

CHEMISTRY

Plastics Are Now Three-Dimensional

► NEW three-dimensional plastics were exhibited in New York. There was a stitchless quilted plastic, suitable for crib or bar, and a film of uniform thickness, with printing, color and texture on both sides. These will be available for the first time early in the new year.

Smartly-styled place mats, handbags and belts of upstanding designs attracted much attention. Undercuts such as those found in beads were exhibited in vinylite plastic. Tough, durable and resistant to abrasion, the plastic felt like the leather, cord or woven straw it simulated. Practically wrinkle-proof, repeated folding or flexing did not crack or crease the articles.

New methods of printing, embossing and forming have made these possible, it was reported by George C. Miller, vice-president of the Bakelite Division of Union Carbide and Carbon Corporation, which makes the plastic.

This preview of new developments for applying surface treatments marks another milestone in the growth and expansion of the plastic film and sheeting industry. The exhibit demonstrates that almost any fabric, pattern or weave can be duplicated in plastic; it shows that film sheeting can be styled suitably and effectively for every room in the house.

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ENTOMOLOGY

Radioactive Flies Used in Oregon Tests

► "Hot houseflies" that cannot escape scientific detection are furnishing new clues to the habits of common disease-carrying summertime pests.

Flies used for tests this summer at Corvallis, Oreg., by scientists of the U. S. Agriculture Department and Oregon state laboratories had one unusual feature. They were radioactive.

By tagging thousands of guinea-pig insects with radioactive compounds from the atomic energy plant at Oak Ridge, Tenn., entomologists were able to trace how far and how fast the "hot" flies flew from a release point. This was the first such field test of its kind, the Agriculture Department's pest control researchers report.

Baited traps as far as 12 miles away picked up the contaminated flies. Checked by a counter device, they were readily identified.

Two ways were devised for getting the radioactive tracers into the bodies of flies and mosquitoes in the Corvallis laboratory. One was to raise insects in a medium containing a compound made with radioactive phosphorus. Even more effective was to feed the insects a sugar syrup containing radioactive phosphoric acid.

By learning that flies of a particular breed are apt to spread as much as 12 miles, the scientists added to knowledge of how insects with resistance to DDT sprays appear in an unsprayed area. In other spots where DDT has killed off non-resistant flies, tougher strains from a neighboring area are apt to move in, they found.

Information of this sort is also needed on the habits of mosquitoes. With it, insect fighters can more accurately set up control zones for poisoning or draining mosquito breeding areas.

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SEISMOLOGY

New Hebrides Area Site of Big Quake

► THE vicinity of the New Hebrides islands in the Pacific has been spotted as the location of a world-shaking earthquake of Saturday, Dec. 2, that gave a big jolt to seismographs. Records collected in part by SCIENCE SERVICE from American, Samoan and Japanese stations allowed the determination of location by U. S. Coast and Geodetic Survey experts. Rated 7.6 on the earthquake intensity scale upon which 8.5 is tops, the quake may have caused tidal waves that caused damage. (Time: 2:52:03 p.m. EST Dec. 2, location 16 ½ S 168 E., depth of focus 100 km.)

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ENGINEERING

Bottled Gas To Be Used To Power City Buses

► "BOTTLED" GAS of the kind used in pressure tanks for cooking in rural homes may soon be used instead of gasoline to power city buses, Dr. Leonard Raymond of Socony-Vacuum Oil Company recently stated.

Bus operators, he said, are showing an increasing interest in the use of liquid petroleum or bottled gas as a fuel because of the rising cost of operating buses. Another reason is the availability of engines with higher compression ratio and the ready supply of bottled gas.

The idea is not entirely new. Heavy trucks, off-the-road vehicles, rail cars and industrial engines have used this type of fuel on the Pacific coast since the early thirties. One bus line in Spokane has used the gas for ten years. About three per cent of the bottled gas sold in the country is for automotive purposes.

The gas used may be either propane or butane or a mixture of the two. The principal sources are crude oil wells, natural gas wells, gas distillate wells and refinery operations. Buses can be converted at a reasonable cost. The gases have high octane number and make knock-free operation at higher compression ratios possible, giving greater power output.

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IN SCIEN

PUBLIC HEALTH

Malaria Control Gives More Food to Pakistan

► BRING malaria under control in a subtropical farming area, and the direct result is an increase in crop yields and a drop in man hours of work needed to farm an acre of land.

This is the finding of a study made by the World Health Organization of the United Nations in Pakistan. With widespread DDT spraying, a WHO malaria control team has boosted agricultural output of Pakistan's East Bengal province 15% in two years.

Surveys were made recently of rice fields which had been sprayed and control fields which did not get the DDT treatment. Since weather and other conditions affected both areas equally, "the 15% increase of yield in the DDT-sprayed areas, and the decrease of man hours of labor required per acre of over 10%, can be fairly attributed to the malaria control work carried out," the team leader, Dr. G. Gramiccia, reported to WHO.

In the DDT-sprayed areas, in addition, no working hours were lost due to illness. In the unsprayed control areas, there was a 2.2% loss in man hours.

This year 193 square miles were sprayed. From the health standpoint, no malaria was found in babies up to a year old in either 1949 or 1950 in the sprayed areas. In the unsprayed region, there was an infection rate of 7.1% among children of that age.

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MEDICINE

High Blood Pressure Has 60 Causes

► DOCTORS know of some 60 causes for high blood pressure. If any one of these can be found when the patient is examined, he may be helped or possibly "cured," Dr. Irvine H. Page of Cleveland declared at the meeting of the American Medical Association in Cleveland, Ohio.

"Outlook in the field today is one of optimism," he said.

Restricted diets seem to help in 30% of carefully selected cases, he said. A nerve cutting operation called sympathectomy helps many with early cases of severe high blood pressure.

Once the patient's particular type of high blood pressure has been classified, Dr. Page said, help can be given him whether through general measures or a special course of treatment.

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CI FIELDS

INVENTION

Eating Doll Bites Spoon and Swallows

► TO DOLLS that cry, talk, roll their eyes or walk, add an eating doll which can be fed with a spoon by its tiny "mother." It "bites" a spoon put into its mouth and "swallows" the contents.

This eating doll is one of the inventions on which the government issued a patent recently. Its inventor is Edgar Kahn of New York City. Patent number 2,531,912. Its head can be easily detached so that its "stomach" can be emptied before overfilled.

The lower jaw of this eating doll works on pivots. It has a magnet embedded in it, which is attracted to an iron spoon when inserted in the mouth. This jaw movement simulates swallowing action. A hanging tube within the body, attached to the rear of the mouth cavity, catches the "swallowed" food.

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RESOURCES

Mica Needed for Electronic Weapons

► IF ALL-OUT war comes, mica which the U. S. is now buying feverishly in far away India and Madagascar will be vitally needed for the electronic eyes, ears and nerves of battle.

But Uncle Sam is in a far better position in 1950, as regards this highly strategic material of war, than he was in 1940. Man-made mica, a scientific sleight-of-hand achieved since World War II, is now being made in substantial amounts in this country.

Mica is indispensable for modern electronic weapons. As an insulator, it keeps high-powered radio, radar, sonar, gun directors, calculators and all other types of electrical equipment from flashing out in one giant short circuit.

Fighting planes use mica-coated spark plugs. Mixed with new synthetic resins, mica insulates generators and protects vital delicate equipment from the weather.

Although the U. S. is the world's largest producer of natural mica, its output is limited in peacetime to powdered or scrap mica. For high grade, badly-needed "blocks" and "splittings" of mica used in electronics, this country has always had to go to India for its major supply. American firms could not compete with low-paid, highly-skilled India workers.

In World War II, substitutes were found for mica in many of its uses. Brazil began

turning out some high grade mica. So did Madagascar, Argentine and Canada. But the most far-reaching war-born development was Germany's success in making synthetic mica.

U. S. scientists, searching for years for this secret, quickly adopted the results of German research. A government-sponsored program began in 1946 at the Colorado School of Mines. Later the U. S. Bureau of Mines began work on a synthetic mica pilot plant at Norris, Tenn.

Only this year did some of the results begin to be revealed. In Colorado, cakes of mica weighing up to 500 pounds were being made by a new "cool hearth" process. Synthetic crystals superior to natural mica in resisting breakdown at high temperatures were being "grown" in mica furnaces which traveled at snail-pace under gas flame jets.

In New York State, other researchers came up with "integrated mica," huge sheets of natural mica made entirely from scrap.

Scientists were already talking of "American self-sufficiency in mica." This is not quite the case—yet. For the tremendous amounts of mica needed in an all-out mobilization and war effort, the pilot plants which now exist would not be sufficient.

But new plants could and would be given top priority. World War III would have no mica bottleneck.

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ENGINEERING

Instrument Speeds Alloy Analysis

► DIRECT reading of the amount of different metals in an alloy will be possible using an instrument now in the final stages of development in Paris.

An improvement over present methods that require photographing, developing and then measuring, the apparatus was built by the Compagnie Radio-Cinema. It uses only two photoelectric cells to study the spectrum lines of the metals making up an alloy. American models use as many photoelectric cells as there are lines to study.

In the new model, one standard cell is stationary. The other cell, driven along the spectrum by a motor, is used to scan the spectrum of the alloy and can be stopped on any line selected for analysis. The result can be read directly by eye and is also recorded on a rotating chart at the rate of one analysis per minute.

Not only can the whole spectrum of an alloy or metal be scanned, explains Frederic D. Mathieu, director and chief engineer of the Compagnie Radio-Cinema, but also the light between the spectrum lines of elements can be measured and studied. This will be valuable for future research on alloy components. Further, the variations of the ratio of intensities of two lines can be recorded over any length of time and sparking.

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VETERINARY MEDICINE

Steel Splints on Legs Save Valuable Animals

► UNTIL recently most fractures in cows and horses have been considered incurable and the animals have been destroyed without further treatment.

But now broken legs in large animals may sometimes be repaired by a new technique adapted to this use by Dr. John W. Kendrick of the Veterinary Science Clinic at the University of California College of Agriculture.

"The new technique, which has been used on both dairy cattle and horses, has given satisfactory results in a high percentage of cases," he added.

Stainless steel splints are attached directly to the bone and the fractured part is encased in a plaster of Paris cast.

Such a fracture was repaired by this method in one dairy cow weighing 1,200 pounds. She calved about three months later, according to the Davis veterinarian, and by the fourth month was back in the milking string with no loss of production.

A horse whose leg was fractured in the early winter was back on the track the following year and won several races.

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RESOURCES

Feudalism Hampers Food Production

► DIRECTOR-General Norris E. Dodd of the United Nation's Food and Agriculture Organization opened an inter-American food conference in Montevideo, Uruguay, with a blast at feudalism in the Western Hemisphere.

In the countries of Latin America, he told delegates from 25 nations, "the system of landholding and tenancy is often such as to make increased production on the part of farmers almost impossible."

Mr. Dodd said much of the discontent, revolt and revolution in the world is caused by agricultural "barriers to progress." These he listed as:

A whole family works only a tiny bit of land which it does not even own. It pays an exorbitant share of the produce to a remote landlord. Too often it is weighed down under heavy taxes or usurious interest rates for a little necessary credit.

"Such conditions," said Mr. Dodd, "must be changed if modern technology is to be given a chance to transform the lives of average human beings."

A regional FAO conference will go on for the next three weeks simultaneously with the Fourth Inter-American Conference on Agriculture called by the Organization of American States. Both Mr. Dodd and U. S. Secretary of Agriculture Charles Brannan are in Montevideo for the conferences.

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