

Do You Know?

Cork normally is used in 50 different places in an automobile.

Domestic *airplanes* carried over 470,000 passengers in 1931, and over 4,000,000 in 1941.

Mice have been taught to distinguish between two musical notes, one of which is associated with the appearance of food.

On seacoasts where fresh water is scarce, *fish* is a better food than lower forms of marine life because the salt content is less.

Giant *cement kilns*, 500 feet long and weighing 1,200 tons, are each turning out up to 200,000 tons annually to meet war needs.

Thirty-five new improved varieties of strains of *crop plants* were released by the U. S. Department of Agriculture during the past year.

Not all *plastics* are new; cellulose nitrate was discovered in 1830 and celluliod was produced in 1868; casein plastics were made before 1900.

A baby *kan garoo* at birth is about one three-thousandths of its mother's weight; the human baby is approximately one-twentieth the weight of the mother.

An ounce of *field soil* contains some 50 billion bacterial cells, a large but unknown number of fungi, and something like 5,000,000 protozoa, in addition to other organisms.

Some 12,000 *mulberry* slips were planted in Brazil in 1930 as a basis for silk culture, and silk weaving was begun in 1938; in 1942 over 277,000 mulberry trees were planted.

Fifty United States doctors, scientists, engineers and other specialists are working with some 2,500 Brazilians in the Amazon and Rio Doce campaigns against *malaria* and other diseases.

Lumberjills are replacing lumberjacks in England; strong, physically fit women from 17 to 40 years of age, after one month's training in forestry, are working in the timber and the sawmills.

CHEMISTRY

Three Kinds of Sugar

New table treat, apple syrup, contains sucrose, dextrose and levulose. Has a clear amber color but does not taste particularly like apples.

➤ "PASS the apple syrup, please" will soon become a familiar request at American breakfast tables.

"Just concentrated sweetness," was the description given the new product by three U. S. Department of Agriculture research men before the meeting of the American Chemical Society in Cleveland. The three men are Dr. R. E. Buck, Dr. J. J. Willaman and Dr. H. H. Mottern, all of the department's Eastern Regional Research Laboratory at Philadelphia.

The strong appeal which apple syrup is expected to have for the national sweet tooth is due largely to the fact that it contains three different kinds of sugar: sucrose, dextrose and levulose. Of the three, levulose is by far the sweetest, and it is present in the syrup in high concentration. The product has a clear amber color, but does not taste particularly like apples.

Apple syrup offers an opportunity for the utilization of the enormous quantities of apples that now are never marketed, and simply rot on the ground under the trees. It is estimated that at least 20 million bushels of apples are thus lost every year. This is enough to make 100 million pounds of syrup, if all could be used.

Last year preparations were made for producing 20 million pounds of apple syrup, but a short crop of both apples and manpower cut the actual production down to three million pounds. The 1944 apple crop promises well, but labor is still short, so it may not be until after

the war that we shall all be able to get our quota of apple syrup.

The syrup is prepared in much the same manner as the commercial product which has been given the advertising name "apple honey," but (as the advertisers put it) "something new has been added." Essentially, commercial apple syrup is made by clarifying the apple juice with lime to remove among other things the jellifying substance, pectin, and then evaporating it down to the desired consistency.

Commercial apple syrup is excellent for the uses to which it is put, but many persons find that it has a slight bitter after-taste. One additional chemical step has been put into the preparation process, which removes this tang and leaves the product with an unalloyed sweet flavor.

Glucose has been prepared almost exclusively from corn so long that it is often called "corn sugar." The peculiar situation that has obtained for the past year or two, of having a surplus of wheat but none of corn, has brought about investigations of commercial methods for producing glucose from wheat starch. Several reports on various phases of this were presented at the meeting, by J. M. Brown of the Revere Sugar Refinery, Boston; Mason Hayek of Joseph E. Seagram and Sons, Inc., and R. L. Shriner of Indiana University; and R. J. Dimler and C. E. Rist of the Northern Regional Research Laboratory at Peoria, Ill.

Science News Letter, April 15, 1944

BIOCHEMISTRY

Elixir of Youth in Protein

➤ SOMETHING that the old-time alchemists would certainly have called the elixir of youth, had they known about it, exists in everyday protein foods—meat, cheese, eggs and the like. At any rate, its absence from the diet brings about baldness, defective teeth, anemia, cataract, permanently bloodshot eyes, degeneration of the sex organs in the male, reproductive failure in the female.

The substance that wards off these

obvious signs of senility is called tryptophane; it is one of the dozen or so essential building-blocks of proteins known as amino acids. The ill effects of diets deficient in this and other specific amino acids were described by Dr. L. Emmett Holt, Jr., of the Johns Hopkins University, speaking before the meeting of the American Chemical Society in Cleveland.

Lack of other amino acids produces other kinds of degeneracy, Dr. Holt con-

tinued. Reproductive deficiency goes with diets short in arginine, nervous disorders with lack of valine, nephritis and hardening of the liver with absence of methionine.

Studies of this kind are going to have great practical significance during the next few years, as war-bred famine presents itself as a problem to be dealt with by the victor nations that have at least some food to spare. Proteins are always the foods most difficult to supply, and the consequences of their lack always the most serious and difficult to deal with.

It is probable that nutritional research will be as much concerned with amino acids during the coming decade as it has been with vitamins in the recent past.

Vegetable proteins are easier to produce in a hurry and in quantity than are

proteins of animal origin, but they may not have the good, high-level balance of all needed amino acids as the more expensive meat, eggs and dairy products. However, such protein sources as soybeans, peanuts and other legumes are capable of being enriched by the addition of specific amino acids such as cystine and methionine, together with heat treatment, Dr. D. Breese Jones of the U. S. Department of Agriculture told the meeting.

Heating improves the digestibility of the proteins of most legume seeds, Dr. Jones continued. Some of them, if left to themselves in the raw state, undergo a kind of partial self-digestion, which leaves them less amenable to human assimilation, even though their proportions of valuable amino acids remains high.

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Pollen victims are usually treated by a process of desensitization. First, the physician makes careful tests to determine just which pollen or pollens cause the trouble. Then the patient is given a tiny dose of the offending substance and at regular intervals thereafter increasingly large doses until he is able to tolerate the large amounts of pollen blown on spring and summer breezes. Details of the treatment, of course, must be planned by the physician who will also give advice on general health measures and will prescribe drops for nose and eyes if necessary.

Densitization treatment can be given during the hay fever season, but is said to be more comfortable and about 20% more efficient if given before the hay fever season starts. A patient whose symptoms usually begin about May 20 is generally advised to start treatment March 1, and others are advised to start correspondingly two months before their particular season. The hay fever season, of course, is the time when the patient's particular offending pollen is in the air.

Hay fever treatment is important not only for relieving the misery of this ailment but for preventing the asthma that develops in more than half the cases. Careful specific treatment over a period of one to four years will, according to one authority, give from one-third to one-half the victims permanent tolerance to the offending pollens—in other words, a cure. For most patients, even if cure is not possible, symptoms can be controlled so that the patients can live in fair comfort and attend to their business or household duties.

Science News Letter, April 15, 1944

MEDICINE

Sulfamerazine for Shock

Bacteria-destroying drug may be solution to problem of one type of shock in battle casualties, animal experiments indicate.

► **BACTERIA - DESTROYING** sulfa drugs may be the solution to the problem of one type of shock in battle casualties. The joint conclusion, reached by Dr. M. Prinzmetal of Los Angeles and Dr. S. C. Freed and H. E. Kruger of San Francisco appears in a report to *War Medicine*.

Eliminating two of the three major theories of shock causes—that nerves and local loss of body fluid are involved—the experimenters demonstrated that the non-acute or chronic type of shock resulted from blood poisoning by bacteria.

It was found that out of a dozen dogs with crushed muscles—a common injury of the battlefield—all went into shock and nine died within three days.

Plaster casts were put on injured limbs to prevent the local accumulation of fluid, blamed by many as the cause for shock. Nevertheless, 11 out of 16 dogs died of shock, and the scientists are forced to abandon the theory that this factor is an active cause of shock.

Proof that shock stems from the activity of bacteria was demonstrated when no shock resulted in cases where the muscle had been removed within 17 hours after injury had been incurred.

Microscopic examination of crushed muscle revealed the presence of many types of bacteria. It is the opinion

of the experimenters that some of the organisms may be the normal inhabitants of tissues, which are of little importance under ordinary circumstances, but grow profusely in damaged muscle.

“Amazing,” the scientists state, is the observation that no deaths or symptoms of shock resulted when dogs with crushed muscles were given doses of the bacteria-killing drug, sulfamerazine, locally, intravenously, or by mouth. “If bacteria are not present the toxic factor is not formed and shock does not result,” the California experimenters conclude.

Science News Letter, April 15, 1944

PUBLIC HEALTH

Hay Fever Sufferers Should Start Treatments

► **THE SNEEZING** and sniffing of spring cold victims should remind hay fever sufferers that their season of nasal misery is not far off and that it is time to see the doctor about preventive treatments.

The hay feverite's suffering is due to his supersensitiveness to the pollens of certain plants or trees. There are all-year-round hay feverites, too, but their trouble is generally due to some other substance such as feathers, horse dander, house dust or the like.

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