

MEDICINE

Cancer Cases Reported From Medicinal Arsenic

CASES of skin cancer caused by arsenic-containing medicines taken for other conditions have caused Drs. Clifford C. Franseen and Grantley W. Taylor of Boston, Mass., to issue a warning to physicians to be very cautious in giving arsenic as medicine.

Nine cases definitely due to arsenic and five more cases probably caused by arsenic are reported by them (*American Journal of Cancer, October*). In two of the cases, the patients had been exposed to arsenic in the form of a spray for fruits and vegetables. But arsenic given as medicine for the relief of skin diseases and blood disorders caused the cancerous condition in the majority of the cases. The arsenic-containing medicine had been taken by some of the patients as long as forty years before the cancerous condition appeared.

Arsenic has been a common constituent of quack cancer pastes, Drs. Franseen and Taylor also pointed out. They hold it has no place in the treatment of cancer.

Science News Letter, November 3, 1934

TECHNOLOGY

Rubber Becomes Rival of Cellulose for Wrapping

CELLULOSE in the recent years of the world's great industrial revolution has been the stuff in which much of our everyday goods are wrapped. Whether an old newspaper, a shoebox, or a newer shimmery transparent sheet, fundamentally they are cellulose, one of the basic chemicals of wood, cotton and other plants.

Now there comes a rubber product to complete in this expanding field of wrappings. The new rival of Cellophane and its transparent cellulose associates is called Pliofilm and it is made by the Goodyear Tire and Rubber Co. It is produced synthetically from rubber by processes requiring the same careful control given to cellulose products.

Noteworthy, Arthur D. Little's *Industrial Bulletin* explains, is Pliofilm's retention of its moisture-proofness on wrinkling, creasing and related types of abuse that reduce or eliminate the effectiveness of most other "moisture-proof" wrappers in practical use. This moisture-proofness is a property of the

film itself, a unique distinction in the transparent wrapping field. Pliofilm is not greatly affected by changes of humidity in the atmosphere, and its producers claim that it has greater tear-resistance and more elasticity than the cellulose type of sheet. It does not have the stretchable elasticity one thinks of in connection with rubber, but rather a toughness, with some "give." Its light weight—more than 20 per cent. extra area per pound compared with the usual cellulose type—will have an important bearing on its economy in actual use.

Coupled with its moisture-proofness, Pliofilm's property of "heat sealing" will be of interest to package specialists who have followed the early difficulties in sealing other "water-proof" types of film. Only moderate heat and pressure are required for producing a strong, permanent seal of two edges.

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PHARMACY

Takes Bitter Taste Out Of Medicine; Adds Value

BY FINDING a way to take the bitter taste out of certain medicines, Dr. James C. Munch, director of research at Temple University School of Pharmacy, has not only made himself the friend of many patients who rebel at the unpleasant doses they must swallow but has also added to the benefit they can derive from the medicines.

In the case of quinine, bitter but effective malaria remedy, for instance, the use of proper solvents for the drug makes it possible for the physician to give doses five to six times as strong as could previously be administered.

A medicine can be so bitter that it is impossible to take it, Dr. Munch pointed out.

Before beginning this research it was necessary for Dr. Munch to establish a standard taste scale, for bitterness is a matter of degree. Once having established this scale, so that it was possible to say that something was twice as bitter as something else, it was necessary to find certain inert solvents or carriers for the drugs that would in no way affect the drugs themselves. Drugs were found to be more bitter in some solvents than in others. The first tests were made with strychnine. Dr. Munch said, regarding these tests:

"The tongue is more sensitive than the most delicate chemical reaction."

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IN SCIENCE

PHYSIOLOGY

Human Eye, Like "Electric Eye," Sums Up Flashes

NEW studies on how the eye responds to flashes of light lasting only from one 100,000th to one 10,000,000th of a second were reported to the Optical Society of America by Dr. J.W. Beams, of the University of Virginia.

The findings, having applications in the physiology of the human eye, reveal that length of the light flashes is not a vital factor in the way the eye receives the light energy. The eye, the research discloses, sums up or integrates the light energy—at least over the range of frequency of flashes studied.

This integrating ability of the human eye, Dr. Beams reports, makes it kin to the photoelectric cell or so-called "electric eye" which also has the property of integrating short light flashes. The photographic plate does not have this property, Dr. Beams said.

The light flashes, lasting only millionths of a second, were obtained by the rapidly rotating mirror driven by air with which Dr. Beams has been able to obtain speeds of 20,000 revolutions per second. In the present research, he declared, such high speeds were not necessary and a rotation of only 1,600 revolutions per minute was used.

Light from an incandescent lamp reflected from the many sides of the revolving mirror produced the extremely short light flashes. Since the flashes followed one another so rapidly no flicker was apparent to the eye and the flashing light could be compared directly with a steady source and "matched."

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ENGINEERING

Beauty Cooperates With the Engineer

See Front Cover

INTERIOR of one of the transmitters built in the Bell Telephone Laboratories for the Central American radio-telephone service is the subject of the illustration on the front cover of this week's SCIENCE NEWS LETTER.

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CE FIELDS

ORNITHOLOGY

Only Few Birds in U. S. Now Hide Nests From Study

BIRDS have no privacy any more. With the discovery of the breeding ground of Harris' sparrow, scientists now know where all but four or five kinds of birds of the United States build their nests and hatch their eggs.

The Smithsonian Institution here has just received specimens of the nest and eggs of the pretty Harris' sparrow discovered recently near Churchill, in Hudson Bay country. The nest and eggs fill one of the last gaps in the Smithsonian's bird collections. The specimens were collected by Miss A. M. Heydweiller, Cornell biology student.

Harris' sparrow flies south in winter, as far as the Midwestern states. But the summer home remained hidden until recently because the sparrows nest in a restricted district and the nesting area was traced only through intensive search.

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CHEMISTRY

Maple Flavor Concentrated From Sap for Export

EXPERIMENTS in the laboratories of the Canadian National Research Council have resulted in the discovery of a way to process the sap of the sugar maple tree so that the maple flavor may be extracted from it in greatly concentrated form. The work is the direct result of an attempt to improve the Canadian maple sugar industry, now hard hit by the strengthened United States tariff wall.

Rather than try to export maple sugar, as such, to the United States, the Canadians now have worked out a way to send to the U. S. A. the essentials of flavor which have wide use in ice cream manufacture, soda fountain products, soft drinks, baking and related industries.

The new process consists of adding to the ordinary maple liquid some volatile fluid like ethyl alcohol in which

the sugar of maple sugar will not dissolve. The addition of the alcohol, in fact, makes the sugar present crystallize out and leaves the maple flavor behind in the alcohol.

Next the alcohol is freed of its maple flavor and used over again, while the flavor is obtained in concentrated form.

When still more concentration is desired the already concentrated maple flavor is put through the same process again and each time a bit more maple sugar is removed. The process has recently been patented in the United States.

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ORNITHOLOGY

Bald Eagles Slaughtered For Indians' "Millinery"

BALD eagles of the British Columbia coast are being wantonly slaughtered by Siwash Indians, to meet a brisk cash demand caused by the vanity of male Indians of other tribes far to the south, in the United States. Thus reported Dr. George Miksch Sutton, curator of birds at Cornell University, before the recent meeting of the American Ornithological Union.

The Siwash, he said, sell the wings for a dollar apiece and the tails for fifty cents. These trophies find their way southward and inland, being used by the Plains Indians and the Pueblos and Hopis of the Southwest for the "millinery" the braves still affect. By the time the feathers reach the Pueblo-Hopi country, in the hands of white traders, they are priced at a dollar each. Dr. Sutton also called attention to the need for better-enforced protection for the rare trumpeter swan in the Knight's Inlet region, which are being mercilessly hunted.

Dr. Sutton was leader, during the past summer, of a joint expedition into British Columbia, undertaken by the University and by the Carnegie Institution of Washington. After several weeks of work in the coastal straits and inlets, the party, known officially as the John B. Semple Ornithological Expedition, moved inland over the mountains and into the drier country.

Two outstanding achievements of the expedition were the finding, for the first time in forty years, of an identified and perfect egg of the marbled murrelet, and the collection of a black pigeon hawk.

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ENGINEERING

Railroads May Save \$180,000,000 Yearly

AMERICAN railroads, hard pressed in the competitive transportation battle, have their hands on the lid of a treasure chest which may yield \$180,000,000 a year.

The potential fortune for railroads consists of the little gaps between each rail on the 300,000 miles of main lines of the country. If the small gaps were removed, it is estimated that five years would be added to the life of railroad rails. And the industry would save its \$180,000,000 in decreased depreciation of equipment quite aside from accompanying maintenance.

The railroads believe they have found the key to the treasure chest in welded joints between the rails. The tiny quarter and half inch cracks between consecutive rails would be eliminated. The track would be one continuous piece.

Railroad passengers would find in the improvement a quieter, smoother ride. To the railroads rail gap elimination would mean great financial saving for the removal of what makes the "click-click" of carwheels on rails coincides with the reduction of battering at these joints. Depreciation of equipment, both rolling stock and rails, would be cut markedly. For class one, main line tracks alone, the saving would be the aforementioned \$180,000,000.

But what about the expansion and contraction of the rails from the scorching days of summer to the frigid periods of a hard winter? asks the layman with some knowledge of physics.

Engineers have found that there is a wide difference between the theoretical expansion of steel rails and the actual change of length. In Germany it is noted that the expected change does not take place. In Australia rails up to 225 feet long show actual expansion and contraction just one-half the theoretical change. In America the change is only one-third that calculated.

H. S. Clarke, maintenance engineer of the Delaware and Hudson Railroad, speaking at the recent meeting of the American Welding Society in New York, described how experimental sections of track up to 2,800 feet long have been studied by this railroad since August, 1933. Three hundred welds were used in these sections of track. No trouble was experienced on this section despite the extremely cold winter of 1933-1934.

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