like possibilities of this photo-electric cell, Willie will even get out of a chair when spoken to. Special feature of his anatomy is his taster, an "electrynx" so sensitive that it can record acidity of fruits by registering the action of one-millionth of an ampere.

Even Junior's Christmas train, mounted on a circular track, may and does give a lesson in science. A George Washington University physicist mounts a little train on a circular track suspended so that the track can move freely. Swing the track round at the right speed, and the train will stand perfectly still on the moving rails. And when you watch that, fascinated—as most observers are—you are getting an idea of how centrifugal force operates.

On a train, centrifugal force is what throws you against the seat, as you walk down the aisle and suddenly the train rounds a curve. Centrifugal force is a railroading problem in applied physics. It causes displacement of rails and wears out ties. Inertia is also demonstrated by the swirling track; showing how the train pushes back as it moves forward. Letting the track move freely makes it possible to show with how much force the train wheels push—something that could not be shown by simply running the train around on an ordinary immovable track. It is a nice experiment for Father to try, when he is tired of showing Junior how the Christmas train runs on the ground—if the train runs.

Science News Letter, December 16, 1939

METALLURGY

New Process for Alloying Coatings on Carbon Steel

METALLIC sparks from research: A new process for alloying coatings of stainless steel and other metals upon carbon steel sheets developed by Robert E. Kinkead, Cleveland consulting engineer. It fuses into a slab of steel by carbon arc chromium, molybdenum, nickel, titanium or silver.

The U. S. A. is building a tin smelting industry, pilot smelters getting under way, although we produce no tin. The idea is that it will be safer to get ore concentrates where we can, Bolivia for example, than to rely upon ore being shipped from southeastern Asia and South America to Holland or England or Singapore for refining and parcelled out to us as metal. One reason for Soviet acquisitiveness in Finland is Finland's nickel and copper production.

Science News Letter, December 16, 1939

SERIOUS GAME

It looks like marbles but it's really a demonstration model of an atom showing how the nucleus, containing many particles, (in center) can be bombarded and transmuted by other particles flung at it with high energy. The bombarding particles, in the model, are marbles rolled down the incline.

CONSERVATION—ARCHAEOLOGY

Soil Expert Studies Ideas Of Prehistoric Indians

With Irrigation Ditches, Check Dams, Semi-Terracing They Farmed In a Climate Worse Than the Dust Bowl

HOW America's prehistoric Indians managed to farm Southwestern country in a climate more rigorous than that of the Dust Bowl is being investigated by Dr. Guy R. Stewart of the U. S. Soil Conservation Service.

Dr. Stewart has discovered that Indian cliff dwellers who inhabited Mesa Verde Canyon, Colorado, in the Middle Ages had far more planning of their agriculture than any one suspected. Speaking before the Biological Society of Washington, he told of detecting traces of a three-mile ditch which ingenious cliff-dwellers dug along a four per cent. grade to bring down water, apparently from a reservoir, to spread over their cornfields. Primitive check dams made of boulders controlled the flow of the water spreading to the fields. Indians who occupied Spruce Tree House, one of Mesa Verde's now-famous and much-visited cliff-dwellings, benefited mainly by this foresighted planning. A twenty-year drought finally routed Mesa Verde's inhabitants.

Dr. Stewart has examined remnants of irrigation ditches, check dams, semi-terracing and other devices by which Hopi and Zuni Indians tried to conserve and control their precious water supplies. He doubts whether the Indians realized that they were also reducing erosion and saving the soil. But some fields abandoned by Zunis have since developed gullies 30 feet deep and 50 to 75 feet wide.

Studies of the old agricultural engineering add to knowledge of Indian experiences, and also may give information on the way certain soils and gradients behave when in agricultural use.

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