

## PHOTOGRAPHY

## Exposure Control for Use On All Standard Cameras

► PATENT 2,360,256 has been awarded to Joseph Mihalyi of Rochester, N. Y., for an exposure controlling mechanism for cameras which does not require any material changes of the standard camera structure and can be added to cameras now on the market. The patent has been assigned to the Eastman Kodak Company of Rochester. With its use any standard camera is turned into a semi-automatic exposure control mechanism. It is adapted particularly for use with cameras of the type which include an objective, an adjustable diaphragm, a variable speed shutter and a view finder.

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## CHEMISTRY

## Three-Metal Coating Protects Instruments

► A THREE-METAL plating process, by means of which an extremely thin coating of copper, tin and zinc is applied electrolytically to the surface of instruments and delicate instrument parts to protect them from corrosion, has recently been perfected in the laboratories of the Meter Division of the Westinghouse Electric & Manufacturing Company. The "bright alloy plate," as the coating is called, is non-magnetic and therefore particularly valuable for use on precision electrical instruments.

The new coating is of especial value on electrical instruments used by the armed services in the tropics, where the high humidity and the salt air cause severe corrosive action under which instruments deteriorate rapidly and lose their accuracy. Instruments coated with the bright alloy plate, subjected to 200 hours of continuous salt spray, show no signs of corrosion, or even any accretions of salt particles.

Perfection of a three-metal plating method has engaged electrochemists for several decades. When, in 1940, it became evident that the commonly used plating metals would quickly become hard to obtain, George W. Jernstedt, a Westinghouse research engineer, began work on the bright alloy plate. Single metal and some bi-metal plating materials had been quite fully developed. His problem was the improvement of the physical qualities of the protective coating by the addition of a third metal, and particularly the development of techniques that would make their ap-

plication practical.

In describing the new process, Mr. Jernstedt says, "Formerly, with multiple-metal platings, the metals were put into the solution in the form of salts; but in depositing a three-metal alloy this method often resulted in inconsistent proportions of metals or uneven thickness of coatings on the plated object, or cathode. If the anode, the starting point of the current passing through the bath, could be made of the metals to be deposited . . . it could be immediately dissolved, making possible a properly controlled three-metal process."

The new method uses an anode composed of the three metals to be deposited. A chemical salt is also used in the bath which helps the plating alloy penetrate the narrow crevices in the object being plated, and reduces the size of the crystals of deposited metal so that they lie flat making a smooth finish.

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## GENERAL SCIENCE

## Jewett Fellowships Set New Style in Honors

► MANY GREAT engineers and scientists have buildings and medals named for them when they are dead, but the five new A. T. & T. research fellowships in honor of Dr. Frank B. Jewett, one of the most active leaders in current war research, are a different sort of recognition.

These new post-graduate fellowships are bets that young men and women who have done their Ph.D. work will develop as creative scientists. Each recipient will receive \$3,000 a year and the institution at which they will work will be given \$1,500, which is a welcome innovation in fellowship grants.

For years a leader in telephone and basic research for the American Telephone and Telegraph Company, Dr. Jewett reached the company's retirement age and therefore relinquished his post as vice-president in charge of development and research at the end of September. But he will continue to be the president of the National Academy of Sciences and a member of the National Defense Research Committee, a top war research organization.

A committee of seven scientists from the Bell Telephone Laboratories will select those who will be given an opportunity to continue their academic researches in physics, mathematics and chemistry, and the first fellowships will begin July 1 next.

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## AERONAUTICS

## 10,000 Horsepower Gas Turbine Engines Possible

► GAS TURBINE engines for aircraft, approaching as much as 10,000 horsepower, may be available within the next decade, G. W. Vaughan, president of the Wright Aeronautical Corporation, reported.

While the principles of gas turbines have been known for years, it was only recently that research has improved their efficiency to a point of practical use and only recently that advances in metallurgy have provided the metals to withstand the heat and power stresses of such engines, he pointed out.

In the high-power range, the gas turbine has many advantages, Mr. Vaughan stated. It offers a large saving in weight and fuel consumption for long range operation at high altitudes. On a giant transport plane of the future, the gas turbine engine may mean a saving of as much as 8,000 pounds over present types of engines, permitting about 40 more passengers to be carried on each flight, or four extra tons of cargo. The use of the gas turbine engine is therefore expected to make possible sharp reductions in passenger fares and cargo rates.

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## INVENTION

## Meat Smoked and Cooked At Same Time in New Oven

► A SMOKE OVEN, in which meat or fish can be smoked and cooked at the same time, is the subject of patent 2,352,590, granted to R. H. Trinkle of Chicago, who has assigned his rights to the Industrial Patents Corporation.

The smoke oven is a highly sophisticated advance over the old-fashioned farm smoke-house. It consists of a closed chamber in which the products to be smoked are placed. The smoke is generated outside, in a separate apparatus, and carried in by a blower; "spent" smoke is removed in the same circulation. Temperature and humidity, as well as smoke, are automatically controlled, and temperature is kept at such a point that the meat is cooked by the time proper smoking has been accomplished.

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# CE FIELDS

RADIO

## Design of FM Receivers Reduces Interference

► A NEW advance in the design of Frequency Modulation receivers reduces interference from undesired stations in the reception of FM radio programs, George L. Beers, of the Radio Corporation of America, the inventor, reports.

The FM receiving system represents a new approach to the problem of reducing noise and interference. Known technically as a "frequency-dividing locked-in oscillator FM receiving system," it consists of an oscillator which automatically adjusts its frequency to the frequency variation of the signal of the desired FM transmitter, Mr. Beers stated.

"Frequency modulation," Mr. Beers pointed out, "is still in its infancy in terms of a nationwide entertainment service. Until a large number of high-powered FM broadcasting stations are operating on a commercial basis, the major technical problems which are involved in the design of FM receivers will not be fully appreciated."

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ENGINEERING

## Gas Turbines May Give More Power to Locomotive

► RAILROAD locomotives of the future may have gas turbines instead of the present steam engine, making them more powerful and efficient, Fred K. Fischer, of the Westinghouse Electric & Manufacturing Company, predicted at a joint meeting of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, held in Hartford, Conn.

The gas turbine engine, he pointed out, requires no water, takes up less space and weighs less than the steam engine. It also has very low maintenance cost.

Although the gas turbine is still in an early stage of development, Mr. Fischer asserted that when applied to locomotives, it can yield considerably more power than is possible with the present steam engine, and it can do it with twice the efficiency.

While gas turbine airplanes are already flying, he predicted that other uses for

the gas turbine will be found in ship drives, larger electrical power generation stations as well as industrial uses.

The advantage of the gas turbine, he stated, lies in its simplicity, since it consists of only three major elements, namely: a compressor, a combustor and the gas turbine itself.

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ASTRONOMY

## Preparations Being Made To Study Total Eclipse

► PREPARATIONS are already being made to observe the total eclipse of the sun on July 9, 1945, in northern Sweden. Great interest has been shown in this solar eclipse, according to a report from Dr. Bertil Lindblad, director of the Stockholm Observatory in *Monthly Astronomical Newsletter*, prepared at Harvard Observatory to help make up for the world-wide exchange of astronomical information disrupted by the war.

The path of the total eclipse, which will begin near Boise, Idaho, passes through Butte, Mont., and Yorkton, Canada. Crossing Hudson Bay, it goes through lower Greenland, into northern Scandinavia and on into the U.S.S.R.

Northern Sweden will be a good place from which to observe the eclipse. It will begin there in the early afternoon at about two and end at approximately four o'clock, Swedish standard time.

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NATURE

## Young Fairy Tern Provides Entertainment for Sailor

See Front Cover

► THE young Fairy tern, shown on the front cover of this SCIENCE NEWS LETTER, is being fed by a sailor somewhere on Midway. G.I.'s everywhere find this sort of entertainment welcome and relaxing in their infrequent spare moments.

Terns breed usually on sand dunes and shingle banks and lay up to four eggs, two being the commonest number, and great variation occurring with the season and locality. They are said by fishermen to damage the fishing, but this has proved to be a mistake, the birds feeding largely on crustacea, insects and sand eels. They obtain their food by plunging into the water from a height of 3 to 8 feet, and emerging with it in their bills.

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MEDICINE

## Unbalanced Body Chemistry Factor in Rheumatic Fever

► AN UNBALANCED chemical condition in the body may play a role in rheumatic fever, it appears from studies reported by Dr. Karl Meyer and Dr. Eleanor Chaffee, of Columbia University College of Physicians and Surgeons.

The unbalanced condition apparently is caused when a heavy, sticky organic acid, ordinarily found in the fluids between the joints and in other organs of the body, is produced in excess at the same time that there is insufficiency or failure of an enzyme that can break up the big acid molecule.

The acid is a polysaccharide called hyaluronic acid. The enzyme that decomposes it is hyaluronidase. The acid in its heavy form is not found in normal blood. A substance closely resembling it, however, has recently been found in red blood cells of rheumatic fever patients.

Tests with samples of blood from patients led the scientists to conclude that the acid does exist in the big molecule form in rheumatic fever. These tests were made by adding an anti-clotting substance to the blood sample and letting it stand in very fine-bore glass tubes.

In rheumatic fever and a number of other diseases the red blood cells settle out in these tubes at a much faster rate than normal. The rate of settling, the scientists found, can be increased by adding to blood sticky, heavy chemicals such as hyaluronic acid. Apparently the cells become coated with the sticky acid which makes them clump together.

The high rate of red blood cell settling in blood from rheumatic fever patients, they also found, can be brought to the normal rate in all cases by adding the enzyme, hyaluronidase, which decomposes the large acid molecule.

This acid, another group of scientists have found, is present in the outer coating of group A and C hemolytic streptococci. This seems significant since rheumatic fever is now generally assumed to be caused in susceptible persons by an abnormal response to previous infection with germs of the hemolytic streptococcus family.

What part the acid plays in the many symptoms of rheumatic fever remains to be seen, the scientists state, adding that the whole question of what part chemicals which, like hyaluronic acid, are highly asymmetrical polymers, play in various diseases must be studied.

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