CHEMISTRY

Lightest Water Made, and New Record for Heaviest Set

Concentrations of Light and Heavy Hydrogen Isotopes Account for Liquids Slightly Unlike Ordinary Water

THE WORLD'S lightest weight water, containing the lightest sort of hydrogen and the lightest variety of oxygen, has been manufactured in the chemical laboratories of the U. S. Bureau of Standards at Washington.

Last year Dr. E. W. Washburn, chief of the chemistry division of Uncle Sam's great scientific establishment, the Bureau of Standards, made what was then the world's heaviest water. Prof. Harold C. Urey of Columbia University checked the heavy water's composition with the spectrograph. They reported their achievement in the Proceedings of the National Academy of Sciences and exhibited the water at the American Association for the Advancement of Science meeting at Atlantic City last Christmas week. Now Dr. Washburn has made the lightest water known.

The Bureau of Standards heavy water contains increased amounts of hydrogen isotope two and oxygen isotope eighteen. The lightest water contains increased amounts of hydrogen isotope one and oxygen isotope sixteen. Both, of course, consist of one atom of oxygen and two atoms of hydrogen.

Until a few years ago it was not known that there are two kinds of hydrogen, one with just twice the atomic weight of the other. In 1931, Prof. Urey and Dr. G. M. Murphy of Columbia University and Dr. F. G. Brickwedde of the U. S. Bureau of Standards discovered the heavy weight hydrogen. It is also known that there are three weights or isotopes of oxygen atoms, 16, 17 and 18.

Dr. Washburn has just determined several physical constants of his heavy water. The heavy water freezes even when surrounded by ordinary melting ice. Its freezing point is five-hundredths of a degree Centigrade higher than that of ordinary water. Its boiling point is higher and its refractive index is lower.

The new lightest water must have physical constants differing from ordinary water in the opposite direction, but since ordinary water consists almost entirely of light-weight hydrogen and oxygen the difference between ordinary and light water is much smaller.

Drs. E. R. Smith and Mikkel Frandsen of the Bureau of Standards staff have worked with Dr. Washburn in his current tests on the light and heavy waters.

Ordinary water was the starting point in making both the heaviest and lightest waters. It was discovered that water in the electrolytic cells of oxygen and hydrogen gas plants had larger concentrations of the heavy hydrogen and oxygen. The light hydrogen and oxygen atoms go off as gas first when the electric current breaks down the water. Thus heavier water is left in the electrolytic cells. Dr. Washburn and his associates therefore decomposed water electrically over a long period and thus obtained heavy water. They burned the light hydrogen and oxygen gases to obtain the champion light (*Turn to Page* 158)

DEIFYING A SCOTSMAN

These two canes are adorned with features of Dr. William Patterson, who is god of medicine to Tule Indians of Panama. The Scottish doctor spent two years in Panama in a seventeenth century colonial venture. Now, the Indians think of him as a god who once lived in their midst and worked great wonders of healing. Dr. Walter Hough, of the U. S. National Museum is holding the canes.

MEDICINE

Successful Treatment For Strychnine Poisoning Found

STRYCHNINE poisoning may be cured by two modern sleeping potions, it appears from a report to the American Medical Association in Chicago, Ill. Successful use of these two medicines in eleven cases is described by Drs. G. F. Kempf, J. T. C. McCallum and L. G. Zerfas of the Lilly Laboratory for Clinical Research, the Indianapolis City Hospital and the Indiana University School of Medicine.

The two modern medicines are isoamylethylbarbiturate, sometimes called sodium amytal for short, and sodium pentobarbitol. They are known to induce sleep in restless, suffering patients. Directions for their use in strychnine poisoning are given by the Indianapolis doctors in *The Journal of the American Medical Association.*

Ordinarily, poisoning of any kind is treated by emptying the stomach and preventing the absorption of the poison into the system. Because strychnine is very quickly absorbed, these measures are usually unsuccessful, and treatment must be directed at counteracting the effects of the poison on the system.

Many drugs have been used for this purpose, but have not been satisfactory. Doctors have been searching for an antidote that would control the convulsions, get the poison out of the body, and supply oxygen so that the patient does not suffocate. Death in strychnine poisoning is due either to exhaustion or to suffocation, the Indianapolis physicians explained. The difficulty with most of the older antidotes for strychnine is that if much strychnine has been