

## CHEMISTRY

## Fluorocarbons for Industry Commercially Produced

► UNRULY FLUORINE, now tamed in a relatively new family of chemicals known as fluorocarbons, has found so many industrial uses that these compounds have now entered production on a semi-commercial scale in a new plant.

The plant was constructed and is being operated at Hastings, Minn., by Minnesota Mining and Manufacturing Company of St. Paul. An electrochemical process is used. It is based on inventions by Prof. J. H. Simons of the University of Florida. Research men of the St. Paul company have found many uses for the fluorocarbons and predict countless others. Products will all contain a high percentage of fluorine.

Primary use for the fluorochemicals is in manufacturing other products such as resins, dyes, pharmaceuticals, polymers, solvents, refrigerants, fire-extinguishing compounds, dielectrics, hydraulic fluids and lubricants. Made with the aid of fluorocarbons, they have such improved qualities as greater heat and chemical stability, unusual optical properties, greater surface activity, increased fire resistance and more resistance to fungus.

Their resistance to heat, corrosion and acid formation gives them possible applications in permanent lubricants and hydraulic fluids, replacing oil. Certain fluorochemicals will produce what is known as wetter water, that is, water which has greater ability to penetrate clothing or other surfaces on which it is applied.

In the Simons process no free fluorine is used. All danger of handling this chemical is eliminated. The fluorocarbons are made using hydrogen fluoride as a basic material. Fluorocarbons chemically are related to hydrocarbons, important source of which is petroleum, but contain fluorine instead of hydrogen.

Science News Letter, October 27, 1951

## NUTRITION

## Wonder Drug Feeds Salvage Runt Pigs

► THE NEW antibiotic-containing feed supplements are much more effective in transforming runts and unthrifty pigs into healthy pigs than they are in speeding up the growth of normal animals.

This is the advice given to farmers by the University of California College of Agriculture at Davis.

It has been found that growth rate was stepped up nearly 100% when antibiotics were added to the diet of weak, unthrifty pigs. The increase in healthy pigs was from 10% to 20%. In some instances, normal pigs have shown no effect at all from the compounds.

This new development in feed has moved to American farms surprisingly fast. Antibiotics include aureomycin, bacitracin, ter-

ramycin, penicillin, and streptomycin. Farmers have reported good results from feeding supplements containing antibiotics to growing-fattening hogs and breeding stock under average farm conditions.

Fortunately, the addition of antibiotics to mixed feeds should not increase the cost greatly because relatively small amounts of the supplements are needed per ton of feed.

Science News Letter, October 27, 1951

## BIOLOGY

## Anti-Germ Chemical Made From Germs

► A NEW antibiotic, or germ-against-germ chemical, is announced by Drs. A. Hirsch and Dorothy M. Wheeler of the National Institute for Research in Dairying at Shinfield, near Reading, England, in the journal, *NATURE* (Oct. 6).

This new antibiotic was obtained from germs of the streptococcus family and was tested against *Staphylococcus aureus*, the germ family involved in boils among other ailments.

Streptozyme is the name given the new antibiotic, to show that it is an enzyme with ability to disintegrate cells.

Science News Letter, October 27, 1951

## INVENTION

## New Electric Lamp Uses Voltage Through Phosphor

► AN ELECTRIC lamp that is neither of the ordinary incandescent nor usual fluorescent types was recently issued a patent. It is called an electroluminescent lamp, and in it a voltage is applied directly to a phosphor, or the phosphor is placed in an electric field.

In the usual fluorescent light an electric discharge is sent through gas in a closed tube. Invisible radiation emitted is converted to visible light by a chemical preparation known as a phosphor that coats the inside of the tube. In this type the current is sent through the phosphor itself, the phosphor being placed between two conductors across which the voltage is applied.

Alternating current will be used ordinarily with this electroluminescent lamp because the light appears to be produced only when the voltage is applied and removed, or when the voltage is changed.

In this flat three-layer lamp, the phosphor material is mixed with wax or some other light-transmitting dielectric material to form an inner layer between a metal reflecting background and a glass plate on which is a transparent conducting coating. The three layers are tightly pressed together to exclude air.

Patent 2,566,349 was awarded to Eric L. Mager, Peabody, Mass., for this invention. Patent rights have been assigned to Sylva Electric Products, Inc., Salem, Mass.

Science News Letter, October 27, 1951

# IN SCIENCE

## MEDICINE

## Red Cell Transfusions Save Blood, Help More Patients

► BLOOD IN blood banks all over the country can be used more economically if the fluid part, or plasma, and the red cells are used separately according to the patient's need, Drs. Donald W. Smith and John Elliott of Miami, Fla., declare in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (Oct. 20).

Of the 28,000 transfusions prepared each year at the Dade County, Fla., blood bank, about 15% are given as suspensions of red blood cells. Another 15% are given as plasma. This means that 15% of the blood collected does double duty.

The chief conditions in which red blood cells instead of whole blood will be good medicine for the patient are listed by the Florida scientists as follows: 1. uncomplicated anemia of the iron deficiency type; 2. anemia in heart disease, high blood pressure or kidney disease where an increase in blood volume is not desirable; 3. anemia in cases in which it is necessary to get a quick, effective increase in the oxygen-carrying capacity of the blood; 4. preparation of anemic patients for surgery when their blood volume is normal.

Details of how to calculate the dose of red cells needed by a patient and of how to prepare the red cell suspension are given with a plea not to waste plasma by giving whole blood when only red cells are needed.

"This economy," the doctors state, "permits stock-piling of more plasma for emergency or wartime needs."

Science News Letter, October 27, 1951

## NATURAL RESOURCES

## Nibbling Deer Threaten West's Ponderosa Pines

► DEER NIBBLING on young pine seedlings are seriously threatening our future supply of ponderosa pine and other evergreens in western forests.

So concludes Lowell Adams, biologist for the U. S. Fish and Wildlife Service at the Forest Range and Experiment Station in Missoula, Mont. His figures on the heavy destruction of young pine seedlings by deer were obtained by comparing over a five-year period the number of trees growing on plots of land, alike except for the fact that deer were excluded from half of them.

He found 114 seedlings growing within the deer-sheltered spots, only 18 on those where the deer were free to nibble. He suggests further studies to determine what deer population can be supported on woodlands without harming the future supply of pine.

Science News Letter, October 27, 1951

# E FIELDS

## MEDICINE

### Hypo Points Rough, Hospital Bureau Warns

► THE NATION'S hospitals were warned to examine the points of their hypodermic needles before they are put into service for giving "shots" of morphine, penicillin and all the other many medicines given by hypodermic injection.

Reason for the warning, given by the Hospital Bureau of Standards and Supplies in New York, is that the bureau's research department has been finding that the points of "a great many" needles have wire edges, metal slivers and loose metal particles.

Whether the wires and metal particles constitute a health hazard is not known to the U. S. Food and Drug Administration which has been consulted by the Hospital Bureau. The Federal agency, however, plans to investigate the matter.

"With all the emphasis that has been placed on maintaining the sterility and removing undissolved material in solutions (for hypodermic injections) it seems strange," the Hospital Bureau states, "that no more consideration has been given to the cleanliness of the needles."

Hospitals sterilize needles before use. This kills germs but does not necessarily remove solid particles.

Science News Letter, October 27, 1951

## RADIO

### Anti-A-Bomb Radar Ring Believed Near Completion

► CONSTRUCTION of the outer radar ring of defenses against A-bomb attack of this continent may shortly be completed.

This was indicated by an announcement from the General Electric Company that it has completed an order for the U. S. Air Force for large and complex radar systems, capable of detecting aircraft at long ranges.

The company designed rubberized fabric housing, held up in a half-balloon shape by air pressure, to protect the radar installations in Arctic positions. One-half pound of air pressure, it was said, would enable the balloon housing to stand up against winds of 125 miles an hour. It is 36 feet high and 54 feet in diameter.

It would not take too many of these complex radars to provide a screen all the way across the top of the continent. They, perhaps, could be spaced as much as 300 miles apart.

However, even these new radars—with ranges of up to 250 miles—would not provide complete assurance that enemy bombers would go undetected. The closer to

the surface a plane flies, the more limited is the ability of the radar to pick it up.

Backing up the radar system, it is planned, will be a net of airplane spotters, working under the Air Force and in conjunction with Civil Defense. Not only would the civilian spotters catch planes which slipped through the radar curtain, they also would be expected to keep track of the planes once they were behind the radar and streaking for American cities.

Each of the new radar installations would need 400 men to operate round-the-clock.

Science News Letter, October 27, 1951

## TECHNOLOGY

### Full Automatic Controls For Ocean Liners Predicted

► OCEAN LINERS, like airplane transports, are now controlled in part by automatic devices but by 1960 will be robot controlled from bridge to keel, the American Merchant Marine conference in New York was told.

Electronic developments in marine design will usher in this age of automatic ships, Maurice R. Eastin, Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., stated. Included among these developments will be automatic navigation devices, automatic boiler controls, master controls for propulsion machinery, and sensitive climate control for passengers, crews and cargo.

Crews will be somewhat smaller but more efficient as the robot devices will better the performances of manually manned ships, he stated. We are approaching the all-automatic ship, he added, not for labor-saving and comfort advantages alone but for greater efficiency, safety and lower operating costs.

Science News Letter, October 27, 1951

## MEDICINE

### Plastic Sponge Used for Lungs Collapsed by TB

► THE PLASTIC sponges that can be bought in drugstores for washing dishes, the family car and for other household purposes are solving a 50-year-old tuberculosis problem, it appears from studies reported by Dr. Sidney Dressler of the National Jewish Hospital in Denver.

The problem is to find the simplest and safest way of collapsing a tuberculous lung for rest and healing. In the past tuberculosis specialists have used materials ranging from mineral oil and rubber to lucite spheres. All of these had shortcomings.

The plastic sponge material, supplied in the form of malleable strips that can be shaped by hand in the chest, has been used with good results in 20 patients during the past year, Dr. Dressler and associates report in the medical journal, DISEASES OF THE CHEST.

Science News Letter, October 27, 1951

## INVENTION

### Hot Seat for Hunters On Cold Days Patented

► HOT SEAT for the deer hunter waiting in the woods with gun in hand for a buck to come within range is provided by an invention which received patent 2,567,323. It is suitable also for the winter fisherman who sits for long hours before a hole in the ice. Inventor is Allan S. Cyphert, Saltsburg, Pa.

The device is a sort of seat-high bucket with ventilating holes in the casing and a hinged cover which provides the seat. Within is a small tank to hold oil or kerosene and a wick like a lamp. When the wick is lighted, the size of the flame can be controlled by turning a button on the outside, much like the control to regulate the flame in an ordinary kerosene lamp.

Science News Letter, October 27, 1951

## PHYSIOLOGY

### Faulty Jaw Action Is Blamed for Ear Stiffness

► STUFFINESS IN the ears and even pain and impaired hearing often are due to faulty jaw action and position rather than to disease of the ear and sinuses formerly blamed for the condition, Dr. James B. Costen of St. Louis reported at the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago.

Dr. Costen based his statement on findings among 800 patients.

Snapping or buzzing sounds in the ears, dizziness, headache, burning sensation in the throat, tongue and side of nose, and lockjaw also can be traced to improper position and action of the teeth and jaws, he said.

The stuffy sensation in the ears and the dizziness he found came from pressure on the eustachian tube. This is the channel that connects the ear with the pharynx in the throat. During swallowing the tube is temporarily forced shut by the bulging of tissue next to it.

Pain in front of the ear, spreading through the whole area even to the tongue, comes when abnormal movement of the jawbone injures an important nerve running close to the point at which the jawbone and upper part of the skull meet. Irritation to the nerve near the joint may be transferred to another nerve which controls the muscles used in chewing. This stiffens these muscles, causing lockjaw.

Lockjaw may also be produced in conjunction with impacted teeth, abscesses or decay of the teeth. This was found in a considerable number of younger people. Correction of the tooth condition generally relieved the symptom, but in some cases special exercises helped relax the muscles.

Science News Letter, October 27, 1951