CHEMISTRY

Rubber While You Wait Demonstrated for Congress

RUBBER while you wait was made for the benefit of the Nation's representatives in the caucus chamber of the Old House Office Building. Buna S and Butyl, the two principal types of synthetic rubber, were made, a half pound of each.

The final operation was spectacular, the mixing together of invisible gases and watery liquids and the almost instantaneous appearance of a solid white mass of raw butyl rubber.

The demonstration was staged by the Standard Oil Company of New Jersey at the request of Jennings Randolph, chairman of the Subcommittee of the Mines and Mining Committee on Production from Coal of Gasoline, Fuel Oil, Plastics, Rubber. W. S. Farish, president of the company, spoke on problems involved in the quantity production of these synthetics, after which Dr. Per K. Frohlich, Norwegian-born president of the American Chemical Society and director of the Chemical Division of the Standard Oil Development Company, carried out the demonstration with the aid of a miniature laboratory.

The rubber manufacture began with butadiene and styrene, the two principal raw materials of synthetic rubber, the one from petroleum or alcohol and the other from coal tar. A colored motion picture film showed the molecular structure of the materials and the changes that took place during the manufacture, every step of which was explained by Dr. Frohlich to the final product—synthetic rubber.

Science News Letter, July 25, 1942

AERONAUTICS

Motion Picture Theaters Aid Model Building

AIRPLANE model building, stimulated in motion picture theaters, with prizes for the best constructions and with the assurance that all the models built will be used by our armed forces, is another of the valiant contributions which the motion picture industry is making toward America's war effort.

In about two months, Paramount's new picture, "Wake Island," will be released. This picture, made in cooperation with the U. S. Marines, and starring Brian Donlevy, tells the story of the 16-day stand at Wake Island of 385 marines against everything the Japs could throw at them.

Tied up with this showing in the theaters throughout the country will be a model airplane competition. The theaters will make available to all patrons the Science Service plans for building a scale model of the Grumman F4F-3.

Prizes will be offered at the local theaters for the best models entered in the competition and all the models submitted will be sent immediately to Science Clubs of America for transfer to the First Fighter Command of the U. S. Army Forces, for use by the Ground Observer Corps.

In this way all the motion picture theaters will aid directly the drive for the model planes which our fighting forces need so badly. The appeal for these models was made by Brig. Gen. J. K. Cannon, commanding the First Fighter Command.

The theaters also will encourage young and old to try for the U. S Army Air Force "Certificate of Award" for building a quota of four models from the seven plans which are issued free of charge to those willing and able to contribute to this war effort.

The plans for the Grumman fighting ship are not included among those issued by the First Fighter Command. Nevertheless, this Command has informed Science Service that the models completed from these plans may be substituted for either the Curtiss P-40E or the Bell P-39D which are among those officially issued.

Science News Letter, July 25, 1942

MILITARY SCIENCE

Red Cross Teaches Soldiers To Swim

THE American Red Cross is teaching American soldiers how to swim, not just for a summer afternoon's fun, but for business.

"The problems related to ship and plane transport of personnel across the seas; the use of landing and assault boats; the necessity for fighting over terrain sliced by rivers and streams—these things pointed up the fact that swimming ability was due to become an important item in troop training," Carroll L. Bryant, Assistant National Director of the Red Cross Life Saving Service, explains.

The Red Cross instructors have developed swimming methods by which soldiers, fully clothed and burdened with field and fighting equipment, can not only keep afloat but make good progress through the water.

Science News Letter, July 25, 1942

IN SCIENC

PUBLIC HEALTH

Census Bureau Announces Lowest U. S. Death Rate

LOWEST death rate in the history of the United States death registration States was recorded in 1941, the U. S. Census Bureau announced.

Provisional mortality statistics for that year, just tabulated, show a crude death rate of 10.5 per 1,000 population. The 1940 rate was 10.8, a slight increase over the previous low level of 10.6 reached in 1938 and 1939.

There were 21,362 fewer deaths in 1941 than in 1940. Most of the decrease occurred in the rural areas. The greatest decreases were in the District of Columbia, Idaho and Vermont. Greatest increases in death rates for individual states were in Arizona and Virginia.

Total number of deaths for the entire nation for 1941 was 1,395,507.

Science News Letter, July 25, 1942

ENTOMOLOGY

Guayule in Mexico Is Attacked By Beetle

GUAYULE, one of the leading "white hopes" of the rubber situation, has a number of insect enemies, U. S. Department of Agriculture entomologists have discovered. Most destructive among them is a bark beetle that does not attack the living plants, but feeds upon the heaped-up shrubs after harvesting. Thus far it is known only from Mexico, and it may be possible to keep it out of this country by suitable quarantine regulations. In any case, this new menace to our scanty rubber supply makes it desirable to process guayule as promptly as possible after it is gathered.

The entomologists are also studying numerous other insect species that attack plants related to guayule, on the chance that they will transfer their unwelcome attentions to that plant after it has been widely established in cultivation. Among these potential enemies are root-eating white grubs (already known in guayule nurseries), wireworms, millipeds, caterpillars, grasshoppers, aphids, leafhoppers, mealybugs, and mites.

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E FIELDS

CHEMISTRY

No Shortage of Magnesium For U. S. Fertilizer Needs

MAGNESIUM, though being used in enormous quantities for airplane production, is not going to be stinted to growing plants that need it, C. W. Whittaker and W. M. Ross of the U. S. Department of Agriculture have determined, after a critical survey of the fertilizer situation.

Magnesium is an absolute "must" for all green plants—their food-manufacturing green pigment, chlorophyll, cannot be formed without it. However, very little magnesium satisfies their requirement, and most soils naturally contain enough.

Where soils are short of the element, a magnesium salt must be added to the fertilizer mixture. Before the war, American needs were met with a compound known as kieserite, imported from Germany. With this cut off by blockade, we can readily meet our needs by using dolomite, a magnesium-containing limestone, where long-time results are required. Where quicker action is needed, heating the dolomite makes it more soluble and hence more readily available to plant roots.

Science News Letter, July 25, 1942

BOTANY

Vegetation on Midway Reported Very Poor

VEGETATION on Midway is certainly nothing to tempt a botanically-inclined person to seek assignment to that flar-flung outpost, even in quiet times. Botanists of the U. S. National Herbarium, with headquarters in the Smithsonian Institution, say that there are only 20 plant species native to the two scraps of dry sand that compose Midway, mostly belonging to groups found on other Pacific islands.

One reason for this is the geological youth of Midway. It is one of the most recent of small land areas to emerge above the ocean surface, hence has had little time to develop a vegetation. It is so far from other lands that about the only way plants can get there naturally is for their seeds to be carried by long-flight birds or to drift in on ocean currents. Chances are against seeds being carried that far by the wind.

Among the scanty list of plants on Midway, however, are two that are almost unique to these islands. One is a kind of mint, the other a species of nightshade, related to potatoes and tomatoes. The nightshade species is found only on Midway and on Ocean Island, a small neighboring bit of land.

The mint once formed part of the vegetation of Laysan, a tiny, uninhabited island about a third of the way between Midway and Hawaii. With all the rest of the vegetation of Laysan, this species was wiped out by rabbits. The animals were accidentally introduced in 1903, multiplied by thousands and within ten years had nibbled away every scrap of plant life on Laysan, leaving the two square miles of its surface a sandy desert.

Two new plant species have recently been purposely introduced on Midway. They are San Francisco grass, brought in to bind and stabilize the shifting sand, and the ornamental shrub, oleander. A number of unintentional introductions were also made, when weed seeds arrived as stowaways in soil brought in by boat, so that the crew of the cable station could have a vegetable garden.

Whether there will be any further unintentional additions as a result of present intense military activities on the island is a question that cannot be answered yet. However, the Army, the Navy and above all the Marines are emphatic in the opinion that if any such weeds do come in they won't be Japanese species.

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MEDICINE

Grant To Hopkins For Infantile Paralysis Study

RESEARCH on infantile paralysis will be conducted during the coming five years at a newly established center, for the support of which a grant of $300,000 has just been made by the National Foundation for Infantile Paralysis. The work will be headed up by Dr. Kenneth F. Maxcy, professor of epidemiology in the Johns Hopkins School of Hygiene and Public Health.

This is the largest single grant made by the Foundation since it was organized in 1938. The funds which make this and other research projects possible are contributed each year at the time of the celebration of the President's birthday.

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AERONAUTICS

Tough Cords of Rayon Strengthen Airplane Tires

TOUGH cords of a special type of rayon, replacing cotton, permit thinner but stronger walls, add thousands of miles to the life of the tires, and save tons of rubber from which more tires may be made for army tanks and trucks. Applied to the airplane, the lighter tires permit heavier guns and bombs to be carried, and thus increase the fighting power of the plane.

These are the claims made by E. I. du Pont de Nemours and Company in describing the new process by which they produce stronger rayon, rayon with a tensile strength of 70,000 pounds per square inch.

The increased strength, the manufacturers say, is mainly due to stretching the filament immediately after it is formed. This is similar to the cold drawing of steel which so remarkably increases its strength. Partly responsible also is the use of cellulose derived from cotton instead of from wood pulp as for ordinary rayon.

Science News Letter, July 25, 1942

NUTRITION

Factory Workers Swing To Fruit and Milk For Snacks

"VICTORY lunches" that follow food-for-freedom diet rules are now being served to war workers in the cafeterias of three major plants of the Westinghouse Electric & Manufacturing Company, Dr. Frank M. Gatto, director of health conservation, announced.

For 30 cents, workers can now get meals consisting of a liberal helping of meat, fish or eggs; vegetables; whole wheat or enriched bread; butter; and milk or a milk dessert.

The lunches are planned to provide at cost a substantial portion of the daily requirements of vitamins, minerals, sugars and starches, proteins and fats, the foods people need to keep physically fit.

Workers at the Westinghouse plants, Dr. Gatto reports, have swung to such nourishing foods as fruits and milk for mid-shift snacks. Recent surveys of the snack wagons that tour the plants show demands for oranges have tripled. From snack wagons and cafeterias come reports that Westinghouse employees are now eating 50% more green vegetables, 25% more salads, 10% more milk, and have doubled their consumption of carrots and lettuce.

Science News Letter, July 25, 1942