

## PUBLIC HEALTH

## Isolate Gases That Form Smog Irritants

► THE GASES in smog that form irritants in sunlight have been isolated.

The fumes are primarily hydrocarbons, gasoline and oil products, Dr. Lawrence M. Richards of the Stanford Research Institute, Stanford, Calif., told a meeting of the American Petroleum Institute in St. Louis.

From smoggy air pumped into his laboratory in Los Angeles, he separated the gases in a liquid oxygen-cooled trap.

Dr. Richards showed that the sun's ultraviolet light triggers the reaction producing the powerful oxidants. Chemists believe that these hydrocarbons react with nitrogen oxides to produce ozone, a very strong gaseous oxidant. The ozone, which is a form of oxygen with three atoms to a molecule instead of the ordinary two, may be the cause of the watering eyes common in Los Angeles during smog.

Outside air, pumped through an irradiated glass vessel, was analyzed before and after exposure to the laboratory light. When unfiltered air passed through the vessel, oxidizing substances and nitrogen oxide were formed. The isolated hydrocarbons injected into pure air also produced this reaction when irradiated.

But when the smoggy air was first filtered through a liquid oxygen trap which produces very low temperatures the reaction was halted because the hydrocarbons had condensed out. The guilty gases were reclaimed from the trap by heating it, and their irritant-forming tendency was confirmed.

Filters with activated carbon, a black adsorber used in gas masks, and hot copper oxide also removed the fumes, the individual hydrocarbons of which have not yet been identified.

Science News Letter, May 21, 1955

## INVENTION

## French Sun Furnace Receives U. S. Patent

### See Front Cover

► THE INVENTION that has made possible the world's largest sun furnace, nestled high in the French Pyrenees, has been patented.

Felix Trombe, director of the National Center for Scientific Research in Paris, was granted U. S. patent No. 2,707,903 for inventing giant composite mirrors capable of trapping the sun's energy. To achieve this feat, M. Trombe designed a composite mirror made of several hundred little mirrors. Each of the little mirrors, he found, if made of pliable glass, could be shaped by permanent mechanical fingers attached to its back. This would then form each into the shape intended for the composite mirror itself. It is possible, he states, "to use thinner glass plates and, owing to the effect of

the mechanical stresses applied to these mirror plates, they keep their shape much more easily than flat elements, despite the action of wind, vibrations or thermal expansion."

The French sun furnace shown on the cover of this week's SCIENCE NEWS LETTER has been in operation for over two years. It consists of two great mirrors, one of which is a 105-square-yard parabola, a product of M. Trombe's invention. The modern solar energy laboratory in the mountains is capable of generating a temperature of 5,432 degrees Fahrenheit. French scientists are using the sun furnace to produce and study some minerals which are made at temperatures too high for ordinary furnaces.

The invention's patent rights were assigned by M. Trombe to the National Center in Paris.

Science News Letter, May 21, 1955

## ANTHROPOLOGY

## Scientists Avoid Atlanta As Segregation Protest

► WHEN THE scientists of America meet next December in Atlanta, Ga., for their big Christmas meetings, one whole section of the American Association for the Advancement of Science, consisting of 484 members, will be absent. Reason: segregation of Negroes.

Section H, Anthropology, has voted by mail ballot to abstain from meeting this year because of the discrimination that would be shown in Atlanta toward Negro members. Dr. Montague Cobb of Howard University, a prominent officer of the section who is a distinguished Negro anthropologist, refrained from voting because he considered himself prejudiced.

The American Association for the Advancement of Science arranged with Atlanta hotels for certain concessions in the way of fair treatment for Negro members of the Association. All technical sessions will be open to Negro as well as white members. And all social functions such as the reception following the presidential address and a traditional big smoker will be open to both races. Buses hired by the Association to transport members to certain sessions will be non-segregated.

But state laws in Georgia forbid housing of Negroes in white hotels, serving them in white restaurants or seating them with whites on street cars. Even taxis are segregated; some will not carry Negro passengers and others refuse whites.

The nation's anthropologists, most of whom hold that the idea that one race is superior or inferior to another is a dangerous myth, have now taken formal action in protest against such segregation.

The action of Section H of the AAAS was supported by a resolution passed unanimously by the American Association of Physical Anthropologists and also by action of the Anthropological Society of Washington.

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# IN SCIEN

## ENGINEERING

## Funnel-Shaped Drains To Save \$1,000 a Mile

► FUNNEL-SHAPED DRAIN inlets for city streets designed at the University of Illinois can save \$1,000 a mile in new street construction.

Tests on the campus showed that the new inlets to take water from gutters are more efficient than rectangular drains and cost half as much to install.

Thirty inches long, 12 inches wide and 12 inches deep, the inlets can be cast in concrete from re-usable metal forms.

The drains were developed by Prof. John C. Guillou of the university's civil engineering department and Norman W. Nester, civil engineer of its physical plant department.

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## MEDICINE

## Removing Gland in Head Controls Breast Cancer

► WIDESPREAD BREAST cancer can be temporarily controlled by an operation to remove the pituitary gland at the base of the brain, six New York City physicians and surgeons reported at the meeting of the Association of American Physicians in Atlantic City, N. J.

Of 43 women with advanced breast cancer in whom the pituitary gland was removed, 20 showed marked improvement, 17 were considered failures and six were treated too recently to be evaluated. Fifteen of the 20 improved patients are still in remission at the present time. The longest remission to date has been 20 months.

Cancers of the breast that could not be removed by operation shrank, as did cancers that had spread to bone, bone marrow, lung, brain, spinal cord and skin. Patients were able to walk again, to breathe more easily and to return to normal activities. Bones broken because the cancer had destroyed bone tissue healed again. Patients felt good generally.

The results of the treatment, besides the new, if temporary, lease on life given the patients, suggest that hormones of the pituitary gland may play a hitherto unsuspected role in the growth of some kinds of cancer.

The studies reported were made by Dr. Olof H. Pearson of Memorial Center's Sloan-Kettering Institute, Dr. Bronson S. Ray, neurosurgeon of New York Hospital-Cornell Medical Center, and Drs. Charles G. Harold, Charles D. West, Min-Chu Li, John P. Maclean and Mortimer B. Lipsett of Memorial Center.

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# CE FIELDS

## ENTOMOLOGY

### Locusts Fed Isotopes To Study Their Habits

► LOCUSTS ARE being corn-fed radioactive isotopes by British scientists to study their habits.

Experiments with both young and adult locust hoppers show that after being fed with radioactive phosphorus-32 mixed with corn, bran or grass, the ravenous insects can be picked up and tracked with a Geiger counter. "Hot" isotope labeling is seen as a new method of studying insect populations, death rates, dispersal and habits.

It was found that both young and old radioactive-fed locusts could be "counted" three to five weeks later. Treated adults could be recognized at a distance of ten inches for two weeks. With both groups, too, it was found that the insects lost about half their radioactivity each in the first 24 hours. Radioactivity loss after that time, however, was negligible.

The study, made by Dr. H. B. D. Kettlewell of the Department of Zoology at the University of Oxford, and reported in *Nature* (May 7), also showed that treated hoppers had a slightly higher death rate than untreated ones.

"Much could be learned about hopper movement and death rate by this method," Dr. Kettlewell reported, "the only one at present available."

But, he pointed out, until an automatic recording device, such as an insulated radioactive-sensitive film of known length, can be found, radioactive isotope labeling costs too much and has no advantages over well-tried paints, which require no specialized observers.

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## PSYCHOLOGY

### Delinquency, Old Age Ills Have Same Cause

► THE RISING tide of crime among juveniles may have the same origin as the increasing rate of mental illness in old age.

Broken homes and an inability to take part in the normal activities of family life which give a feeling of belonging have been blamed for the increasing number of teenagers who get into trouble.

Similarly, a lack of participation in the work and living of the family and community may give rise to the mental ills of old age. More than one out of three first admissions to state mental hospitals today are persons 60 years old or over.

These problems were among those discussed at a research conference under the joint auspices of the National Institute of Mental Health and the American Psychological Association.

Among the gravest of the problems needing research is loneliness, Dr. J. B. Sheldon, English expert on old age, told the conference in an opening address. Dr. Sheldon is director of medicine at the Royal Hospital, Wolverhampton, England, and former president of the International Association of Gerontology.

The loneliness that saddens old people comes not only from the death and drifting away of old friends but from the feeling of being "on the shelf" and out of the active stream of family and community activity.

Occupation is the best medicine for the elderly, Dr. Sheldon said, and America needs the experience and special talents of those past middle age.

Medicine has increased the average life span and many more are now living past the conventional retirement age of 65. But so far people have generally taken for granted that those past that age are handicapped. Their talents and assets have been largely neglected.

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## PSYCHIATRY

### Mental Patients Given Electroshock-by-Proxy

► AN ELECTROSHOCK-by-proxy treatment of mental patients is now being tried in Germany, Dr. Fritz Roeder of the University of Gottingen at Gottingen, Germany, announced at a scientific meeting at St. Elizabeths Hospital, Washington.

The meeting was held as part of the 100th birthday celebration of this Government hospital, now one of the world's largest and best known institutions for the care and treatment of the mentally ill.

The new treatment reported by Dr. Roeder was developed by another German psychiatrist. It is done by giving several electroshocks to rabbits and then extracting their brains with acetone and ether. The brain extracts of the electroshocked rabbits are then injected into mental patients.

In "extremely favorable" cases of depressions, the patients could be released from the hospital after several injections.

Even in serious cases, there was "an astonishing improvement" lasting two to seven days.

Patients feel tired and sleep after the injections. They all feel quieter and more "content" afterwards and are readier to reveal their feelings and discuss them with their psychiatrist. They sleep better and have better appetite, feel freer and brighter.

The effects apparently are not long lasting but further injections again bring improvement.

This proxy electroshock treatment does not help patients with schizophrenia.

Dr. Roeder himself has been treating Parkinson's disease, or shaking palsy, patients with extracts of the corpus striatum of calves' brains. He reported good results lasting four weeks, after which the injection must be repeated.

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## ELECTRONICS

### Network Color TV Is Sent From Tape

► COLOR TELEVISION recorded on magnetic tape was transmitted for the first time over commercial television network facilities as part of the dedication ceremonies of the new research center of the Minnesota Mining and Manufacturing Co. at St. Paul.

SCIENCE SERVICE's observer considered it much better than color television seen last year.

The tape-recorded telecast originated with the prototype Radio Corporation of America TV tape recorded installed for field testing at the National Broadcasting Company's studios in New York. It was transmitted over a closed circuit to St. Paul. Magnetic tape developed by 3M was used.

Some problems, involving both the machine and the tapes, remain to be solved, Dr. Harry F. Olson of the RCA laboratories said.

The system is believed to have a future as a convenient and versatile means for making electron motion pictures, particularly in business and industry and in the home, in an all-electronic chain comprising portable TV camera, TV tape recorder and standard TV receiver.

The tape recorder used for the demonstration operates at a speed of 20 feet per second and can accommodate a 15-minute TV program on a 20-inch reel using tape approximately one mil (0.001 inch) thick.

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## MEDICINE

### Fingers Put in Cold Storage for Later Use

► FINGERS AND toes can be kept in "cold storage" under the skin of the belly for possible later use to replace those lost by accident, Dr. Lyndon A. Peer of St. Barnabas Hospital, Newark, N. J., declared at the meeting of the American Association of Plastic Surgeons in Washington.

He has already performed the "cold storage" part of the operating in four New Jersey children, aged two to 10 years.

Each of the children was born with an extra finger or toe. When he removed the extra digit surgically, Dr. Peer buried it under the skin of the abdomen, or belly. All three fingers and one toe have survived and retained their characteristic structure. The fingers are still jointed and can be bent. Nail remains on the nail bed.

In past experiments of this sort, finger bones are reported to have been absorbed.

If a child or grown-up has a finger completely sliced off by accident, Dr. Peer explained, the finger cannot be successfully resealed to the stump because the burden of recreating blood circulation is too great.

But if the finger has been stored in the abdomen, it can be gradually transferred to the finger stump without ever cutting off the finger's circulation.

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