted by the observation that no case of breast cancer has been reported among Eskimo women whose diet contains a high proportion of rancid fat.

Science News Letter, October 6, 1956

## BOTANY

### Hormone-Like Chemical Makes Flowers Bloom

► FLOWERS that bloom rarely or not at all have been made to blossom by the application of gibberellic acid, a new hormone-like substance.

Dr. Anton Lang of the botany department of the University of California at Los Angeles said it is the first instance in which flowering has been promoted consistently by chemical application and in a considerable number of plants.

Gibberellic acid has been known to Japanese workers for nearly 20 years but until recently has not attracted the interest of American and European plant scientists.

Dr. Lang applied the substance to plants that normally remain in a vegetative state indefinitely. Initial experiments were carried out on henbane, water pimpernell, sweet William, catchfly, carrots and other plants.

Such plants normally form stems and flowers only under stimulus of cold or of long summer days. Otherwise they just grow leaves directly from the root crown or from a tuber.

Gibberellic acid caused stems to shoot up immediately and two or three months later the plants would flower, while untreated plants remained stemless and non-blooming.

Preliminary experiments by Dr. Anton Kofranek of the department of floriculture in application of gibberellic acid to hasten blooming of commercially important China asters have been encouraging.

Science News Letter, October 6, 1956

## ELECTRONICS

### Electron Tube Works at Very High Frequencies

► AN ELECTRON TUBE designed to operate at extremely high frequencies with large power outputs has been developed by the Air Research and Development Command.

Considered one of the most significant research contributions in the field of electronics in recent years, the tube was developed by Ohio State University under contract to ARDC's Wright Air Development Center.

The tube, called a "retarding field oscillator," goes farther toward satisfying Air Force requirements for generation of high radio frequencies than any other electronic device now available.

The characteristics of the new tube are such that it operates at frequencies not only far above the highest TV channel of 890 megacycles, but also considerably above the World War II airborne radar frequency of 10,000 megacycles.

It actually works well at a frequency of 70,000 megacycles and has operated, with reduced power output, at 100,000 megacycles.

Science News Letter, October 6, 1956