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CHEMISTRY

New Family of Polymers

➤ A CHEMICAL building block is opening doors to new polymers, the compounds from which nylon, rubbers, plastics and other common products today are made.

High-temperature-resistant diphenyl oxide polymers, now being tested at 25 firms, are on their way to wide use in industry, Dr. Gerry R. Sprengling of Westinghouse Electric Corporation in Pittsburgh told SCIENCE SERVICE.

He is director of a research group that developed a diphenyl oxide electrical insulator, Doryl, which can be used in rocket engine systems. Dr. Sprengling predicts other applications such as laminates (products, like plywood, made of thin layers held together by an adhesive) and protective coatings in the near future.

Research at the Dow Chemical Company, which produces diphenyl oxide, showed that the diphenyl oxide family of industrial chemicals may be used as plasticizers or as glycol alkyds that may have application in the production of paints, textiles, paper, floor coverings and other products.

As an electrical insulator, the diphenyl

oxide derivative has a high strength that it retains at 572 degree Fahrenheit temperatures. Westinghouse scientists chose it above the numerous other polymers available for testing because it showed promise of chemical properties that were not present in products now marketed and is economical to use.

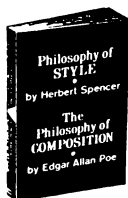
High temperature electrical systems are commonly made with silicones. The new diphenyl oxide varnishes and coatings reduce brush wear and relay sticking often characteristic of silicone systems. On the other hand, while the silicones remain flexible at high temperatures, the diphenyl oxide compounds form hard coverings.

The electrical insulator is a polymer in which the diphenyl oxide groups are attached with methyl groups. It is solvent resistant and is strong enough to withstand pressure in electrical systems of 5,000 to 8,000 times the force of gravity.

At Dow, researchers have found the new compounds, in addition to being heat resistant, highly chemically resistant and able to produce light, longer-lasting colors.

• Science News Letter, 83:46 January 19, 1963

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GENERAL SCIENCE

News From Science Clubs

Programs and activities of science clubs reported to Science Clubs of America are as follows:

THE CASTLE HIGH SCHOOL SCIENCE CLUB, Newburg, Ind., uses some of its funds to present a \$15.00 award to the top science student and \$5.00 award to the runner-up each year. The name of the first place student is inscribed on a bronze plaque kept in the school.

THE NUCLEUS SCIENCE CLUB of Fremont Junior High School, Seaside, Calif., featured National Science Youth Month in October on their Modern Discoveries in Science for their monthly radio broadcast and presented a science play for

a student assembly program in November.

THE DALE STUDENTS OF SCIENCE from Dale Junior High School, Johnstown, Pa., presented a science program on the local television channel and made name plates for the teachers. At the present time they are busy cleaning up the school labs.

THE BI-PHI-CHI of Miami Military Academy, Miami, Fla., is conducting special projects on weather predictions and maintaining a science library.

Affiliate your club with SCA and report your activities to Science Clubs of America, 1719 N Street, N.W., Washington 6, D. C.

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AGRICULTURE

New Machine Speeds Citrus Fruit Picking

➤ AVOCADOS, oranges, lemons and other citrus fruits may soon be rapidly harvested with the aid of a new machine.

It is a fat-tired frame vehicle that supports a boom from which a picker's chair can be suspended. From the chair a picker can propel himself around a tree by pushing a button or shifting his weight. Thick, low-pressure tires allow the machine maneuverability over soft orchard soil.

The machine is being developed by Dr. Roy J. Smith at the University of California, Riverside. He reports: "Preliminary rate-of-pick tests, made recently, encourage us to believe that the number of fruits picked, using this machine, can substantially exceed the number picked by the conventional ladder, bag and field box method."

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CRYOGENICS

Ultrasonic Thermometers For Low Temperatures

➤ AN ACCURATE temperature scale in the region of four to 14 degrees Kelvin (zero Kelvin is minus 273.16 degrees Centigrade) is expected to be established with an ultrasonic thermometer.

The ultrasonic thermometer, refined by the National Bureau of Standards, is based on the determination of the speed of sound in helium gas. It is essentially a resonance tube used to determine the wavelength of sound. It eliminates the troublesome corrections required with gas thermometry.

The thermometer is expected to provide the basis for the calibration of germanium resistance thermometers.

The program is under the direction of H. H. Plumb of the Bureau's cryogenic physics laboratory.

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