

CHEMISTRY

Ether Aids in Separation Of Rare Earth Elements

ETHER, widely used as an anesthetic, is finding a new role as the solvent used in separating the rare chemical element, praseodymium, from its most common rare earth chemical sister, neodymium, Prof. B. S. Hopkins of the University of Illinois, discoverer of the element illinium, told the National Academy of Sciences in Ann Arbor.

Water has always been used in the past to separate the members of the rare earth group of elements. Prof. Hopkins explained to the academicians how he is studying the action of other solvents, particularly the alcohols and similar chemicals, in the hope of finding liquids whose solubilities for the anhydrous rare earth chlorides and nitrates will make possible quicker and more complete separations.

His most striking success came through the discovery of the differential solvent action of ethyl ether on neodymium and praseodymium nitrates. At ordinary room temperature (20 degrees Centigrade, 68 degrees Fahrenheit) the praseodymium compound is practically insoluble in the ether while the neodymium nitrate dissolves to the extent of five grams in a liter of ether (about a sixth of an ounce in a quart of ether). By further improved methods Dr. Hop-

kins believes that it should be possible to use ether to remove the last traces of neodymium from praseodymium, a separation that has been very difficult to bring about by older methods. Praseodymium is rare and it possesses properties which are remarkably similar to those of neodymium.

Ethylene glycol, now used as an anti-freeze for autos, may prove useful in bringing about a separation of neodymium and lanthanum. Other solvents are being investigated.

The rare earths include fifteen elements, numbers 57 through 71, the most widely used of which is cerium, which with thorium compounds formed the mantle of Welsbach gas lamps. The element illinium, discovered by Dr. Hopkins a few years ago and named after the State and University of Illinois, is number 61.

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PALEONTOLOGY

Modern Hawk's Skull in 35,000,000 Year Old Rocks

SOME birds did their evolving early. New evidence on this point was presented at the meeting of the National Academy of Sciences in Ann Arbor by Dr. Alexander Wetmore of the U. S. National Museum and Prof. E. C. Case of the University of Michigan.

They reported on the discovery of the skull of a hawk of fully modern type in the Badlands of South Dakota, in rocks of the oligocene geologic period, which began some 35,000,000 years ago, according to estimates based on earth radioactivity. The skull belonged to a bird of the genus *Buteo*; modern representatives of this group include such well-known species as Swainson's hawk, the red-tailed hawk and the broad-winged hawk.

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ENGINEERING

Tires Inflated With Carbon Dioxide

MANY German motorists no longer carry emergency tire pumps, states the German scientific journal *Technische Blätter*. Instead, they carry small cylinders of compressed carbon dioxide, equipped with hoses and suitable nozzles. Each cylinder will serve for several inflations.

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Strictly American

AFTER the turkey has been stripped to his framework and the cranberry sauce and sweet potatoes and all the rest of the "fixin's" have departed with him, the Thanksgiving feast is appropriately rounded off with pumpkin pie. Even the least forethoughtful of small boys will have left a corner somewhere into which he can drive a wedge of it.

The fruit pie is a typically American dessert, and the pumpkin is a typically American pie material. Europeans know it not; they are abashed and embarrassed in its presence. There is a tale that a member of Sara Bernhardt's entourage once informed the great diva that pumpkin pie is "the American national cake." But it is as natural for an American to demolish pumpkin pie as it is for him to turn a deaf ear—or radio dial—to patriotic orators.

The typical farm scene, of orange-yellow pumpkins littered among dun-colored cornshocks, was American while the Pilgrim Fathers were still Englishmen. For the Indians cultivated corn and pumpkins together exactly as we do today, and when the white men came they learned this agricultural trick from the red men. Though there is little doubt that pumpkins originated on this continent, they are not known anywhere in the wild state. Like the corn they grow with, the Indians had them in cultivation but knew nothing of their source when the white man first arrived. Unlike corn, however, pumpkins have relatives all over the world. But the yellow pumpkin that makes our pies is still of straight American ancestry.

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under control as old-fashioned French girls awaiting their parents' pleasure in a marriage of convenience.

When they are ready to carry out the pollination, the botanists load the chosen pollen into a sterilized hypodermic syringe. The needle is plunged through the fabric of the bag, and the fertilizing yellow dust puffed in on the flowers by means of a small rubber bulb. Then the puncture hole is sealed over with a bit of adhesive tape, and the flowers are still left in the bag until they have set their seed and there is no chance of any contaminating foreign pollen getting in.

It has been learned that pine pollen will keep for a year or more, so that pollens can be stored from one season to the next, or brought from as far away as India to use in making hybrids with western American pines.

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