CHEMISTRY

Heavy Neon is Concentrated To Purity of 99 Per Cent.

Achievement Hailed as of Great Importance and Comparable With Discovery of Heavy Hydrogen

PREPARATION of 99 per cent. pure "heavy" neon, the gaseous element most widely known for its use in reddish advertising signs, was announced before the meeting of the British Association for the Advancement of Science in Norwich, by Dr. Gustav Hertz of the Siemens-Halske Company, Berlin.

The achievement is comparable with the concentration of pure heavy hydrogen for which Prof. Harold C. Urey, Columbia University, recently was awarded the Nobel Prize in Chemistry, because of the importance of neon in experiments on atomic structure.

Ordinary neon gas consists of two isotopes, which are chemically indistinguishable but have different atomic weights. The lighter and predominating fraction has an atomic weight of 20 and the heavier one a weight of 22. As found naturally, they occur in the proportion of nine to one, respectively, and give the average atomic weight of 20.2.

Dr. Hertz's concentration of the mass 22 kind of neon makes the second case where an isotope has been separated in usable quantities. Hydrogen's heavy isotope is the other.

Samples of the almost pure heavy neon have already been given to Prof. F. W. Aston, Cambridge University, England's most famous experimental scientist dealing with atomic weights. Another sample is being rushed to Dr. Kenneth Bainbridge of Bartol Research Foundation, Swarthmore, Pa., for analysis on his mass-spectrograph. Prof. Ernest O. Lawrence, University of California, may also receive some of the precious heavy neon for experiments in nuclear physics.

Commenting on the concentrated heavy isotope of neon, Prof. Aston hailed the work as a great aid to experiments on nuclear disintegration, because by using the heavy neon gas, investigators can be sure that its weight is unambiguously 22. Recent work has shown that nuclear studies such as artificial radioactivity and transmutation ought to be done, for best results, with really pure elements; the word pure being used in its physical as well as chemical meaning.

Dr. Hertz uses the diffusion technique for separating the neon isotopes. A battery of tubes containing porous material is filled with pure neon gas as obtained chemically. Mercury vapor pumps drive the neon through the system. As the gas comes to the porous material, the lighter kind of neon passes through a little faster than the heavier kind because of the difference in the diffusion rates.

The lighter fraction passes back to the opposite side of the porous tube and repeats the process while the heavier fraction passes on to the second porous tube, then to a third, and so on. Each porous tube has the return system whereby the lighter isotope is each time returned to repeat the diffusing process. Continuous operation and circulation of the gases is maintained by the pumping system.

Starting with the original neon gas in the ratio of 9.3 parts of isotope of mass 20 to one part of isotope of mass 22, only one hour is needed to bring them to equal concentrations. Five hours suffice to bring the heavier isotope up to 98 to 99 per cent. concentration.

Science News Letter, September 21, 1935

BOTANY

X-Rayed Bulb Produces Lily That Never Sheds Pollen

AN "X-RAY lily" that keeps its petals shining white by never shedding its pollen on them has been originated in the research laboratories of the General Electric Company, by C. N. Moore. The new variety has been given the provisional name of "Roentgen Regal Lily," in honor of the discoverer of X-rays, and patent to protect it has been applied for.

Many species of lily have the habit of shedding pollen from their big yellow anthers as these ripen and burst. The yellow dust, scattered on the shining petals, disfigures the flowers in the opinion of many purchasers. Florists also claim that if this fertilizing dust falls on the receiving surface of the pistil, the flower dies sooner.

For this reason, florists generally tear off the anthers as soon as the lily opens.

ROENTGEN REGAL LILY

This beautiful flower has the peculiar virtue of never shedding its golden pollen.

This, however, is a tedious hand job, adding to the cost of the flowers. Moreover, to many flower lovers these de-antherized lilies appear simply mutilated. A lily that can keep its golden anthers and yet not shed pollen on the petals is therefore a very desirable thing.

Mr. Moore started four years ago toward the goal he has finally attained. He treated three lots of regal lily bulbs to varying doses of X-rays. Most of them did not show any effect, though a few did produce deformed or otherwise freakish flowers.

Two bulbs, however, gave rise to new generations of bulbs which produced flowers with non-shedding anthers, and these were the vegetative ancestors of the stock he now has blossoming. The natural-appearing pollen-sacs swell up in the usual fashion, but never burst. Instead, they finally begin to dwindle slowly, and the pollen is never liberated.

Science News Letter, September 21, 1935

PLANT PATHOLOGY

Willow Disease Threatens Cricket, Sport of English

SUPPOSE Lou Gehrig's bat should break every time he hit a ball.

Suppose every baseball player's bat should break, every time anybody hit a ball.

That nightmare situation is what menaces cricket, which means even more to English boys than baseball does to young Americans—if that can be imagined. The cricket-bat willow, main reliance of the game, is afflicted with a widespread epidemic known as watermark disease, which

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to The Science News-Letter. www.jstor.org