

the development of the female animal's milk glands on her back instead of on the underside of her body, so that the young may nurse while she carries them through the water. One coypu which Dr. Osgood kept in his camp for a time would eat nothing but potatoes.

Although there are no snakes in southern Chile, there are plenty of frogs and toads, Dr. Osgood said. He gave an account of one species which was discovered by Darwin and has been named for him.

"It is a tiny little chap scarcely more than an inch long," he said, "bright green in color, and it has a sharp little

proboscis on its nose. In this species the eggs, after being laid by the female, are picked up by the male and held in his mouth or in a pouch in his throat. He carries them here until the fully formed young are hatched, for in this frog there is no tadpole stage. As the embryo frogs develop, the pouch extends backward between the skin and muscle of the abdomen until it occupies the whole abdominal area, giving their father, who acts as a sort of brooder, a very bloated appearance. Meanwhile, the female parent, the mother, has no further responsibility."

*Science News Letter, March 31, 1934*

#### MEDICINE-PHYSICS

## Cancer to be Studied With Use of New Heaviest Water

**H**EAVY water, the new chemical wonder, will be used shortly in experiments upon the growth of cancer cells as a part of the extensive investigation of the heavy hydrogen twin element being directed by Prof. Hugh S. Taylor, of Princeton.

The cancer experiments will be of "extraordinary interest," Prof. Taylor predicted. They will be begun when larger supplies of heavy water are accumulated at Princeton.

By summer from 12 to 15 pounds of the purest heavy water will be available for the Princeton researches. The daily output is now 3 grams (1/10 ounce) of heavy water containing 100 per cent. deuterium (heavy hydrogen). The production cost is approximately \$5 per gram.

Heavy water produced in Princeton's Frick Chemical Laboratory is the heaviest heavy water so far produced. It has a specific gravity at least two-tenths of one per cent. greater than that recorded earlier by Prof. G. N. Lewis of the University of California. The Princeton specific gravity is 1.1078 at 77 degrees Fahrenheit (25 degrees Centigrade) as compared with the California value of 1.1056. The determinations were made by Dr. P. W. Selwood, using in all three ounces of heavy water which failed to increase in density after repeated processes of refinement. For this reason it is believed that pure deuterium oxide has been obtained.

Synthesis of ammonia, wood alcohol and other chemicals will be aided by

heavy hydrogen researches carried out at Princeton. It was found that light hydrogen molecules will react with deuterium molecules to produce mixed molecules, with one atom each of light hydrogen and deuterium, at temperatures as low as that of liquid air, using catalysts such as chromium oxide. These results indicate that the high temperatures necessary in industrial syntheses are required, not for the activation of the hydrogen, but for the activation of the molecules with which the hydrogen has to react. If surfaces can be found as active towards these molecules as present available surfaces are with respect to hydrogen, tremendous improvements would be possible in the yields of ammonia and alcohol under much simpler operating conditions. The deuterium experiments indicate the direction which research in technical catalysis must take.

Prof. Taylor recently reported to the Franklin Institute, Philadelphia, his experiences with heavy hydrogen as a new research tool.

*Science News Letter, March 31, 1934*

Except in a downpour, the sound of raindrops is too faint to be recorded for use in the movies, and ordinarily rain sounds are made with a machine.

A safety expert says that accidental deaths due to falls in the home can be reduced 85 per cent. if housekeepers will provide such equipment as adequate lighting, strong stair rails, non-slip rugs, and sturdy ladders.

#### NUTRITION

## Females Stand Deficient Diet Better Than Males

**W**HEN it comes to eating a diet deficient in proteins for a prolonged period, the female of the species can take it better than the male, it appears from studies of rats reported by Dr. C. M. Jackson of the University of Minnesota to the American Association of Anatomists.

From the age of three weeks, litter mates were kept on the same protein-deficient diet for fifteen weeks. Then they were fully refed the normal stock diet for laboratory rats. On refeeding, the test females at first grew more rapidly when compared with females that had not been on the protein-deficient diet, overtaking these control animals in about 20 weeks and thereafter maintaining about the same average weight as the animals that had had full diets from the start.

The males when put back onto the full diet also grew more rapidly than normal, but never quite caught up to the control animals. At the age of one year, when rats had nearly stopped growing, they were still considerably behind in average weight.

"Although individual variations occur even within the same litter, the test males in general apparently remain permanently subnormal in body weight while the test females fully recover," Dr. Jackson stated.

This sex difference in resistance was also evident from the deaths occurring during the experiment. About three times as many males as females died among the test animals, but there were no deaths among the controls.

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#### ENGINEERING

## Fire Fighting Helped By Calculation of Gases

**J**UST how much nitrogen, carbon dioxide or other inert gas needs to be released in a warehouse to stop a fire can now be computed as a result of mathematical methods developed by Dr. S. H. Ingberg of the U. S. Bureau of Standards, reported in *Physics*. His calculations also apply to the reverse situation, the flushing out of a toxic gas from an enclosure so that its atmosphere will be sufficiently pure to allow workers to enter.

*Science News Letter, March 31, 1934*