

agent and, as such, may react with reducing materials, such as carbonaceous matter, certain metals, phosphorus and sulfur. With certain mixtures and the proper environment, spontaneous heating can occur at ordinary temperatures.

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## CHEMISTRY

## Find Way to Keep Powders Suspended in Liquids

► ELECTRICAL CHARGES on their particles enable certain soapy chemicals called detergents to prevent the curdling of paint, cosmetics and other commercial preparations, the American Chemical Society was told by two California scientists, Leonard Greiner of the U. S. Naval Ordnance Station, Inyokern, and Prof. Robert D. Vold of the University of Southern California, Los Angeles.

Many present-day commercial products, including medicines and toiletries as well as paints, consist of finely divided particles dispersed in liquids. The list of such products would grow, they said, if the factors governing the stability and efficient preparation of dispersions were better known. The investigations on which they reported were to discover the unknown factors.

Powder can be suspended indefinitely in a liquid, they stated, if a suspending agent is added to the mixture. They explained that the agents seem to charge the particles with electricity so that they repel each other. The molecules of the soapy chemicals used split into electrically charged particles when dissolved in water.

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## CHEMISTRY

## AEC Selling Chemicals In Radioactive Forms

► LATEST peacetime service of the nation's atomic energy program is the sale of chemicals tagged with radioactive elements, announced by the U. S. Atomic Energy Commission.

These chemicals are compounds such as certain acids and alcohols in which one of the elements is radioactive. The radioactive forms, called isotopes, of some chemical elements have been sold to researchers by the Atomic Energy Commission for two years. But the new tagged chemicals will speed studies where the radioactive elements are to be used in compounds.

One of the more important isotopes for research on living things, carbon with atomic weight of 14, is listed by the Commission as available now in several different compounds with more scheduled for production. Radioactive gold in the form of colloidal gold and aurothiosulphate is available for therapeutic use, it was announced.

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**EXPLODING STAR**—Recently discovered supernova, of the fifteenth magnitude when found, is shown here. Located in a spiral nebula known as NGC 6946, the arrow points to it. The supernova, 4,000,000 light years from the earth, was discovered by Dr. N. U. Mayall of the University of California's Lick Observatory. It was taken with the Carnegie 20-inch astrograph. (See SNL, July 17).

## AERONAUTICS

## Elasticity of Plane Wings

► THE elasticity of an airplane wing profoundly affects the stability and control of aircraft, the Institute of the Aeronautical Sciences was told at a meeting in Los Angeles, by S. I. Pai and W. R. Sears of Cornell University.

Far from being rigid structures, wings and other components deflect elastically under load, they said. Thus air loads on a wing in flight actually distort the wing, the distortion changing the air loads. The important effects on the ordinary straight wings are due to twisting; with the newer sweepback or sweepforward wings a bending under load changes the air loads appreciably.

Inertia loads, such as weights carried near the tips of the wings, tend to bend the wings downward. This has a stabilizing effect. Fuel tanks on wing tips, already carried on some planes, appear to be advantageous for this reason.

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### Boundary Layer Control

► BOUNDARY layer control through the use of suction slots in airplane wings was found not "particularly attractive by comparison with drags known to be obtainable

with wings of sufficient smoothness," according to H. B. Dickinson of Lockheed Aircraft Corporation. The use of these suction slots has been recommended by others.

Boundary layers are relatively thin layers of air next to the wings and fuselage of a plane that cause considerable drag. The suction slots on the rear half of the wing surface removes part of the layer and, in theory at least, reduces the drag which comes when the smooth, or laminar flow, breaks into a turbulent flow.

Between 1941 and 1946, an investigation was conducted at Lockheed to determine whether it was advisable to attempt an early application of boundary layer control to an airplane project. The investigation was confined to the use of a single spanwise suction slot on the upper surface of a low-drag airfoil of conventional thickness and planform, Mr. Dickinson stated.

After extensive tests it appears that before the slot method is adopted, the simpler method of obtaining sufficient smoothness of actual wings should be solved. Thereafter, drag reduction by boundary layer control appears less promising, he said, and to make the added complication worthwhile would require capitalizing on all potential advantages.

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