

CHEMISTRY

Cannot Predict Sweetening Of Sugar Substitutes

WHEN the housewife uses a sugar substitute for part or all of the ordinary sugar called for in a cake, there is no general rule for predicting whether the finished cake will be more or less sweet than it would have been in pre-sugar rationing days.

The reason is that the relative sweetening values of sugars vary with their concentration, Miss Edith H. Nason, of Syracuse University, told members of the American Home Economics Association meeting in Boston.

When one sugar is added to another, the sweetness is not additive, Miss Nason said.

Acids as well as sugar act as preservatives for foods, she continued. Glucose, the sugar found in corn syrup, has a more lethal effect on yeasts and bacteria than ordinary sugar. The nature of the anion as well as the number of hydrogen ions has importance in determining the protective action of acids.

Science News Letter, July 4, 1942

AERONAUTICS

Merit Cards To Be Issued For Making Airplane Models

"NO EFFORT is too small; no achievement, too great" when it comes to furnishing model airplanes for use by the U. S. Army Air Force, First Fighter Command.

The call has gone out nation-wide for model planes which will be utilized in more than 9,000 Observation Posts along the Atlantic seacoast from Maine to Florida.

An official certificate bearing the signature of Brig. Gen. J. K. Cannon, U. S. Army, commanding the First Fighter Command, will be issued to every person who makes a "quota" of four acceptable models. This certificate of award reads, "This is to certify that _____ has been awarded the honorary rank of Aircraft Technician in recognition of wartime service in making Four Scale Model Aircraft for use by the Ground Observer Corps in accordance with specifications approved by the Army Air Force.

"Given this — day of — in the year of Our Lord one thousand nine hundred and forty-two and of the Independence of the United States one hundred and sixty-six."

Further to encourage this educational program, a merit award card is to be issued to every person who contributes even as much as a single acceptable model. Space is provided for the name of the model builder and the school science club, boys club, scout group or other organization with which he chooses to have his affiliation known.

Four such cards issued to the same person indicating that he or she has made a "quota" of four models will be exchanged for the Army's certificate of award. A complete quota comprises one single-motored, one bi-motored and one multi-motored ship and a biplane. Seven sets of plans are sent to those volunteering their services. From these selection can be made by the model builder.

Science Clubs of America at 310 Fifth Avenue, New York, N. Y., has been designated officially as the "clearing house" from whence all illustrative material, instructions and other literature will be sent without charge. All airplane models must be sent to that organization. From that point the Army will distribute models to the observation posts. They should not be sent direct to the Army.

As rapidly as possible diagrams and instructions are being sent to those who have volunteered to help build the needed scale models. Many clubs devoted to scientific pursuits are modifying their programs so that model making can be included in their activities.

Science News Letter, July 4, 1942

ENGINEERING

War-Time Fire Hose Contains Less Rubber

A NEW war-time fire hose, which uses only seven pounds of new rubber instead of 17 pounds for 100 feet in the 2½ inch size, stands up under the standard test applied by Underwriters' Laboratories. It probably will not last as long.

The bursting pressure for the double-jacketed hose still remains 600 pounds per square inch.

When the order reducing the rubber content of fire hose was issued earlier this year by the War Production Board, fire chiefs found that they could not obtain such hose because it did not meet the Underwriters' Laboratories standard. After considerable experimentation the Underwriters' Laboratories developed emergency specifications under which an adequate but shorter-lived hose could be produced, according to their tests, that would comply with the WPB order.

Science News Letter, July 4, 1942

IN SCIEN

MEDICINE

Spanish Edition Announced Of Annals of Surgery

NEWEST bond between North and South America is the publication, starting with the June issue, of the Annals of Surgery in Spanish. This 57-year-old publication is the official organ of the American Surgical Association and the Southern Surgical Association. The new Spanish edition will be published in Buenos Aires, Argentina, by the Guillermo Kraft Company. The edition in English will continue to be published by J. B. Lippincott Company.

"The policy of the journal has been formulated by a distinguished editorial board representing the medical schools and the national surgical societies of the United States and Canada. In the future," says Dr. Walter Estell Lee, chairman, "this board will sincerely hope to secure the support, inspiration and privilege of consulting members from our sister republics in South America, where surgical work of such a high caliber is being performed."

Science News Letter, July 4, 1942

CHEMISTRY

Plastic Thrust Into Leaks Keeps Lifeboats Afloat

A NEW plastic, after kneading briefly in the hands can be thrust into leaks in a sinking lifeboat to plug holes splintered by bullets. Every lifeboat in the British Merchant Service is now equipped with the pliant substance, according to British information.

The plastic has a binding effect and works by settling and hardening in water. Already officially approved by the British for emergency boat repair, it is expected also to prove useful in pontoons.

American merchant ships have not adopted the plastic. Tapered soft-wood plugs, or bolts with grumets and washers, are supplied for mending leaks; also candle wicking, adhesive tape, and white lead in oil. However, U. S. Coast Guard officials are now experimenting with substances similar to the British plastic.

Science News Letter, July 4, 1942

CE FIELDS

ASTRONOMY

Canadian Astronomers Find Lithium in Coolest Stars

LITHIUM, third lightest element, has been identified in at least 19 stars by Drs. A. McKellar and W. H. Stillwell, astronomers at the Dominion Astrophysical Observatory, Victoria, B. C. Their results have been reported to the members of the American Astronomical Society meeting in New Haven.

Hitherto, lithium had been found definitely present in only one star, WZ Cassiopeiae. This is an N-type star, often called "red carbon stars," and one of the coolest known, but there are a few score of other N-type stars which did not appear to contain lithium in their atmospheres.

However, the astronomical chemist is constantly improving his technique, particularly by using spectrographs attached to large reflecting telescopes, such as the 72-inch at Victoria, one of the world's largest instruments. With a grating spectrograph, Drs. McKellar and Stillwell studied the spectra of 19 red carbon stars and detected the presence of lithium in all but one of them.

The existence of lithium in almost all stars is indicated by this work, but the high temperatures prevent its spectral lines from showing.

Science News Letter, July 4, 1942

PHYSICS

Bees Flying In a Hive Do Not Lessen Its Weight

GRASSHOPPERS jumping about in a box do not lessen its weight; neither do bees flying about in a closed hive.

A friend on a farm asked Dr. Gordon S. Fulcher, a physicist of Washington, D. C., if a hive would be easier to carry if she stirred up the bees so they would fly around. This suggested the grasshopper problem to Dr. Fulcher as a similar but simpler case. (*Science*, June 5.)

Each grasshopper as it jumps gives a downward kick to the box, thereby increasing its weight. While the grasshopper is in the air, the box is, to be

sure, relieved of its weight, but when the hopper lands, the box again receives a downward thump. Dr. Fulcher shows mathematically that these balance out and the average weight of the box does not change.

The same applies to the bees in a closed hive: "The total average weight must be the same no matter what the actions or motions of the bees and other parts inside the closed container may be."

The same applies to any body not at the absolute zero of temperature, for which all the molecules are at rest. At any higher temperature, because of thermal agitation, many of the molecules at any given instant are in the air, so to speak. But each molecule as it takes off gives a downward kick and again when it lands. The weight of the body as indicated by a balance is an average of these downward kicks and of the dead weight of those molecules that happen to be at rest. The indicated weight does not change with temperature.

Science News Letter, July 4, 1942

MEDICINE

Sulfa Drugs Saving 75% Of Meningitis Patients

THE SULFA drugs are saving 75 out of every 100 patients stricken with influenzal meningitis and about 90 out of every 100 with meningococcus meningitis, according to two surveys reported to the *Journal, American Medical Association* (June 27).

Before the introduction of the sulfa drugs, the mortality from influenzal meningitis was 100% among patients most of whom, 74.6%, were babies and children under 6 years old. When sulfanilamide was used to treat this deadly disease the mortality was reduced a little, to 92.3%, but after sulfapyridine became available, the mortality dropped to 25% among patients. These figures apply to experience at the Los Angeles County Hospital and are reported by Dr. Evelynne G. Knouf of Los Angeles, Dr. William J. Mitchell of Alhambra, Calif., and Dr. Paul M. Hamilton, of San Marino, Calif.

For the other kind of meningitis, sulfa drug treatment saved 98 out of 110 patients, a mortality of 10.9%, at Sydenham Hospital, Baltimore, between January, 1938, and February, 1942, Dr. Horace L. Hodes and Captain Paul S. Strong, U. S. Army report. Sulfathiazole and sulfadiazine, they find, are superior to sulfanilamide in treatment of this kind of meningitis.

Science News Letter, July 4, 1942

PHYSICS

Thin Glass Coatings Protect Plastic Lenses

PLASTIC lenses for cameras, spectacles and other uses can be protected against scratches and other injuries that have been their principal drawback by coating them very thinly with glass films, Frederick J. Binda of Boston points out in his description of a method on which he has just been granted U. S. patent 2,287,546.

Plastic lenses can be made very rapidly and cheaply and would undoubtedly have much wider use than they enjoy at present if they were not so easily scratched. Mr. Binda overcomes this difficulty by blowing a bubble of hard glass in such a way that it comes into contact with one side of the lens. The film of molten glass, which may be as thin as a few ten-thousandths of an inch, cools, hardens and sticks tightly to the lens, giving it a scratch-resistant surface.

Mr. Binda suggests that his method may be used, among other purposes, for protecting plastic sun goggles containing embedded layers of light-polarizing particles—a type of eye protection that has become increasingly popular in the last couple of years. He has assigned his patent rights to the Polaroid Corporation, which manufactures such materials.

Science News Letter, July 4, 1942

ENGINEERING

Comfort in Subway Assured By Electricity

COMFORT and safety of passengers will be provided for in Chicago's new \$64,000,000 subway by the most modern electrical equipment, the American Institute of Electrical Engineers was told by Charles E. DeLeuw, of the Chicago Department of Subways and Superhighways.

At almost every station escalators will relieve the strain on weary feet. Eight and ten-foot fans will bring in fresh air. Soft fluorescent light will illuminate the stations and platforms, while incandescent lamps will light the tunnels.

Modern lightweight cars, seating 106 persons and carrying 200, will speed up to 45 miles per hour, smoothly and quietly over welded rails. Only regret is that these new cars will not be ready at the time of the expected opening early in 1943. Temporarily, older cars will have to be used. But congestion will be relieved in downtown Chicago.

Science News Letter, July 4, 1942