

## METEOROLOGY

**Radar Pictures Help Predict Flash Floods**

► **FLASH FLOOD** conditions can be forecast while the rain is still falling with the help of radar pictures of distant areas, two weathermen told the American Meteorological Society meeting in Monterey, Calif.

Dr. Stuart G. Bigler, A. & M. College of Texas, and Richard D. Tarble, U. S. Weather Bureau, Washington, D. C., and the same Texas college, said the areas of persistent rainfall can be "readily" identified using films of a radar screen.

They reported lack of accurate information about the areas where rain fell and how much poured down, especially in remote headwater regions, has previously hampered forecasting of river levels. Poor communication facilities and inadequate numbers of rain gauges contribute to the problem. Very often, the weathermen pointed out, forecasters were not aware a local storm might produce a flood until river levels started to rise.

Radar pictures can be very useful in identifying areas likely to be flooded while the flood-producing storm is still in progress.

Radar and other modern tools for probing the atmosphere open up the possibility of a new approach to weather forecasting, Dr. Myron G. H. Ligda, also of A. and M. College of Texas, suggested at the meeting.

Instead of treating atmospheric motions in terms of what happens at a given moment at a particular place, the station where the weather record is taken, the new techniques allow weathermen to follow a storm, or a part of it, and how it changes as it moves through the atmosphere, without reference to any fixed point.

This approach, Dr. Ligda said, is "more realistic and natural" than the present method of making atmospheric readings at fixed points and times.

Science News Letter, June 22, 1957

## BIOCHEMISTRY

**Lung Lining Critically Damaged by Smoking**

► **SMOKERS** who have been smoking for 20 years or more have sustained critical damage to the lining of their lungs' bronchi or breathing tubes, scientists at the Washington University School of Medicine reported to the American Association for Cancer Research meeting in Chicago.

Tissue taken from the lungs of heavy smokers was up to 25% thicker than that of nonsmokers, contained many more fast-growing basal cells, showed more lesions or surface furrows, and was infiltrated with a larger number of inflammatory cells, the researchers reported.

After 20 or more years of smoking, whip-like cilia shorten to about one-third their normal length; goblet cells become exhausted and disappear, and protective mucus no longer is produced copiously; cells take on the irregular appearance of cancer cells,

and coarse furrows appear in the bronchial lining.

The studies were made on autopsy specimens from 155 men and women over 40 years old. Among those smoking for 30 years or more, women were as vulnerable to the effects as men, indicating that it may be the relative newness of the habit with women, rather than their sex, which has so far protected them from the enormous increase in lung cancer deaths, the report stated.

In those who smoked less than 20 years, the changes, if present, were described as fairly mild.

The damage was found in the bronchi and also in the trachea, the main air passage from the throat to the lungs. The trachea itself is seldom affected by cancer, a fact which has so far escaped understanding.

The long-term study, directed by Dr. E. V. Cowdry and Valentina Suntzeff, was performed by Drs. Brian Spencer, Cardiff, Wales; S. C. Chang of Seoul, Korea; Gen-shiro Ide, Japan; and Allan J. Rossell and Adele Croninger of the Wernse Cancer Research Laboratory, Washington University School of Medicine, where the work was done.

It was reported by the American Cancer Society, which helped support the research.

Science News Letter, June 22, 1957

## MEDICINE

**Tube Takes Stomach Pictures in Color**

► A **SNAKE-LIKE** tube, three feet long, that takes color pictures inside the stomach, has been perfected by scientists at the University of Michigan, Ann Arbor.

Called the fibroscope, the device is only one-half inch in diameter yet contains 40,000 tiny glass fibers each three feet long. At the base end of the device are a series of mirror reflectors to send the image back up the tube. A tiny electric wire runs down the side of the instrument and carries power to a small floodlight which lights up the stomach.

When refined and mass produced, the fibroscope is expected to be a major tool for private physicians. They will be able to use it in the office to diagnose possible stomach ulcers and cancers, saving many people a short trip to the hospital for more involved diagnosis.

Once inside, the tube can be twisted or bent around in the stomach to observe the duodenum, an area where peptic ulcers frequently occur.

The instrument will eventually replace the currently used lucite gastroscope which is much less flexible, Dr. H. Marvin Pollard, professor of internal medicine at the University, predicted.

The fibroscope was developed by two physicists, Dr. C. Wilbur Peters and L. E. Curtiss, and a physician, Dr. Basil Hirschowitz, former assistant professor of medicine at the University's Medical School.

Science News Letter, June 22, 1957

**IN SCIEN**

## PLANT PATHOLOGY

**Speedy Detection Made Of Plant Viruses**

► **PLANT VIRUSES** can now be detected within 45 minutes as compared with tests taking as long as three to seven days.

The testing procedure developed by scientists at Pennsylvania State University, University Park, uses a two percent suspension of red blood cells added to a preparation of juice extracts from the leaf tissue of the plant being tested. The juice extract, which can also be made from fruit tissue, is first combined with a phosphate buffer.

The presence of virus infection is indicated by clumping of the red blood cells. The test is so sensitive that, when juices of a supposedly healthy tomato plant were tested and clumping occurred, it was not until one month later that the plant showed definite infection.

The test also indicates the concentration of the virus in the host plant and this amount can be correlated with lesions appearing on the plant.

It is expected the new method for early detection of plant viruses will have great economic importance, considering the millions of dollars in damage caused by virus diseases of tomatoes, potatoes, sugar beets, cherries and other crops.

Dr. John S. Boyle, Dr. James J. Reid and Robert C. Dalzell, a graduate student in the department of bacteriology, developed the testing method.

Science News Letter, June 22, 1957

## TECHNOLOGY

**Tandem Wheels for Plane Newest Landing Gear**

► A **LANDING** gear that permits a 50-ton cargo plane to land safely and on hastily prepared airstrips was described to the American Society of Mechanical Engineers meeting in San Francisco.

Developed for heavy Air Force cargo carriers, the landing gear has two wheels on each side instead of the conventional one wheel. The added wheel is in front of the other wheel, as on a bicycle.

The tandem arrangement, R. O. Dickinson Jr. of the Lockheed Aircraft Corporation, Marietta, Ga., explained, gives greater reliability, a smaller concentration of weight on the runway and a narrower housing when the wheels are retracted.

For cargo carriers with a gross weight of almost 100,000 pounds that may operate from dirt or sand fields, the tandem arrangement permits the second wheel to run in the tightly packed track of the first, thereby reducing friction.

Science News Letter, June 22, 1957

# CE FIELDS

## MEDICINE

### Technique Makes Injection Painless

► THE ART of giving completely painless injections with a hypodermic needle has been explained by Dr. Janet Travell, Cornell University Medical College, to the American Medical Association meeting in New York.

Dr. Travell takes exception to the popular notion that the jab of a hypodermic needle must be expected to cause some pain.

She has devised a two step-procedure that eliminates pain and removes the fear of "the needle."

The first step is to spray the skin with a fine stream of coolant that chills but does not freeze the skin. With the skin temperature down to below 10 degrees centigrade the needle is quickly inserted through the skin and into an area of muscle found to have no "deep tenderness."

By avoiding the so-called trigger sites of muscular pain, the pain of the injection is done away with, Dr. Travell explained.

Normal skeletal muscle is completely insensitive to a needle, but with the stresses and strains of usage muscles develop local areas of sensitivity that trigger off pain sensations.

The trick is to miss these with the needle, and a quick manipulation of the area beforehand is all that is needed to find them. The trigger sites are about the size of a fingernail and feel like a washboard to the touch.

The painless procedure can be taught to a person in five minutes and should be standard practice in mass inoculations, Dr. Travell said.

Science News Letter, June 22, 1957

## PUBLIC HEALTH

### Summer Time Filled With Dangers, Doctors Report

► SUMMER and outdoor activities have many good effects on man but also many bad ones, a study of Canadians by Drs. Norman M. Wrong and H. R. Ruttan of the University of Toronto shows.

The bad effects are largely ignored by the average person and by many doctors who should be warning their patients about some of these dangers, they report.

Sunshine is one of the biggest potential hazards and suntans should be acquired with caution.

Too much sunlight produces sunburn immediately, but there are other changes which may not show up for years. The long term effects include aging of the skin and skin cancer, they say.

People should be warned sunbathing in

moderation is healthful but sun-baking may be dangerous.

The best preventive of skin cancer is to avoid sunburn at any age. A blonde or red-haired individual with blue eyes should be particularly careful.

Heat exhaustion, another common summer ailment, comes from exposure to excessive heat. It is more common when there has been no period of adaptation. It brings on a gradual weakness and loss of appetite which may progress to mental confusion, Dr. H. W. McIntosh of Vancouver, B. C., reports.

Heat stroke is a far more serious condition and results from a breakdown of the heat-regulating mechanism of the body. It frequently follows heat exhaustion and, without prompt treatment, can result in death.

Medical treatment includes continuous tepid baths or wrapping the victim in a wet sheet and spraying it with cool water.

The doctors reported on the summer hazards in the *Canadian Medical Journal* (May 15).

Science News Letter, June 22, 1957

## PHARMACOLOGY

### FTC Questions Antibiotic Industry

► DETAILED information on how much it costs to produce antibiotics and how much they are bringing on the market has been requested from the 18 manufacturers producing "wonder drugs."

The questionnaires being sent out by the Federal Trade Commission are the second that have been issued. The first were sent out last July by the Commission to check on production, patents and other data relating to antibiotic manufacture.

Among the facts requested by the Commission are those relating to bulk sales of the drugs and their dosage forms for 1956, the pricing policies for antibiotics during that year, and descriptive statements covering the history of the development period, 1943 through 1949.

Much public interest has been aroused about the pricing of modern medicine's wonder drugs and, although the questionnaires are by no means meant to be a policing device, they are designed to give the Federal Trade Commission up-to-date information on the economics of the mushrooming industry.

Since antibiotics represent so high a percentage of all prescription drugs sold today, they have become a fit subject for economic investigation, the Commission believes.

The request for information was developed with the cooperation of antibiotics manufacturers, John W. Gwynne, FTC chairman, emphasized in announcing the new questionnaires.

As rough drafts of the questionnaires were prepared, they were discussed with members of the industry and at the same time FTC investigators visited company plants to study production and research.

Science News Letter, June 22, 1957

## TECHNOLOGY

### Relay Sends Photo 40 Miles in 3 Minutes

► THE ARMY revealed it has a facsimile set that can flash a photograph to a person miles away five minutes after a photographer has clicked the shutter.

The high-speed photo transmitter is foreseen as having both revolutionary military and civilian uses. The set can flash vital military reconnaissance pictures by radio to a command headquarters in time to affect a critical decision. It could also change present methods of photo-reporting by daily newspapers.

Developed by the U. S. Army Signal Engineering Laboratories at Fort Monmouth, N. J., the set needs no darkrooms or messengers. It fits easily into the back of a radio-equipped jeep or car.

Described as the fastest facsimile set in the world, the equipment combines high-speed Army picture-sending techniques with a polaroid film that produces a finished print in one minute. Such a print can then be sent to a receiver 40 miles away, or thousands of miles away over standard telephone lines or long-range radio circuits.

In combat, for example, a front-line soldier with a specially equipped camera can take a picture of important enemy movements and get a three and one-quarter by four and one-quarter inch picture to his commander in five minutes flat.

The set was designed by John Erhart of the Signal Engineering Laboratories' Telecommunication Division and built under the sponsorship of the Signal Corps by the Times Facsimile Corporation, New York.

Science News Letter, June 22, 1957

## MEDICINE

### Bladder Can Be Grown Around Balloon

► HUMANS can grow completely new bladders around a plastic balloon implanted in them, Dr. A. Waite Bohne of the Henry Ford Hospital, Detroit, Mich., reported in an exhibit at the American Medical Association meeting in New York.

The plastic balloons, used in patients who have had their own bladders removed because of cancerous conditions, stimulate the body to grow a covering wall of muscles around the balloon which eventually becomes a new bladder.

The small balloon has three plastic tubes leading from it. Two of these are connected to drain the kidneys and the other passes to the outside of the body.

Seven cases of regenerating bladders have been made possible with the balloons, although a serious drawback in some of the cases has been a back flow of fluid from the bladder to the kidneys. Although plastic valves in the tubes could mechanically prevent this, they would cause a foreign body reaction, and lead to the development of kidney stones, Dr. Bohne explained.

Science News Letter, June 22, 1957