

## Jasmine Perfume Components Synthesized

➤ A SYNTHETIC MATERIAL useful in duplicating the scent of the jasmine flower can now be produced by a simple, relatively inexpensive method discovered by Dr. Robert T. Dahill Jr., of the Givaudan Corporation, Clifton, N.J.

Dr. Dahill stated that a compound known as jasmone is the principal component giving this flower its characteristic odor. Jasmone is exceedingly expensive because the flower yields only small quantities, and it is most difficult to synthesize.

A closely related compound, useful in jasmine compositions, is dihydrojasmone. Although several methods of synthesizing dihydrojasmone are known, the product obtained is usually low in yield and in purity.

Recently, said Dr. Dahill, dihydrojasmone was synthesized from a highly aromatic substance of the cyclopentenolone family of compounds. This substance is inexpensive and abundant, being obtained from the dry distillation of beechwood, from tall oil (a wood pulp byproduct) and from other soluble wood tars.

Scientists of Louisiana State University had developed a method of synthesizing dihydrojasmone in fairly high yields from this substance but the procedure was more complex. A more direct method was developed with yields as high as 81% as a result of Dr. Dahill's research.

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### GEOPHYSICS

## Supersonic Transports To Heat Earth's Surface

➤ WHEN SUPERSONIC transport planes come into regular use, they will actually raise the average temperature of the surface of the earth.

This is the prediction of Prof. Gordon J.F. MacDonald, professor of geophysics at the University of California, Los Angeles, who recently completed a two-year review of weather and climate modification as chairman of a National Academy of Sciences panel.

"About 400 supersonic aircraft flying four flights a day on intercontinental routes can be shown to affect surface temperature on the same level as adding carbon dioxide to the atmosphere," says Dr. MacDonald. "We can thus tentatively expect about a four-tenth degree increase in the average surface temperature if SST's are put into large-scale operation."

Heavy burning of fuels, triggered by the industrial revolution, has increased the amount of carbon dioxide in the atmosphere by 10% to 15% over the last 60 years, he estimated.

The double effect, according to

rough calculations, has been a slight rise of about four-tenths of a degree F. in the surface temperature of the earth, accompanied by a drop in stratospheric temperatures of about four degrees.

In the next 60 years, such unplanned changes may develop into real problems, Dr. MacDonald said.

He cited three man-made developments that are likely to affect the heat balance and dynamics of the atmosphere in the next decades.

1. Increased burning of fossil fuels throughout the world.

2. Growing urbanization. Cities are known to have slightly higher temperatures and rainfall than surrounding countryside, although the primary cause is still unknown.

3. Pollution through rocket and supersonic transport flights, spewing exhaust chemicals into the atmosphere.

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### PHYSIOLOGY

## Nicotine Can Stimulate Or Depress Smokers

➤ SMOKERS who use cigarettes to calm their nerves should be aware that nicotine can be both a depressant and a stimulant.

Researchers have found that nicotine injections slow down rats during the night, when they are normally active, but in the daytime when they usually rest, the injections increase their activity.

Drs. D. Bovet and F. Bovet-Nitti of the University of Sassari in Italy and Dr. A. Oliverio of the University of California School of Medicine, Los Angeles, reported the rat studies at a conference on the effects of nicotine on the central nervous system which was sponsored by the New York Academy of Sciences.

They said that in strains of rats with a very high level of performance nicotine impairs activity. Strains with a low performance are helped to a certain kind of learning.

Dr. Barbara B. Brown of the Veterans Administration Hospital, Sepulveda, Calif., reported that cats appeared to be neither alert nor asleep after nicotine was introduced under their skin. Electrical responses of some parts of their brains resembled those found during natural sleep, but other responses indicated wakefulness.

Drs. Henry B. Nurphree and Carl C. Pfeifer of the New Jersey Psychiatric Institute, Princeton, reported that the prominent changes that occur in the brain waves of adults after inhaling tobacco smoke take place before the constituents of the smoke have time to reach the brain through the bloodstream from the lungs.

They reasoned that the smoke must stimulate nerve endings in the lungs to send nerve signals to the brain. These signals may cause changes in the brain waves.

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# IN SCIENCE

### AGRICULTURE

## Painless Cold Brand Replaces Red Hot Iron

➤ FREEZING COLD, not red heat, is the new tool used in branding animals for identification purposes.

Like the old cattle round-ups, the Pony Express and other events of the Wild West, the brutal method of tying steers and burning a scar into their skin with a red hot poker will be a thing of the past.

The new freezing method, developed by Dr. R. Keith Farrell of the Agriculture Research Service, U.S. Department of Agriculture, uses super-chilled material such as a cold metal brand or dry ice applied to the skin surface for about 30 seconds. There is some swelling and redness in the area, and the hair drops off.

When the hair grows back again, however, it is snow white, because the extreme cold has destroyed the pigment-producing cells called melanocytes. This growth of white hair in the shape of the letter or number of the brand can easily be spotted at long distances.

Working with scientists at Washington State University, Pullman, Dr. Farrell has successfully tested freeze branding on a large variety of animals, fish and birds.

The simplest and most economical technique is the use of a copper brand chilled in a dry ice-alcohol bath to minus 158 degrees F. and applied to the animals' skin for 30 seconds.

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### AGRICULTURE

## Cattle Like to Eat Midnight Snacks

➤ CATTLE do about one-fourth of their feeding at night with or without lights, Dr. Paul A. Putnam, a Department of Agriculture scientist, reported. However, continuous lighting prompts the steers to space their feeding more evenly throughout 24 hours.

It is possible that meal spacing improves the conversion of feed to meat. If so, it would explain why lighted feed lots often raise the financial returns on beef, Dr. Putnam told the annual meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

The USDA's six-year study in Maryland also revealed that cattle have food preferences, said Dr. Putnam. If given a choice between grain and hay, coarse grind and pellet form, they usually take the coarse grain.

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# CE FIELDS

## TECHNOLOGY

### Voiceprint Introduced In Court for First Time

➤ VOICEPRINTING, an electronic method of reprinting the human voice, was introduced in a criminal trial in White Plains, N.Y.

It is believed to be the first courtroom application of the voice identification method developed by Lawrence G. Kersta, a physicist at Bell Telephone Laboratories, Inc.

The technique pictorially registers, by means of a spectograph, the voice of a speaker. Every person has a voice that is characteristic and regardless of how he tries to disguise his voice by pitch, volume or other means, the voiceprint remains substantially the same.

No two persons have exactly the same voice print and the picture a voice produces is as individual as a fingerprint.

The defendant's voice recorded on a tape was introduced in evidence. Mr. Kersta called the use of the voiceprint for such a purpose a milestone in his work.

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## PSYCHOLOGY

### Hypnosis Helps Measure Emotional Repression

➤ DEPENDING on how well an individual represses his emotions, he may get a headache or develop an eye twitch.

At least this appears to be the case, a Michigan psychologist found in an experiment with hypnosis.

Dr. Joseph Reyher, an associate professor at Michigan State University, East Lansing, hypnotized 24 students and told them a story in which they had been wronged. He also told them they felt very angry and that after they were awake, anything which reminded them of this event would again cause anger. In addition, they would have an overwhelming desire to destroy some valuable papers.

Actually only three students tried to tear up the so-called valuable papers planted in the room, reported Dr. Reyher.

Most of the others did not feel conscious anger no matter how many cue words the professor threw out.

But a lie detector device measuring the students' skin resistance indicated that nearly all were reacting emotionally to the words.

Good repressors tended to have physical symptoms such as headache,

nausea, tiredness. Some even broke out in rashes, Dr. Reyher found. Others, less able to repress emotions, had muscular-nervous reactions such as tics, aches and tension.

Finally some of the students said they were annoyed, irritated or had other feelings akin to anger.

Dr. Reyher concluded that the type of psychosomatic reaction a person experiences may be related to the degree to which he is able to repress an uncomfortable emotion and that the better the repression, the more physical the symptoms; the poorer the repression, the more emotional the symptoms.

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## AGRICULTURE

### Gas Storage Keeps Apples Fresh All Year

➤ MORE THAN 14 million bushels of apples were "put to sleep" in gas storage across the country, this past winter, reported Dr. R. M. Smock, New York State College of Agriculture.

Fresh, tasty apples can be eaten all year round with the controlled atmospheric storage, said Dr. Smock at a symposium on "Frontiers in Food Research" at Cornell University, Ithaca, N.Y.

Levels of oxygen and carbon dioxide are manipulated in the storage room. The low oxygen level retards respiration, softening and quality changes in the fruit, while the relatively high amount of carbon dioxide slows down the development of decay. The technique, initiated in England in the late 1930s, was first used in New York State in 1940.

Studies of gas storage are being conducted on avocados, citrus fruits, strawberries, bananas and pineapples. This method of storage does not seem promising for stone fruits, such as peaches, cherries and plums.

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## RADIOLOGY

### Artificial Manikin Has Human-Like Mouth

➤ AN ARTIFICIAL man, at least from the neck up, has been developed with human-like mouth tissue that offers about the same resistance to X-rays as living flesh.

Designed to eliminate the need for exposing dental "practice patients" in radiography studies, the manikin is complete with hard and soft tissue of the upper and lower jaw, a full set of teeth, a tongue, uvula and soft palate, cheeks and lips. Two adjustable metal arms can be positioned to hold X-ray film plates in place.

The manikin is currently being evaluated for use by the U.S. Public Health Service.

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## ASTRONOMY

### First U.S. Orbiting Star Watcher Fails

➤ AFTER SEVERAL postponements due to bad weather at Cape Kennedy, the first Orbiting Astronomical Observatory (OAO) was successfully launched into space. Then, as astronomers around the world were visualizing vast additions to their knowledge of space and the things in it, came the announcement that the satellite's batteries were running down.

In fact, they died, despite all efforts to save them. Had they not failed, OAO would now be transmitting its observations back to earth, including measurements at infrared, ultraviolet and X-ray wavelengths.

Except for some cosmic ray data, OAO was not directly concerned with manned flights to the moon. However, combined with Gemini 8's case of the "wobbles" and the recent failure of an Atlas-Centaur rocket like the one that is to carry a Surveyor spacecraft to the moon, it gives the U.S. lunar effort a rather under-the-weather look.

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## RADIOLOGY

### Practical Use of X-Ray Made on Discovery

➤ IN LESS THAN 20 days after Wilhelm C. Roentgen handed the manuscript announcing his discovery of X-rays to the editor of a scientific journal, the X-rays themselves were employed in clinical medicine. Probably no discovery in the world has ever been put to use so quickly and so successfully.

A research paper by Dr. Kurt Walthner of Leer, West Germany, and Dr. Charles G. Roland, senior editor of the Journal of the American Medical Association, published in the Journal of the Canadian Association of Radiologists March 1966, attempts to pinpoint the exact dates of the earliest medical use of roentgen rays for diagnosing pathologic processes.

Based on their investigations, the authors believe "the first demonstration of a roentgen picture of a pathologic process was shown in Vienna on Jan. 17, 1896, by Sigmund Exner." It showed a left hand with a crookedly-healed fracture of the fifth finger caused by a bullet wound.

In addition Exner exhibited an astonishing X-ray picture of a corpse's hand which had been injected with a solution which clearly outlined the arteries.

This was born at this early date, the technique of angiography, radiography of vessels after injection of radiopaque material into an artery.

The remarkable speed with which news of Roentgen's discovery, made on Nov. 8, 1895, spread and the almost instant recognition by physicians shows that X-rays are an invaluable tool.

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