

MARINE BIOLOGY

"Porcupine" of Sea Found off Florida

A VERITABLE porcupine of the sea, a giant sea urchin with spines a foot long, has been given scientific description for the first time by Austin H. Clark, curator of echinoderms at the U. S. National Museum. The creature is believed to be the biggest sea urchin known from any part of the Atlantic ocean.

The giant sea urchin was discovered by Dr. P. Powers of the Carnegie Institution of Washington, in the shallow waters around the Dry Tortugas islands, off the southern tip of the Florida peninsula. He sent it to the National Museum for examination, and Mr. Clark discovered that it is a new species. He has given it the scientific name *Astropyga magnifica*.

The round body of the sea urchin is about six inches in diameter. It is covered with hundreds of foot-long, barbed black spines. Among their bases are about 200 bright blue eye-spots arranged in rows. These appear to be true sight organs, for when anything moves in front of them the long spines are kept pointed menacingly at it. The formidable armament, however, is strictly defensive; the sea urchin cannot "shoot" its spines or in any other way assume the initiative in attacking.

Science News Letter, March 3, 1934

PHYSIOLOGY—PHYSICS

Heavy Water Makes Mouse Act Strangely

HEAVY water, made with double-weight hydrogen atoms instead of the ordinary single-weight ones, failed to kill a mouse to which it was administered with a dropper, but did cause the animal to act very strangely, as if temporarily poisoned. This was the outcome of the first experiment tried with a warm-blooded animal, in the laboratory of Prof. Gilbert N. Lewis of the University of California, as reported to *Science*.

Prof. Lewis chose three mice of "respectable ancestry." To one of them he administered the heavy water, drop by drop because it is so costly. To the other two he gave ordinary water; these mice served as experimental "controls." The two "control" mice behaved normally, dividing their time between eating and sleeping, the one that got the

heavy water did neither, but persistently leaped about, and for some mysterious reason licked at the glass walls of his cage.

"The more he drank of the heavy water the thirstier he became," reports Prof. Lewis. "He would probably have drunk much more if our supply of heavy water had not given out."

Yet in spite of his evident distress the mouse recovered.

Prof. Lewis and his associates discovered some time ago that tobacco seeds immersed in heavy water failed to germinate. When the experiment was repeated, and the seeds transferred to ordinary water after a period of soaking in heavy water, some of them did sprout, but their growth was freakish and short-lived. Part of a batch of flatworms, apparently killed by immersion in heavy water, similarly revived in ordinary water.

In his report, Prof. Lewis discusses possible biochemical reasons for the deadliness of heavy water, but withholds definite conclusions pending further experimentation.

Science News Letter, March 3, 1934

PSYCHOLOGY

Minds of Premature Babies Develop Normally

THE MENTAL development of babies born prematurely, sometimes called "midget" babies because of their small size at birth, goes along at the same rate as in their brothers and sisters who were born at full term. Evidence of this was obtained in a study reported by Dr. George J. Mohr of the Pittsburgh Child Guidance Center and Dr. Phyllis Bartelme of the Chicago Institute for Juvenile Research to the American Orthopsychiatric Association.

Two hundred and fifty prematurely born white children were studied and compared with 150 of their brothers and sisters who had been born at term. Both physical and mental growth were studied. The brain and nervous system were apparently not affected by premature birth, but heart, blood vessels and digestive system were found seriously affected. Such changes as were found in the brain and nerves were results of weakness of the heart and blood vessels.

Weight of the babies at birth apparently had nothing to do with their mental development, although it was a factor in their physical development, particularly among the boys.

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IN SCIEN

CHEMISTRY

Research Aids Beer And Wine Industries

LABORATORIES of the bureau of chemistry, U. S. Department of Agriculture, will shortly be at work on problems of wine making and liquor distillation.

Dr. Henry G. Knight, chief of the bureau, recently told House members of the subcommittee on appropriations for the Department of Agriculture that this "is a field we are giving consideration to at the present time. . . . Recently we have done a little work in connection with citrus fruits or in the manufacture of beverages from citrus fruits. We have made a very satisfactory wine out of oranges and certain other citrus fruits."

Liquor manufacture is a very profitable field for research, Dr. Knight said. Quality of yeast, types of fermentation, are very important in the brewing and fermenting industries, and accuracy in their use determines the liquor or brew which is produced.

Dr. Knight told the congressmen of a brewery which formerly had worked up a large sale for a certain type of beer made with a certain yeast which they had found. This yeast was accidentally lost. They have been hunting for it ever since. In the meantime, that particular beer has gone out of existence.

Science News Letter, March 3, 1934

SEISMOLOGY

Quake Shakes Sea Bottom Among Japanese Islands

JAPANESE mandated islands in the Pacific may have felt the force of an earthquake which occurred early on Saturday morning, Feb. 24, and was traced to its epicenter by seismologists of the U. S. Coast and Geodetic Survey, using data gathered telegraphically by Science Service.

The approximate location of the epicenter was between the Bonin and Marianne islands, in latitude 22 degrees north, longitude 145 degrees east. The quake began at 1:23.6 a. m., E. S. T.

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CE FIELDS

METEOROLOGY

Unstable Air Structure Cause of Tornadoes

WINTER tornadoes, such as the storms that took two score of lives in the South on Sunday afternoon, Feb. 25, are unusual only in the season of their occurrence, scientists of the U. S. Weather Bureau told Science Service. The basic physical causes that bring tornadoes into existence are the same, whatever the season.

The state of great atmospheric instability that can start these intense twisting air-whirls is set up most commonly by the inflow of a cold air mass at a relatively high level—6,000 to 15,000 feet—riding over a mass of warm air that hugs the ground. Such an extensive "temperature inversion" is an invitation to the two air masses to mix and overturn—and if the overturning is rapid enough, swirls of tornadic force are the result.

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METEOROLOGY

164-Mile Wind Blows On Mt. Washington

See Front Cover

RECENT calibration and test of instruments reveal that a true wind velocity of 164 miles per hour has been recorded on the top of Mt. Washington during the present occupation of the peak as a meteorological observatory. Examination of records at the U. S. Weather Bureau at Washington, D. C., show that this is an unusually high figure in the history of weather observation.

A reading of 186 miles per hour was made on Mt. Washington on Jan. 11, 1878, with a hand anemometer which was held out of a window, C. F. Talman of the Weather Bureau states. Since anemometers of that day ordinarily read high, yet this one was not held in a well exposed location, its reading has been accepted. It is a coincidence that exactly the same velocity was observed by pilot balloon sent up at Lansing, Mich., on Dec. 17, 1919.

Equally high and even higher wind

velocities are known to occur in tornadoes and tropical storms, but seldom does a record come through the destruction. A 164-mile per hour reading was reported from Nassau during a 1929 hurricane.

The present Mt. Washington record was originally reported as 152 miles per hour, but the figure was altered by wind tunnel tests on the anemometer after it had been brought down from the mountain. The readings were taken between three and four a. m. last April 5.

The front cover picture of this week's SCIENCE NEWS LETTER strikingly pictures the method of measuring wind velocity high above the top of the mountain. A pilot balloon has just been released and will be followed with the theodolite as long as it can be seen.

Since the winter of 1932-33 was very mild, while the current season has been extremely severe in the East, Mt. Washington may soon be reporting greater velocities than the 164 mile per hour figure.

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CHEMISTRY

Alcohol-Blended Gasoline Discussed by Congressmen

ALCOHOL blended with gasoline is not completely satisfactory when used as a motor fuel, Dr. R. W. Skinner, assistant chief of chemical and technological research, reported to congressmen comprising the subcommittee of the House committee on appropriations for the Department of Agriculture.

There are both technical difficulties and operating difficulties, he elaborated. (See SNL, June 17, '33, p. 380, May 13, p. 301, Feb. 25, p. 116). The mileage obtained from a gallon of such fuel is less than that obtained from straight gas. Depending upon the proportion of alcohol used, there may or may not be a decrease in power. There are technical difficulties in the way of preparing alcohol from corn which can be used in such a mixture.

Engines built for straight gas, however, are not a fair test of the use of alcohol as motor fuel. Engines in which alcohol mixtures are to be used should have higher compression.

Of the advantages in using alcohol, he said, one is that it gives the fuel better anti-knock properties than straight gas would have.

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PUBLIC HEALTH

No Rickets in Puerto Rico But Children Starving

ALTHOUGH the majority of children in Puerto Rico are greatly undernourished, some even to the point of starvation, hardly any of them have rickets, U. S. Children's Bureau investigators found.

They state that of 584 children under three years whom they examined, only five children had definite rickets. One of these showed scars of rickets which she had while living in New York City. Another was an infant who had lived most of her life in the cellar of a large stone tenement lighted only by electric light.

The absence of rickets in these children, in spite of their poor state of nourishment, is considered due to the fact that they spend most of their time in the tropical sunshine. The ultraviolet rays of the sunshine act on a fatty substance in the skin to form rickets-preventing vitamin D. In the North, where there is little sunshine, and where the ultraviolet rays do not strike with full intensity, rickets is a very common complaint. To prevent it, vitamin D is given in cod liver oil.

Even with cod liver oil, however, children of New Haven, Conn., who were examined by child specialists of the U. S. Children's Bureau were found suffering from slight rickets. Because of this finding, the study of the Puerto Rican children was made. The condition is actually very rare in Puerto Rico as compared with New Haven, it appears from the survey.

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AGRICULTURE

Copper Sulphate Speeds Truck Crop Production

COPPER sulphate (blue vitriol), usually considered a poison to plants, is good for certain crops in certain soils, R. Russell and Dr. T. F. Manns discovered in experiments in the truck-garden area near Newark, Del. They reported on their experiments before an audience of plant physiologists at the meeting of the American Association for the Advancement of Science.

Corn, potatoes, sweet potatoes and string beans were among the crops that responded favorably to copper sulphate fertilizer.

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