

CHEMISTRY

Watch These Signs to Spot Bomb Detonation

➤ WHICH FISSION products and atomic fragments of the bomb case tell observers that an A-bomb has been exploded were reported to the American Chemical Society meeting in Los Angeles by Dr. L. R. Bunney of the U. S. Naval Radiological Defense Laboratory in San Francisco.

Working with Dr. N. E. Ballou, and using both experimental and theoretical data, Dr. Bunney concludes that uranium and plutonium would be found in air samples as evidence of such an explosion, and that there would also appear as fission products elements from zinc through gadolinium in the periodic table.

Most fission products would be in the form of oxides by the time they had cooled to ordinary temperatures, Dr. Bunney said, although a number of other combinations would be possible. Nitrogen resulting from the explosion would be uncombined, as would the rare gases. Silver, he believes, would be found as a metal.

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TECHNOLOGY

Antifreeze Speeds Synthetic Rubber

➤ SYNTHETIC RUBBER for automobile tires and military equipment now can be mixed up in a big "heat exchanger" vat resembling an ice cream freezer in about 20 minutes, using new formulas and techniques described to the American Chemical Society meeting in Los Angeles by U. S. Rubber Company scientists.

In pilot plant tests, the process replaces a tedious 12- to 14-hour production rate now widely used in government-owned plants making GR-S synthetic rubber.

The secret of the process lies in removing heat as the chemicals react inside the vat to form "cold" rubber. A coolant, similar to methanol antifreeze, was used to carry off the heat of chemical reaction inside the big vessel. The resulting liquid synthetic rubber latex then could be processed into solid form by conventional methods.

Success of the pilot plant tests, conducted at the Naugatuck Chemical Division's synthetic rubber plant in Naugatuck, Conn., indicates the process may be adaptable to full-scale production, the scientists reported.

The B. F. Goodrich Company, working on the project under Reconstruction Finance Corporation sponsorship, previously has announced its findings on a similar process in which the synthetic is made in a tube-like affair. Rubber made in these pilot plant runs now is being tested to reveal its quality.

The GR-S synthetic rubber is particularly suited to automobile tire treads. It is believed to be generally about 20% better than natural rubber in this application.

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CHEMICAL PRESERVING METHOD—A cheap method of treating fruits and vegetables after harvest to cut down on spoilage losses is being worked out by E. B. Oyer and E. G. Sharvelle of Purdue University, Lafayette, Ind. Vapors from volatile trichloroethylene and tetrachloroethylene are being tested as chemicals to cut mold losses when marketing highly perishable peaches and strawberries.

METEOROLOGY

Speed Forecasting Time

➤ A WEATHER forecast which would take one weatherman with a desk calculator one year to do can now be done by an electronic computer in 36 minutes.

The forecast is actually for the flow of the atmosphere over the United States east of the Rockies, being done by the new weather predicting method called numerical forecasting. For the first time, Dr. Jule Charney of the Institute for Advanced Study at Princeton revealed at a meeting of the American Meteorological Society in Atlantic City, N. J., a three-layer forecast for this area has been fed into the extremely fast "electronic brain" at the Institute.

A human forecaster can only hold in his mind a general picture of the weather, while the electronic brain can hold in its memory organs specific information about atmospheric pressure and other weather data at hundreds of separate points in the atmosphere.

The human forecaster uses his general picture, plus what he knows about weather processes, to make a big jump into the future—a jump of 24 hours. The electronic brain uses its information about the weather, plus certain mathematical for-

mulas that describe weather processes, to predict what will happen in one hour. Then it jumps from hour to hour until it gets a forecast for 24 hours ahead.

Originally, numerical forecasts were made for a two-dimensional square at one altitude in the atmosphere. Then the meteorology section at the Institute proceeded to two horizontal slices of the atmosphere. Now, they have fed into the machine the first forecast problem using three slices. The upper limit will probably be five or six slices, Dr. Charney said.

At the same meeting it was revealed that some modification of the formula used in numerical forecasting on a 24-hour basis may be used in predicting the weather over long periods of time. Philip F. Clapp of the U. S. Weather Bureau said that, when the numerical method is used to predict weather five days or a month ahead, large scale heat and cold sources will probably have to be taken into account.

He based this observation on work he had done in long-range forecasting by the numerical method at the University of Stockholm.

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