

## CHEMISTRY

## Aluminum Eaten Away In the Kitchen Sink

**T**HE HOUSEWIFE can do her bit toward conserving the aluminum supply not only by giving up her old pots and pans but by using cleaning compounds, in washing her good ones, that do not dissolve away the metal.

According to researches by J. F. J. Thomas, chemist of the National Research Council of Canada, (*Canadian Journal of Research*, July) some washing compounds eat away the needed metal.

To be sure, the action is very slow. Even in the worst cases it would take about a year of constant immersion to dissolve entirely away a light aluminum pan. But the remedy is so easy to apply that there is no reason why even this slight loss should not be prevented.

The investigation showed that the addition of 25% of water glass to even the worst of the washing compounds, say a teaspoonful to a heaping tablespoonful of the washing powder, will entirely stop all dissolvent action.

Water glass is a thick syrupy liquid commonly used to preserve eggs, is cheap, and can be obtained everywhere. Scientifically it is a solution of sodium silicate or metasilicate. Mr. Thomas found that trisodium phosphate and sodium pyrophosphate also prevented corrosion but not to the same extent as the metasilicate.

Most washing compounds advertised in the American market already contain these substances in sufficient quantity to be harmless to aluminum ware. Incidentally, Mr. Thomas remarks that the discoloration of aluminum utensils is no sure sign of deterioration.

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## BIOPHYSICS

## Lopsidedness of Life Is Subject of New Monograph

**W**HAT might be called the lopsidedness of life is the subject of a monograph, *Optical Activity and Living Matter*, newly published in this country. (Reviewed, *SNL*, this issue.) It came out in the nick of time, for the author, Prof. G. F. Gause, is a member of the faculty of the University of Moscow, and his country is now so swamped in war that further interchange of scientific ideas is at present impossible.

The monograph is a summary of research in a field that has apparently

aroused relatively little interest among scientists in this country. It calls particular attention to the fact that all living things, from full-grown complex organisms down to the molecules of which they are composed, are predominantly either right-handed or left-handed—never both equally. If one snailshell, or climbing vine, twists to the right, all the others in the same species will twist in the same direction. You won't find an exception in a hundred thousand, maybe not in a million. The rarely occasional organism that reverses its family direction seems to be under penalty for its deviation, for Dr. Gause notes that such individuals appear to be "ecologically handicapped."

Organisms choose between right and left even in the molecules they absorb as food. These minute inanimate particles betray their characteristic structural twists by the way they turn the fronts of light waves in the polariscope. "Right-handed" sugars, amino acids and other basic food molecules are accepted by given species of yeasts and other microorganisms, while chemically identical but "left-handed" molecules are rejected. At the same time, other species will choose the left and refuse the right, in selecting their foods.

Thus the whole organism, from basic building-blocks of food to gross outer structure and even direction of movement, has its dominant orientation. Only in the non-living world, says Dr. Gause, will you find indifferent, evenly balanced mixtures of rights and lefts.

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## PHYSICS—BIOLOGY

## Streams of Neutrons Cause Hereditary Changes

**S**TREAMS of neutrons, uncharged fragments of atoms smashed in the University of California cyclotron, have produced hereditary changes in living organisms, in experiments performed by Dr. Everett Ross Dempster.

As experimental material, Dr. Dempster used the familiar fruit fly, classic "guinea pig" of genetic research. He exposed male insects to the neutron stream, then mated them with untreated females and watched their offspring for mutations, or abrupt evolutionary changes. He found that neutrons are more effective than X-rays in producing certain types of mutations, less effective in producing others.

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# IN SCIEN

## TECHNOLOGY

## Money Still Wears Silk, But May Go All-American

**D**OLLAR bills that Uncle Sam's Bureau of Engraving and Printing is turning out are still wearing silk. But Treasury officials state that a shift to synthetic fiber replacing the familiar fine fibers of silk in paper money can be made at any time, since an official order on April 22 paved the way for a change. The order authorized as the distinctive feature of our currency paper "small segments of silk or synthetic fiber colored red and blue and incorporated in the body of the paper while in the process of manufacture."

The amount of silk needed for the paper is so small that the raw material in a pair of the soon-to-be-extinct silk stockings would dress up a lot of dollars. But if the United States goes all the way off the silk standard, our money will be all-American, too.

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## ANATOMY

## New Type Red Blood Cell Discovered in Young Mice

**A** NEW type of red blood cell has been discovered in newborn laboratory mice by Dr. Hans Grueneberg of University College, London (*Nature*, July 26). Named "siderocyte" by its discoverer, it differs from the common type of red blood cell in reacting to a chemical test for the presence of iron to which ordinary red cells do not respond. The test seems to indicate that the iron in the new type is a different compound from the hemoglobin of normal blood.

Discovery of a new kind of red blood cell, in so thoroughly explored a tissue as mammalian blood, is almost as startling as discovering a new island in the Caribbean sea. Since mice of the strains in which the new-type cells occur are always anemic at birth, gaining normal health as they mature, it is possible that Dr. Grueneberg's discovery may eventually have some significance in the study of anemia.

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# CE FIELDS

## CHEMISTRY

## Cotton Fabrics Developed For Making Powder Bags

**P**OWDER BAGS, vital to the Army and ordinarily made by the million of silk goods, can be made successfully of cotton for most purposes, the War Department announced.

Foreseeing a possible silk shortage, the Ordnance Department experimented with cotton for this use as early as 1934, and has developed cotton fabrics not unlike sheeting and lawn used as dress goods. The special materials overcome a danger that cotton goods was supposed to have, of smoldering in the gun breech or barrel after a powder charge was fired. A smoldering fabric could cause a premature explosion when a new charge was introduced. Four kinds of cotton cloth differing in weight and strength have been developed for this use, none having an ash content of more than two-tenths of one per cent.

Silk powder bags will still be used for loading very heavy caliber guns, and silk tie straps for the heavier charges, but experiments now in progress may result in finding that silk substitutes can be used.

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## VETERINARY MEDICINE

## Vitamins and Minerals Help Thoroughbreds Win

**T**IPS "straight from the feedbox" will have more value for racing fans if they include information on what the horse in question has actually been eating. Vitamins and mineral salts, especially calcium, have a lot to do with the performance of a thoroughbred on the track, Dr. Cassius Way, New York veterinarian, told his colleagues at the meeting of the American Veterinary Medical Association.

The training diet of race horses, Dr. Way indicated, often fails to supply the balanced array of necessary vitamins. He has made analyses of blood samples from 116 thoroughbreds in training, and finds them quite low in sugar and calcium. Blood sugar, of course, is the prime energy source for their straining

muscles during the race, and when blood calcium is too low its mineral team-mate, phosphorus, is apt to be too high, at least relatively speaking. This calcium-phosphorus imbalance is apt to result in loss of appetite, an inflamed condition of the nerves, and general poor condition. A horse in that state is in no shape to win races.

In his practice, Dr. Way stated, he has succeeded in correcting this condition by supplementing the feed with a mixture of essential vitamins and minerals.

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## ENTOMOLOGY

## Pyrethrum Found Effective Against Silverfish Pest

**S**ILVERFISH, the long, grayish insects that scamper through stored books, papers and linens, have just had their private lives examined and their death warrant written. The likes and dislikes of these elusive pests that destroy valuable papers, books and heirlooms have been discovered by Arnold Mallis, entomologist on the Los Angeles campus of the University of California.

The species used by Mr. Mallis in his studies, called *Ctenolepisma urbani* by entomologists, is unable to survive a spray of pyrethrum.

"When the silverfish is confined in a pyrethrum dust it shows great signs of irritation, often within 30 seconds. The pyrethrum dust adheres to the hairs on the body and around the mouth parts as well as upon all appendages. The insect becomes paralyzed within from three to ten minutes," said Mr. Mallis.

Sodium fluoride and sodium fluosilicate have been used in the past to control silverfish but were only partially effective. If these poisons are combined with pyrethrum, the lethal result to the pests is greatly enhanced. Treated "cards" sold commercially for silverfish control have little effect on the pests, Mr. Mallis reported.

The diet preference of silverfish was also studied, and it was found that animal fibers such as silk and wool are not as popular with the pests as vegetable fibers, linen, rayon, cotton and lisle. As all paper and fine old linens are made from vegetable fiber sources, this explains their choice of libraries and linen closets for habitation. A modern streak was discovered in the insects. They are very fond of Cellophane, Kleenex and onion-skin paper, preferring these materials to newsprint and cardboard.

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## ENGINEERING

## Chopped Cotton Expected To Aid Powder Production

**C**OTTON chewed up short by machine is expected to play an important part in the preparation of the vast quantities of smokeless powder for this country's defense program.

Best material for smokeless powder has always been linters. These are the short, fuzzy threads left clinging to cottonseed hulls after ginning. They are removed by other machinery and treated with acids to make the propellant powders.

However, the enormous increase in demand long since outran the supply of linters. Staple cotton fibers were too long for the nitrating machinery; they tended to "spin" or "rope" and clogged the works. But the same standard-staple cotton, chopped into something like linter lengths by new machines invented by U. S. Department of Agriculture engineers has obviated the difficulty.

One of the new machines is able to chop up two tons of cotton an hour. It takes two machines to complete the job. The first reduces the cotton to medium lengths; the second turns it into the equivalent of linters.

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## VETERINARY MEDICINE

## Eye Disease in Cattle Reduces Yields of Meat

**K**ERATITIS, a serious disease of the outer coating of the eye that eventually results in blindness, afflicts cattle as well as human beings. In dairy herds it brings about reduction in milk yield as high as 32%, and beef cattle are often as severely affected in reduction of their meat production, Dr. Vilo T. Rose, veterinarian of Elkton, Ky., stated at the the meeting of the American Veterinary Medical Association in Indianapolis.

There are two types of keratitis in cattle, Dr. Rose continued. One is infectious, due to the spread of the causal bacteria from animal to animal. The other is due to deficiency of vitamin A, and is especially likely to occur in lot-fed cattle, that do not have access to pasture.

The infectious type can be largely prevented with a vaccine made of weakened cultures of the causal germ. Correction of the vitamin A deficiency will eliminate the other type.

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