

CHEMISTRY

# Double Weight Hydrogen Found in Water Electrolysis

## Commercial Hydrogen-Oxygen Plants Yield Water Containing Abundance of Hydrogen Isotope Two

**A** PLENTIFUL supply of newly discovered double-weight hydrogen atoms exists in the apparatus used commercially to break down water into oxygen and hydrogen gases by passing electricity through it.

This has been determined through joint research by Dr. E. W. Washburn of the National Bureau of Standards in Washington and Dr. Harold G. Urey of the chemistry department of Columbia University, New York.

The existence of a hydrogen isotope of atomic weight two, twice the ordinary hydrogen atom of mass one, was discovered last year by joint research between the same two institutions. This was hailed as an important development bearing upon the constitution of matter and the way in which elements are distributed in nature.

The scientists set about to find ways of separating the heavier atoms of hydrogen, which are relatively rare, from the light atoms of hydrogen, which are plentiful. It was recognized that when hydrogen gas is formed by electrolysis of water, the two kinds of hydrogen atoms or ions do not have an equal chance to get into the hydrogen gas that is formed. The heavy, or double-weight, hydrogen atoms would be likely to be held back in the water, while the lighter isotope one hydrogen would be most likely to pass off.

To test this theory of the concentration of isotope two hydrogen, a water electrolysis experiment was begun at the Bureau of Standards. This test is not yet complete.

But it was possible to take advantage of water electrolysis processes operated commercially over a period of a year by plants producing oxygen and hydrogen gas for industrial use. As every school boy knows, water consists of two parts hydrogen and one part oxygen, and electricity breaks it up into the two gases. Residual water from two such plants was broken down into hydrogen and oxygen gases at Columbia University and examined with the spectroscope. As was expected, larger amounts of the isotope

two hydrogen were found than of the isotope one variety.

Plans are underway for the concentration of large quantities of the double-weight hydrogen from the old water of electrolysis plants in order that this unusual kind of hydrogen may be thoroughly investigated.

*Science News Letter, July 16, 1932*

BOTANY

## Russian "Velvet Tree" May Compete With Cork Oak

**C**OMPETITION with the cork oak, classic cork-producing tree of southwestern Europe, may be offered by the "velvet tree," native to wastelands in Japan, China and Russian Asia. Prof. E. E. Kern of the Institute of Plant Industry has been investigating its possibilities, and finds that though the cork it produces will not do for bottle stoppers, it is quite satisfactory for insulation and other purposes.

The tree belongs to the same botanical family as the citrus fruits. It is known as *Phelodendron*, which is Greek for "cork tree." It reaches a height of about fifty feet, and attains an extreme age of 300 years. Cultivation, Prof. Kern states, improves the quality of its corky bark.

*Science News Letter, July 16, 1932*

CHRONOLOGY

## Millions of American Clocks Have Only Five-Second Error

**A**RE Americans living on time? Many of them regulate their activities within a maximum error of five seconds, is the answer of Henry E. Warren, president of the Warren Telechron Co., in a paper presented before the International Electrical Congress in Paris. Mr. Warren described the development and increasing use of electric clocks that maintain their accuracy from the frequency of the power supply.

He said that in order to determine the accuracy of time pieces of this kind a study was made of one of the largest

power systems in the country for 16 weeks. During this period there was never a deviation of more than five seconds faster or slower than the correct time. Mr. Warren believes that the time service on many other large systems is as good as this.

In order to keep the tiny home clock accurate, it is necessary that huge turbines and generators run exactly at the right speed, the paper brought out. Operators observe a master clock and occasionally manually change governor settings to maintain the split-hair regulation.

Mr. Warren estimates that there are more than 4,000,000 of these little clocks in the United States. Although each is very small and consumes little energy, he thinks that the 4,000,000 clocks must bring power companies more than as many dollars in revenue each year. The power output of each ranges from less than one-millionth to more than one ten-thousandth of a horsepower. The power output of a spring clock, however, was said to be even smaller, easily amounting to less than one twenty-millionth of a horsepower.

*Science News Letter, July 16, 1932*

ICHTHYOLOGY

## Michigan Fish Often Have More Than One Head

**"SIAMESE TWINS"** among fish are a common occurrence in Michigan. The State Fish Division reports that probably no other group of living



**NOT UNUSUAL**

*Some become adults and occasionally a fisherman catches one.*