CHEMISTRY

Plastics and Foams Made From Plasma Proteins

➤ FROM the proteins in blood plasma scientists have succeeded in making plastics, films and foams for clinical use, as well as the more familiar immune globulin for measles prophylaxis and isohemagglutinins for blood typing, Dr. Edwin J. Cohn, of Harvard Medical School, reported to the New York Section of the American Chemical Society.

The plastics are made from fibrinogen, the substance in blood upon which the physical properties of the blood clot largely depend. In connection with thrombin this can be made into fibrin films used as membranes, and into the fibrin foams used to check bleeding in surgery on the nervous system.

Albumin from blood, also available now as a stable, dry, white powder, is put up in 25% water solution in the 100 cubic centimeter Army-Navy package and used for treatment of shock. This approximately three-ounce solution is equivalent to a pint of blood plasma.

Science News Letter, February 19, 1944

AERONAUTICS

Huge Propellers Examined In New Test Cells

See Front Cover

➤ AIRCRAFT propeller parts that would not fail in 10,000 hours of actual flight can be vibrated to destruction within a very short period by an electronic apparatus in the experimental engineering laboratory of the Curtiss-Wright Corporation.

Parts that have passed this test are assembled for further study as complete propellers. New test cells, just unveiled at the Caldwell, N. J., laboratory, are big enough so that great propellers, such as those on the Mars and tomorrow's even bigger ones up to 30 feet from tip to tip, can be tested. Since the testing of a propeller depends upon the control of the engine, propeller and engine are tested and controlled as a unit in this new laboratory set-up. The blades are subjected to the buffeting of wind and the stress of vibration just as they would be if mounted on a bomber in flight.

For endurance tests, covering several hundred hours, four or more engines of the same model are used interchangeably, since an engine's performance occasionally varies, causing changes in propeller testing conditions.

The picture on the cover of this SCIENCE NEWS LETTER shows the largest propeller in existence, 16-feet-8-inches from tip to tip, being mounted for testing in one of the 38-foot-square cells. The need for rugged tests becomes clear when it is realized that centrifugal force exerts a 97-ton pull on each of the four blades of this propeller. In terms of the 16½-foot propeller on the giant Mars, this pull on each blade is 45,000 pounds greater than the gross weight of the fully loaded ship on its recent trans-Pacific flight.

Science News Letter, February 19, 1944

PLANT PHYSIOLOGY

Maybe Moon Does Affect Plants After All

➤ BELIEF that the moon has something to do with the behavior of living things may have some scientific justification after all, experiments on trees by Prof. Harold S. Burr of the Yale School of Medicine seem to indicate.

Prof. Burr inserted a pair of electrical contacts into the trunk of a maple tree, about five feet apart and at a depth that placed them next to the cambium, or layer of actively growing cells that build new layers of wood and bark. They were hooked up to delicate electrical recording apparatus.

Approximately once a month, he reports, the records show there was a "tremendous and very sharp rise" in the average potential difference over the path of living tissue between the two points. Close records were kept of temperature, humidity, barometric pressure and other weather factors, and none of these were found in step with the changes in the tree's electrical state.

Something that happens approximately once a month must be responsible, unless the changes are due only to some internal rhythm within the plant itself and not to any outside factor. The moon seems to be the readiest object to hold responsible; although Prof. Burr is careful to point out that thus far no actual casual connection has been demonstrated. However, he states, "on the basis of the evidence so far collected, one could predict by means of electrical measurements the changing lunar phases within 48 hours."

In any case, he feels that the phenomenon is of sufficient interest to justify further research.

Science News Letter, February 19, 1944

IN SCIEN

EDUCATION

Yale To Have Institute For Ex-Service Men

➤ SERVICE MEN mustered out when the war is over may have a chance to go to college in a special Institute of Collegiate Study for Ex-Service Men, to be established for them at Yale University.

The question of what sort of education should be offered ex-service men is now being studied at Yale, it is revealed by the annual report of the University's president, Dr. Charles Seymour.

"It is the responsibility of the University to aid men returning from the war to make the transition from military life to the life of free self-reliant, responsible citizens of a democracy," President Seymour believes. Despite their maturity, he feels, the ex-service men will be unprepared for normal college life.

"They will need to learn how to be responsible for themselves, to think and judge according to their own lights, and to choose and execute the purposes of their own lives," he said.

After the war, the accelerated year-round program should be abandoned, President Seymour indicated, because it would be "clearly unprofitable for the student and might easily become disastrous for the professor."

Science News Letter, February 19, 1944

INVENTION

Snow Grinding Machine Hastens Melting Process

➤ FROM SNOWY New England comes an idea for a contrivance with the odd-sounding name of snow grinding machine. The invention of W. J. O'Brien of Boston, it is covered by patent No. 2,341,471. The object is to break the masses of consolidated snow that often clog streets in northern cities into small fragments, so that they will melt more easily. The snow lumps are fed through a cylindrical hopper in which there is an open arrangement of fixed rods, between which whirl strong steel bars extending from a central shaft. The chopped-up snow is delivered through a funnel-like chute to the side of the highway or into a removal truck.

Science News Letter, February 19, 1944

CE FIELDS

METALLURGY

Valuable Alloy Metals Separated by New Process

➤ TWO ALLOY metals of great importance in steel production, molybdenum and tungsten, occur together in certain ores, but they cannot advantageously be used together. A chemical process for their separation is the subject of patent No. 2,339,888, granted to George S. Smith of Uravan, Colo., and assigned to the United States Vanadium Corporation.

Mr. Smith's process is based on the fact that both molybdenum and tungsten react toward certain lighter metals not as bases but as acids. Accordingly, he gets them both out of the ore together by mingling them with a very strong solution of caustic soda, to form sodium molybdate and tungstate respectively. After filtering, he first acidifies the solution containing the two salts, then adds sodium sulfide. This forms an insoluble precipitate with the molybdenum, which can be filtered out. The sodium tungstate can either be reduced directly to solid form by evaporation, or converted to insoluble calcium tungstate which is then filtered out.

Science News Letter, February 19, 1944

RADIO

Post-War Television Sets Will Require Trained Men

➤ THE ADVENT of television should have a highly constructive effect in requiring adequate training for radio service men, declared Arthur Stringer, of the National Association of Broadcasters, at the winter technical meeting of the Institute of Radio Engineers in New York. No one without adequate training, he said, will be able to handle television service satisfactorily.

"In sound radio the ear will tolerate considerable departure from maximum fidelity. Unlike the ear, the eye will not tolerate a poor or slightly defective image," the speaker stated.

A television set is a precision instrument requiring a skilled workman for repair work, he pointed out. Radio engineers and manufacturers will have to design and produce proper testing equipment for their use.

Radio servicing was generally unsatisfactory in the United States before the war, Mr. Stringer indicated, because of the lack of training on the part of many repair men. Approximately 60,000,000 radio sets in use in the country means enough servicing to warrant basic training, he declared, and urged radio engineers to plan sets with sturdy construction, assuring a minimum of servicing and ease of repair when they do break down.

Science News Letter, February 19, 1944

CHEMISTRY

No Captured German Tires Wholly Synthetic Rubber

➤ CAPTURED German army tires analyzed are found to contain some natural rubber, and are not made entirely of synthetic rubber as commonly reported.

Four American scientists, working in the research laboratories of the American Cyanamid Company in Stamford, Conn., developed two methods of detecting natural and synthetic rubber in tires and other materials. All German tires examined by them contained natural rubber in varying quantities.

Of ten tire treads, one was wholly plantation rubber, and nine were pure Buna S, the synthetic butadiene-styrene rubber on which the Germans presumably depend principally. Of ten car-carcasses, all contained from 20% to 100% rubber. The tubes were 75% to 100% natural rubber.

The two methods developed for detecting natural and synthetic rubber and determining the proportion of each kind in a tire or other article are the result of two years of research, a report to the American Chemical Society states. One is measurement by the phosphorus content, the other is by use of infra-red light.

During growth, natural rubber trees and plants acquire minerals from the soil. Among these minerals is phosphorus. Some phosphorus gets into the rubber produced. Synthetic rubber has little or none of it. The amount of phosphorus in rubber can be measured by ultraviolet spectrochemical analysis.

The second method is by study of infra-red spectra. This determines what substances are present by the way they absorb infra-red radiations—light of the longest wavelengths. Each type of rubber molecule produces a different spectrum. A careful method was developed to separate the pure rubber from the tire before making such tests.

Science News Letter, February 19, 1944

MEDICINE

Frogs for Pregnancy Tests Can Soon Be Bred in U. S.

➤ WITHIN six months the war-caused shortage of African frogs for pregnancy tests will be overcome and tens of thousands of frogs should be available in this country, it appears from a report by Christopher W. Coates and Dr. Abner I. Weisman, of New York. (*Journal, American Medical Association,* Feb. 12)

Attempts at breeding these animals in this country prior to 1943 have not been very successful. "Heartening news" of a frog breeding method developed in the midst of war conditions in Switzerland, has recently arrived in this country.

The method consists essentially in injecting both male and female frogs with sex-gland stimulating hormones. Mating and spawning follow within eight hours.

Arrangements are now being made to breed these African frogs in New York. The scientists believe that as soon as considerable numbers are available, the African frog will entirely replace rabbits, mice and rats for pregnancy diagnostic tests.

The New York Zoological Society and the Jewish Memorial Hospital, with which the scientists are affiliated, plan to aid in making the results of the research available to all who are interested.

Science News Letter, February 19, 1944

POPULATION

War-Swollen Cities May Lose Many Migrants

➤ CITIES which have increased greatly in size due to war activities can probably settle down to a more normal existence after the war as these increases appear unlikely to be permanent.

War workers are generally pessimistic about their chances of holding their jobs after the war, states Jerome S. Bruner, associate director of Princeton University's Office of Public Opinion Research. (*Mechanical Engineering,* January) He reports that the highest percentage of readiness for migration is in shipbuilding cities, next highest in aircraft towns and the least in steel and automotive centers.

Thus Detroit, San Francisco, Oakland, Los Angeles, Washington, Norfolk and other cities which have undergone an increase of from 100,000 to nearly 400,000 since the war may lose a large percentage of this migrant population after peace is declared.

Science News Letter, February 19, 1944