

TEXTILES

Sheer Cotton Stockings For Evening Wear

WEB-LIKE mesh cotton stockings fine enough for evening wear are the Government's suggestion answering feminine America's query, "What will we wear when sheer silk hose are gone?"

More than 150 designs for all types of cotton hose, from sturdy sports weights to sheer mesh and lace that can be worn with toeless evening shoes, are ready and waiting for American hosiery manufacturers to copy in mass production.

Three years ago, Congress anticipated silk trouble because of international complications, and set the Department of Agriculture to work streamlining cotton hose. The new designs, evolved under direction of David H. Young, textile technologist, are pronounced far less likely to snag or wrinkle than leg coverings of the last cotton stocking era.

Some of the Government's designs are already available in shops, with more in prospect. It is estimated that 89% of the full-fashioned knitting machines in this country can knit cotton as well as silk, while 47% can handle nylon.

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ENGINEERING

"Dimouts" Urged Instead of Total Blackouts for U. S.

IF WAR and air raids come to the United States we may be saved from the dangers of total blackouts by "dimouts" instead.

This is the suggestion made by Samuel G. Hibben, Director of Applied Lighting for the Westinghouse Electric and Manufacturing Co. He is now working with the National Technological Civil Protection Committee to draft a standard set of air raid precautions for use in American cities in event of war.

His idea is that power stations should be equipped with voltage regulating devices. Then, in case of an enemy raid, the street lighting circuits could instantly be reduced so that the lights would pale to the reddish glow of the harvest moon. This would give enough light for civilian activities but, it is believed, they would not be visible from the air.

"Total darkness during air raid attacks often can cause more civilian casualties than falling bombs, and in some instances even make a city more vulnerable to attack," explained Mr. Hibben. Lights in surrounding suburban and country areas outlining a blacked-out city

make it a conspicuous target, he said.

Since traffic must move, even during bombardment, he proposes that city police be provided with portable, shielded traffic lights which they would carry strapped to their shoulders. He recommends a band of white on the bodies of cars and trucks, with cat-eye slits in headlights and small running lights suspended under the chassis.

Ultraviolet "black" light can be used when intensities still lower than moonlight are required, he said. Signs would be painted with materials that glow under the invisible rays, and used to indicate subway entrances, police stations, bomb shelters and hospitals.

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MEDICINE

Cancer Patients in Death Confirm Animal Studies

PATIENTS dying of cancer and leukemia, cancer-like disease of the blood, gave in their last days of life and after their death final confirmation of studies which University of California researchers hope will lead to better treatment of cancer and leukemia patients in future.

Phosphorus made radioactive by the giant atom-smashing cyclotron when injected into the mice with leukemia, previous experiments had shown, concentrates in the affected tissues of the body and since the rays of the phosphorus destroy leukemia cells, this radioactive phosphorus has been used as a treatment for the disease.

Radioactive phosphorus is likewise rapidly taken up by cancer tissue when injected into the bodies of mice with cancers. It is taken up by cancer tissues as fast or faster than by normal tissues such as liver and spleen in which there is a rapid turnover of phosphorus.

The radioactive phosphorus, which emits radium-like rays which can be detected with sensitive instruments, was given to six human patients dying of cancer and to four dying of leukemia.

In post-mortem examinations it was found that the experimental results with animals were borne out.

Researchers said that this was a final confirmation of the experiments with animals.

The research was done by a group of workers in the Radiation Laboratory of the University, headed by Dr. John H. Lawrence, assistant professor of medicine. He was aided by Dr. L. A. Erf, research fellow, and Gerhart Friedlander, graduate student.

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ENGINEERING

Horseshoe-Shaped Yoke Triples Work of Machine

See Front Cover

BY MEANS of a horseshoe-shaped metal yoke, attached to a boring mill in the General Electric plant in Schenectady, the one machine is made to do work formerly requiring three. The device is used in making bearing rings and self-aligning bearings for battleships, and the time required for this small but vital step is cut in half.

The yoke attachment was devised by Waclaw Dasziewski, 53-year old Polish-born mechanic. Without the yoke the required smoothness could not be attained on either the vertical mills used for the bearings or the horizontal mills for the rings, and they had to be finished on a lathe. With Mr. Dasziewski's invention, shown on the front cover of this week's SCIENCE NEWS LETTER, one mill does it all.

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AERONAUTICS

Aeronautical Laboratory Gift Of Swedish Industrialist

STUDIES of airplane engines which will not only improve fighting planes but will be an aid to civil aviation as well are now under way in a new research laboratory of the University of Kentucky. Named after Axel L. Wenner-Gren, Swedish industrialist and philanthropist who donated \$150,000 for its construction, it was turned over to the University by Colonel James H. Graham, dean of the College of Engineering, and Chief Civil Engineer of the U. S. War Department.

Research, under the direction of Prof. A. J. Meyer, director of the laboratory, will concentrate on problems of combustion, cooling, lubrication and airplane engine mechanism.

In a statement quoted by Colonel Graham, Mr. Wenner-Gren, who is now living at Nassau, said that "the United States possesses the skill and the resources to solve many pressing aviation needs. Equally important, it has the will to devote the results to constructive democratic purposes throughout the globe."

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CE FIELDS

BIOLOGY

Pure Sea Water Found Poisonous to Bacteria

PURE sea water is poisonous to bacteria, states Prof. Claude E. ZoBell of the Scripps Institution for Oceanography, La Jolla, Calif. Sea water also contains an organic substance that can be precipitated by aluminum and iron salts, and destroyed by heat. If during laboratory analysis of ocean water polluted by sewage, it should be diluted to only 5% of the sample, this concentration will actually stimulate the growth of organisms. Prof. ZoBell points out that these factors can easily distort the picture of the problem of sewage contamination of the ocean.

Away from the shore, only ten parts of organic material are found in a million parts of water. This is too low a concentration to provide enough nourishment to support much bacterial life. There has been a conflict of opinion on the question whether normally one should expect to find the same bacteria in the digestive tracts of marine animals as are found in humans. The work of Prof. ZoBell and his associates at the Scripps Institution seems to indicate that there is no similarity except when the fish are feeding in contaminated waters.

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CHEMISTRY

Ozone More Poisonous With Nitrogen Oxides Added

OZONE, the stuff that creates the faintly sharp odor when you turn on your sunlamp, becomes poisonous to human beings only when its concentration rises above 20 parts per million of air, Clark E. Thorp, Chicago industrial chemist, has reported to the American Chemical Society. Its toxicity, however, is considerably enhanced when it is mixed with oxides of nitrogen.

Ozone is a form of oxygen gas, with three atoms to the molecule instead of the usual two. It is formed in pure state by the action of ultraviolet rays on oxygen. Electric discharges through the air

produce a mixture of ozone and oxides of nitrogen in roughly half-and-half proportions.

Five hundredths of one part of ozone per million of air can be detected by a keen sense of smell. One tenth part per million is easily detectable, but not unpleasant. At one part per million the odor begins to be unpleasant to some persons. At 100 parts per million, a one-minute exposure produced dry skin and severe sore throat. The same concentration killed mice left in it for an hour.

Ozone is used as a germicide in various industrial applications. Pure ozone in low concentrations had weak killing effects on bacteria and other one-celled plant forms. In higher concentrations, especially when mixed with oxides of nitrogen, it was much more effective. Thirty parts per million of the mixture killed all colon bacilli in water at less than 1,000 of the bacteria per cubic centimeter of water.

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PHYSIOLOGY

Phosphorescence of Teeth Test for Good Health?

AGHOSTLY light shining from your teeth after an ultraviolet lamp has been flashed on them may, at some future day, tell your doctor in one quick glance that you are suffering from malnutrition, some serious illness or have been poisoned.

The possibility of such a simple diagnostic test is suggested by Jack De Ment, of Portland, Ore., in reporting his discovery that human teeth are phosphorescent. (*Science*, July 25.)

The intense white fluorescence of human teeth which shifts to a reddish fluorescence in old age and in diseased persons has been reported previously by other scientists. So far as is known, phosphorescence, which certain lower forms of life such as jelly fish have, has never been noted before in living human teeth, Mr. De Ment says.

He discovered it in a healthy 20-year-old man by shining ultraviolet light from a cold mercury-quartz lamp on his upper and lower teeth. The teeth glowed with a medium green light for several seconds thereafter.

"It would be interesting to study the phosphorescence of teeth in relation to disease, deficiency of diet, poisoning and other conditions, since the action might provide a simple diagnostic measure for certain pathological states," Mr. De Ment states.

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BOTANY

Earthly Flowery Eden In Chinese Mountains

AN EARTHLY Eden, a real Shangri La, carpeted with a rainbow of flowers from June until August, has been discovered in an inaccessible mountain fastness in Kansu province, northwestern China, by R. C. Ching, a Chinese botanist collecting for the Smithsonian Institution. A bulletin describing the plants he found there, written by Egbert H. Walker of the U. S. National Museum, has just been published by the Institution.

The country, which is a high plateau, treeless and almost uninhabited, is exceedingly difficult of access, Mr. Ching reports. He struggled across deserts and over mountain ranges by impossible roads and obscure paths. When he arrived on the plateau, he traveled for two days without seeing a living soul, although he did find mud huts which had been used by Tibetan herdsmen.

The flowers, like mountain flowers elsewhere in the world, burst into bloom very suddenly, after summer is well advanced in the lowlands. Thereafter for a couple of months the place is a paradise, with masses of lemon yellow, purplish blue and deep red, as far as the eye can see.

Metropolis of the plateau is a settlement known as Labrang, at an elevation of 8,900 feet. It consists of the shops of about 100 Chinese and Mohammedan merchants, with a huge lamasery housing more than 3,000 Tibetan monks. Past the town runs a river, the Labrang Ho, spanned by five-arch bridges. The clearness of its water, Mr. Ching says, suggests the existence of immense forests at its source, far up in the Tibetan country.

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ENGINEERING

Water Heater Operated When Current Use Is Low

A TIME SWITCH for controlling electric water heaters to operate during hours when normal consumption of current is low, is mounted on a base, and provided with a glass cover like the common watt-hour meter. The timing is adjusted easily when the cover is removed. It will handle 240 volts at 40 amperes. (*T-52 Time-Switch, General Electric.*)

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