PHYSICS

## Rays Make Nitrogen Glow

"Ice" of frozen nitrogen gas, which becomes solid at a temperature of 166 degrees below zero, Fahrenheit, glows with a brilliant greenish light under the influence of cathode rays. This is one of the results obtained by Prof. J. C. McClennan, of the University of Toronto, in experiments made with the cathode ray tube developed recently by Dr. W. D. Coolidge, of the General Electric Co.

Professor McClennan and his associates previously made experiments with solidified nitrogen in a vacuum tube, in an effort to determine what caused a strange green light in the aurora borealis. When the auroral light is passed through the prisms of a spectroscope, a green line appears. For a long time, the origin of this line was uncertain, but a few years ago a French scientist, Professor Vegard, claimed that it resulted from solid nitrogen when bombarded with cathode rays from the sun. Professor McClennan, however, announced at the Toronto meeting of the British Association for the Advancement of Science in 1924, that he had found the luminescence of solid nitrogen of a different color from that of the green aurora line.

In the new experiments made with the Coolidge cathode ray tube, the experimenters find that there is not only the green luminescence while the solid nitrogen is bombarded by cathode rays, but that following the turning off of the tube, there is a greenish red phosphorescence that continues for a time. This, they believe, is due to the solid nitrogen changing from one molecular form to another, the second form being the one that continues to glow. The red glow, however, is not of the same wavelength as one that Professor Vegard claimed to have discovered.

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PLANT PHYSIOLOGY

## Synthesis of Sugars

An approximation of the process whereby living plants produce sugar from water and carbon dioxid, using the energy of light to make the combination, has been accomplished in the laboratory of Prof. E. C. C. Baly of Liverpool University. Using the most elaborate precautions against contamination of either his materials or the glass vessels used in the experiments, the British scientist and his associates have repeatedly produced substances that pass all the chemical tests for sugars.

The first tests were made with the invisible ultra-violet light as the source of energy. In these experiments, finely powdered iron and aluminum compounds were introduced into the water. These took no part in the reaction, but acted as catalysts, or chemical go-betweens, furnishing a large spread of surface on which the chemical action could take place.

But in nature the formation of food substances by plants is carried on by the power of visible rather than invisible light. The experimenters therefore sought a closer artificial approach to natural conditions. Since leaves have colored substances in them, colored catalysts were sought for the sugar-formation going on in the glass tubes. For this purpose carbonates of cobalt and nickel, both of which are colored salts, were found useful. With these in the tubes exposed to visible light from electric lamps, the carbon dioxid and water produced the sugars quite as readily as they came into being with colorless catalysts under ultraviolet light.

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PALÆONTOLOGY

## To a Gigantosaurus

What incapacity was yours?
  What fatal, vast ineptitude?
Your skeleton alone endures
  Of all your huge reptilian brood.

Your muddy spoor was wallowed out
  In fens and bogs and marshy runs.
Were your dank haunts laid waste
    by drought?
  By flaming mesozoic suns?

Did torrid air and arid skies
  Dry up each cherished swamp and
    slough?
Were you, for all your awful size,
  Unable to evolve enough?

Were you compelled, by some dry
    fate,
  To drag your belly all about
In your dumb way with awkward gait,
  Until cool death just laid you out?

Or did some quick, insidious foe,
  And not the burnished Permian sun,
Have high intent to lay you low,
  Enmeshed in skeins your fates had
    spun?

Was it some shrewd mammalian force,
  Small furry beasts with agile legs,
Who scotched the reptile at his
    source,
  And ate your good reptilian eggs?

You cannot tell? Well, anyhow
  You live no more except in dreams.
Your furry foes are talking now,
  And climate is the best of themes.

—*Richard Ashman.*

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ARCHÆOLOGY

## Herculaneum Plundered

Italian archæologists who are laboriously excavating the buried city of Herculaneum have found to their disappointment that robbers have been there many times before them according to a report to *Art and Archæology* by Dr. David Robinson, well-known American archæologist, now in Italy.

The city was believed to be sealed, compartively intact, in its mold of hot mud poured down by Vesuvius and long since hardened to stone. But as they drill into the rock, the scientists have discovered that all through the ages tunnels have been dug by robbers. The site is honeycombed by these tunnels, showing that many works of art have been carried off in previous times, Dr. Robinson states.

"The excavations have disclosed some new houses with second stories preserved." he says. "The new methods make it possible to preserve second stories and to take casts of doors and balconies and put these in place of the last originals. In one of the new houses where the King of Italy started the excavating is a beautiful shrine of mosaic. In one room a fine pavement of large black and white tiles and in another is a multi-colored pavement. On the walls are beautiful mosaics representing a man with his mule and other scenes."

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ORNITHOLOGY

## Sugar For Humming Birds

Tiny bottles of sugar and water, covered with bright colored cloth, are the bait with which Miss Margaret L. Bodine of Philadelphia lures humming birds to the porch of her summer cottage in Maine where they almost literally "eat out of her hand."

The tiny birds think at first that the gaudy little vials are a new kind of flower. Once they have tasted the saturated solution of sugar and water they abandon all their former favorite brands of nectar and it is necessary, according to Miss Bodine, to refill the bottles every hour. As many as eight have visited the porch at one time, she stated.

What might be called the humming bird sweet tooth, if birds had teeth, has given this amateur ornithologist an excellent opportunity to study and photograph the minute, quick-moving birds. She has a reel of humming bird movies to her credit as well as motion pictures of purple finches and cedar waxwings.

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