

CHEMISTRY

**Fine Hard Wallboard
Made from Sawdust**

► HOW SAWDUST and other wood waste can be made into a fine quality hard wallboard by a new chemical process and a hydraulic press was demonstrated recently to a group of scientists at the Polytechnic Institute in Brooklyn, where the new method was developed. The simple chemicals used are themselves waste by-product of wood-using industries.

The new process is so simple and the equipment costs so low, that every sawmill in the country producing a few tons of sawdust a day will find it a profitable project. The sawdust passes directly from the saw to a mixer where the chemical is added. A minute or two is all that is required for the mixing. Then the pulp is squeezed in a hydraulic press. The catalytic action of these wood-derived chemicals causes the wood to recombine with itself into a strong, grainless board.

By use of molds, the pulp can be pressed like a plastic into any special shape required, such as into complete doors, panels or molding. It has been compressed into cups, plates, trays, and probably can be shaped into one-piece dories and duck boats.

With the new process, it is claimed, 2,000 square feet of first quality, strong, water-resistant wallboard can be obtained from one ton of sawdust. It is estimated that 20,000,000 tons of sawdust and related fine shavings and chips result from all phases of production by the lumber-using industries of America each year. In addition to annual sawdust production, vast quantities of old sawdust may be found in lumber areas. With the partial depletion of timber supplies due to excessive war needs, wallboards made from waste sawdust might prove particularly desirable during the expected building boom of the next few years.

Science News Letter, September 22, 1945

GENERAL SCIENCE

**Science Research Center
Under Construction**

► A NEW industrial science research center under construction in Bound Brook, N. J., is another bit of evidence of appreciation by American industrialists of the part science played in winning the war, and the increasingly important part scientists will play in American manufacturing. The building under construction is the first unit of a gigantic

center to carry on research work in the field of building materials. It is being erected by the Johns-Manville Corporation.

A unique feature of the first building of the group planned, a \$2,000,000 structure, is that it will contain central laboratories and 10 experimental factories. Projects initiated in the laboratories may thus be carried through their development and pilot-plant production stages under one roof. This is expected to speed up the development of new and improved materials for building and for industrial uses.

The completed research center, if constructed according to present plans, will include six buildings on a 93-acre plot, across the Raritan river from the company's plant at Manville. They include two laboratory-factory structures, a research engineering and machine shop building, a water filtration and waste processing building, and utility buildings.

Science News Letter, September 22, 1945

ELECTRONICS

**Hydrogen in Furnace
Continuously Indicated**

► THE HYDROGEN content in copper wire annealing furnaces, an element whose presence is detrimental to the process, is now continuously indicated by a new sensitive apparatus called a sniffer nose. It also detects the presence of other detrimental gases, such as oxygen and carbon monoxide, because they are usually present in quantities proportionate to the hydrogen content.

The new apparatus is a development of General Electric laboratories. It is extremely simple in design and operation, and can be used with any of the ordinary annealing furnaces now in use in wire manufacturing plants. By means of it an accurate and precise indication of annealing furnace conditions can be maintained, it is claimed, and information is provided which formerly could be obtained only by lengthy chemical analysis.

Bright annealing of copper for wire applications must take place under extremely well-regulated furnace conditions, in what engineers called a neutral or reducing atmosphere. It must contain very little hydrogen, since this gas tends to make the wire brittle. The presence of oxygen causes oxidation and the formation of the green material that can often be seen on copper roofs. The presence of carbon monoxide causes the loss of certain valuable properties of the wire.

Science News Letter, September 22, 1945

IN SCIENCE

ASTRONOMY

**Autumn Officially
Begins on Sept. 23**

► AUTUMN officially begins this year on Sunday, Sept. 23, at 5:50 a.m., E. W. T., when the sun's center will be directly over the equator of the earth, according to calculations made at the Nautical Almanac Office of the U. S. Naval Observatory in Washington, D. C.

At this time of the year the sun rises directly east and sets directly west. Hence, supposedly it is above the horizon for half of the 24 hours and below for the other half, making the days and nights exactly equal in length. The name "equinox," in fact, means "equal night." This is not quite true, however, as the sun's light is bent as it comes through the atmosphere, and we can actually see the sun while it is slightly below the horizon.

Science News Letter, September 22, 1945

MEDICINE

**Cashew Nut Shell Oil
Found Poisonous to Some**

► PERSONS who are sensitive to poison ivy become industrial risks when they work with the oily liquid extracted from cashew nut shells, which is now used in the preparation of certain resins and plastics employed in brake linings and insulating materials. A study of the ill effects of this liquid is reported in *Science* (Sept. 14), by Dr. Harry Keil, of the New York Post-Graduate Medical School and Hospital, and Dr. David Wasserman and Dr. Charles R. Dawson of Columbia University.

The cashew nut tree and poison ivy are fairly close botanical relatives, though their native habitats are half a world apart. The active principles that make them a menace to sensitive skins are chemically related; both belong to the phenolic group of compounds.

The three investigators also call attention to the fact that men in our armed forces who are sensitive to poison ivy have reacted to the foliage of the cashew nut tree when they came into contact with it in the Southwest Pacific region. Sometimes the effects were disablingly severe, as they occasionally are with poison ivy.

Science News Letter, September 22, 1945

CE FIELDS

CHEMISTRY

Many New Types Of Synthetic Rubber

► NOW THAT the war is over, and with it the necessity for "freezing" onto one formula for maximum production of synthetic rubber, it can be expected that rubber chemists will strike out along new lines in efforts to produce synthetics that will equal or better the performance of natural rubber—which the war-time GR-S rubber quite definitely did not, lifesaver though it was in time of need.

In keeping with this expectation, two research chemists of the B. F. Goodrich Company at Akron, Dr. Waldo L. Semon and Dr. Charles F. Fryling, have received a number of U. S. patents on new synthetic rubbers. Although many possible compounds are listed, they all call for butadiene or one of its close chemical relatives as a principal ingredient. Instead of the styrene which forms the other half of the present standard GR-S rubber, these new synthetics call for acrylonitrile and one other ingredient, which may be selected from a considerable list, but usually belongs to the group known as the alkyl acrylates.

Among the advantages claimed for the new synthetics are high plasticity and easy workability in the unvulcanized state, with great strength and elasticity after vulcanization. They are said to be especially good at low temperatures, such as are encountered by, aircraft at high altitudes.

Each of the two chemists received five patents; Dr. Semon's are numbered 2,384,568 to 2,384,572, and Dr. Fryling's from 2,384,543 to 2,384,547. Rights in all are assigned to the B. F. Goodrich Company.

Science News Letter, September 22, 1945

GENERAL SCIENCE

National Research Council Offers Fellowships

► YOUNG SCIENTISTS who have had their graduate work interrupted by war duty and are now ready to resume their studies are invited by the National Research Council to apply for grants from a special \$335,000 fellowship fund provided by the Rockefeller Foundation. Unlike fellowships previously adminis-

tered by the Council, which were given only to persons who had already obtained the Ph.D. degree, these new fellowships are for men and women who have their bachelor's degree but have not yet completed the additional three or four years of work required for the doctorate.

These predoctoral fellowships are intended specifically to help in "the recovery of the scientific vigor and competence of the country which is so seriously threatened by the loss of almost two graduate school generations of scientifically trained men and women."

The annual stipend will be \$1200 for single persons and \$1800 for married men. In general it is expected that each recipient will spend at least eleven months per year on academic work. An additional allowance up to \$500 per year will be made for tuition fees. Fellowships granted to individuals who are eligible for educational support from the "G.I. Bill of Rights" will be at such stipends as to bring the total income from these two sources to that which would be received at the above rates. Prospective applicants are urged to write to the National Research Council at once, even though they may not be able to undertake their graduate work until later.

Information about the NRC predoctoral fellowships, together with applications blanks, are being mailed to graduate schools throughout the country, as well as to wartime research laboratories. Prospective graduate students may obtain information from these places, or by writing directly to the Secretary, Committee on Predoctoral Fellowships, National Research Council, Washington 25, D. C.

Science News Letter, September 22, 1945

METALLURGY

Method for Recovery Of Indium from Zinc

► INDIUM, a scarce metal related to aluminum, used in small quantities as an alloy in dental work and as a plating material, is recovered from zinc, in which it occurs as an impurity, by a chemical method on which patent 2,384,610 was granted to H. M. Doran, M. A. Jackson and A. I. Alf, all of Great Falls, Mont. Essential steps are solution in sulfuric acid, with subsequent electrolytic recovery of the zinc, and precipitation of the indium in the form of a bisulfite. The latter salt is further treated to free it from iron, aluminum and other impurities, then redissolved in an acid and subjected to electrolysis to get out the pure metallic indium.

Science News Letter, September 22, 1945

PHYSICS—GEOGRAPHY

Site of Atomic Bomb Test To Be National Monument

► THE ATOMIC bomb explosion site in New Mexico and surrounding area is to be recommended as a national monument, the Secretary of the Interior has decreed. In a way, the monument will be dedicated to science and to the scientists of America, Great Britain and other countries who pooled their knowledge and skills in producing the development that delivered the final stroke that hastened the Japanese surrender.

The site of the first non-laboratory test of an atomic bomb, where its destructive potency was proved, is on what is known as Alamogorda, N. M., bombing range. It is within a federal grazing district and was withdrawn for the use of the Army in 1942.

The Interior Department's recommendation that this area be made a national park must go to the President for consideration and action. Already the Commissioner of the General Land Office has received instructions to reserve the land for creation of the monument, and the National Park Service, under whose administration national monuments rest, has been ordered to make the necessary surveys as soon as the Army permits.

Science News Letter, September 22, 1945

CHEMISTRY

Addition of Formaldehyde Improves Gramicidin

► GRAMICIDIN, one of the first of the germ-stopping antibiotics to be discovered, has never come into use for disease treatment because it is poisonous to animal tissues, and also destructive to red blood corpuscles. Addition of formaldehyde to gramicidin solutions renders it less harmful in these respects, while its ability to check the growth of bacteria remains unchanged, Dr. J. C. Lewis and a group of five colleagues report in *Science*, (Sept. 14).

Dr. Lewis and his research team carried on their work at the Western Regional Research Laboratory of the U. S. Department of Agriculture at Albany, Calif. They are continuing their investigations, and promise a fuller report at a future date.

Unlike penicillin, which is derived from a mold, gramicidin is produced by a soil-dwelling bacterium. It attacks germs belonging to a group against which penicillin is ineffective.

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