

ASTRONOMY

Hydrogen in Atmospheres

Lightest of all elements found in atmospheres of far-away Uranus and Neptune. Earth is only other planet yet found with hydrogen in its air.

► THE DISTANT planets Uranus and Neptune have just been discovered to contain in their atmospheres hydrogen, one of the atomic fuels that keep the stars burning.

Discovery of the presence of this lightest of all elements in the two planets' atmospheres was reported by Dr. G. Herzberg of the division of physics of the Canadian National Research Council, Ottawa, at the joint meeting of the American Astronomical Society and the Astronomical Society of the Pacific in Victoria, B. C.

There is little hydrogen in the earth's atmosphere and none at all has been found in the atmospheres of other planets. Now there appears to be enough in the atmospheres of Uranus and Neptune to show up in spectra of sunlight reflected from these two planets.

There are even larger amounts of helium than of hydrogen, at least three times as much in the atmospheres of both, Dr. Herzberg calculates. Helium is the next lightest element after hydrogen. There is so little helium in the earth's atmosphere that it was first discovered in the sun, then later found in our own air. A much larger percentage must exist in the gases surrounding these outer planets.

Both of these planets are so far from the sun that their atmospheres, even when

heated by the sun, never get much above absolute zero. Uranus is almost 1,800,000,000 miles from the sun; Neptune is approximately 2,800,000,000 miles from it. Only Pluto is known to be more distant.

Neptune and Uranus, planets remarkably alike in size, mass, density and all other characteristics, are the first known to contain either helium or hydrogen in their atmospheres. The atmospheres of both are composed largely of methane or marsh gas. In addition, Uranus' atmosphere is known to include ammonia, ozone and sulfur dioxide.

Over three-fourths of our own atmosphere is nitrogen, over one-fifth is oxygen. The other elements are relatively rare. If there ever was much pure hydrogen, it has largely escaped into the tip top of our atmosphere or has left the earth entirely. Hydrogen has been retained mostly in combination with other elements, as with oxygen to form water.

Mars is the only other planet in our solar system believed to have an atmosphere capable of sustaining any form of life that we know. The atmosphere of Venus is rich in carbon dioxide, but lacks oxygen and water. The giant planet Jupiter and ringed Saturn contain much more methane in their atmospheres than anything else.

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MEDICINE

Doctor Paralyzes Self

► EXPERIMENTS IN which he produced complete paralysis in himself with a new drug are reported by Dr. Otto K. Mayrhofer of Vienna, Austria, to the BRITISH MEDICAL JOURNAL (June 21).

The drug is succinylcholine chloride, or S.C.C. for short. It is a muscle relaxing drug with very short lasting action. The paralysis Dr. Mayrhofer induced in himself with the drug lasted from about one minute to a minute and a half or two minutes, according to the dose of the drug and how it was given. The paralysis included paralysis of breathing muscles.

Object of the experiments on himself was to prove its action on skeletal muscles in man and to show that it had no undesirable side effects. It had previously been tested on frogs, cats, pigeons and dogs.

This drug and a close relative, succinylcholine iodide, or S.C.I., are new additions to the muscle relaxing drugs, such as curare compounds, flaxedil and decamethonium

iodide or bromide, which are being used or tried out as aids in surgical operations and electroshock treatments.

The drug takes effect very quickly, muscles being relaxed to the point of paralysis within 35 or 40 seconds, Dr. Mayrhofer found. Recovery is also rapid. He was able to breathe normally within three minutes after the first movement of his diaphragm when the drug's effect first began wearing off.

Blood circulation was not affected even with doses several times the paralyzing dose.

Three members of his medical staff assisted Dr. Mayrhofer with the tests on himself. One gave oxygen and artificial respiration needed when Dr. Mayrhofer's breathing muscles were completely paralyzed so that he could no longer breathe himself. The second injected the drug and took pulse readings and blood pressure readings. The third took electrocardiograph readings and kept the records. Dr. Mayrhofer was

completely conscious during all of the tests.

In subsequent trials on patients, anesthetics were given so that the patients were unconscious and did not know what was going on. All patients were awake at the end of the operation and none showed any side effects or after effects. The surgeons and anesthetists were "extremely pleased" and satisfied with the effects of the drug.

Good results with this drug in trials on patients are also reported by Drs. H. Richards and H. R. Youngman of the United Cambridge Hospitals. The iodide form of the drug is also being used regularly in the Karolinska Hospital at Stockholm, Sweden.

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INVENTION

Grass Seed "Blanket" For Planting Lawn

► NOW YOUR lawn may be planted by merely throwing a "blanket" over the lawn area. Preston F. Marshall, Washington, D. C., has patented an invention, number 2,601,620, which contemplates twisting the grass seeds into strands of yarn during the spinning and then weaving the yarn into an open mesh fabric. The fabric is then spread out on the area to be seeded. This prevents the seed from being blown or washed away or eaten by birds before germination.

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VETERINARY MEDICINE

Progress in Fight on Costly Cattle Disease

► "IMPORTANT" PROGRESS in the fight on brucellosis was reported to the American Veterinary Medical Association at its meeting in Atlantic City, N. J.

This disease is known also as Malta fever, undulant fever and, in cows, contagious abortion. It is said to be the nation's most costly cattle disease and besides affecting cattle, hogs and goats, can also attack humans who drink raw milk from infected animals or who handle the carcasses of infected animals.

During the past year (1951), it was reported, over 85% of all calves in six states were vaccinated. These states are Connecticut, Pennsylvania, New Jersey, Vermont, New York and West Virginia.

In addition, six other states had from 25% to 75% of their calves vaccinated. These states are Delaware, Maine, Maryland, Massachusetts, Virginia and Rhode Island.

In one state, Idaho, calfhooed vaccination has increased about 100% every year from 1946 through 1950. Other states which have also pushed broad-scale calfhooed vaccination include Oregon, Washington, Montana, Florida, Louisiana, Tennessee, Alabama, South and North Carolina, Georgia and Mississippi.

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