

eclipse to observe radio signal strengths on the day of the sun's eclipse to test the theory that particles from the sun create one of the ionized or conducting layers in the earth's upper atmosphere and thus affect radio transmission.

The radio eclipse will occur about two hours earlier than the optical eclipse.

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PHYSIOLOGY

## Study Throws New Light On Tooth Decay

**T**HE ENAMEL which protects our teeth is made up of thousands of minute crystals of apatite, a kind of phosphate of calcium. In dogs' teeth these minute crystals are arranged perpendicularly to the surface while in human teeth they are inclined, according to findings of J. Thewlis of the Physics Department, National Physical Laboratory, Teddington, England.

Dogs' teeth are almost immune from caries. Chemically their constituents are identical with those of human teeth and possibly it is their physical structure that gives them increased resistance.

To observe crystalline structure by means of X-rays a different method is used from that of the dentist who takes X-ray photographs to see the shape of the roots. The X-rays come from a point source; they strike at a known angle and are scattered in definite directions. The pictures obtained consist of dots and rings, and must be mathematically interpreted in terms of the arrangement of atoms and crystals.

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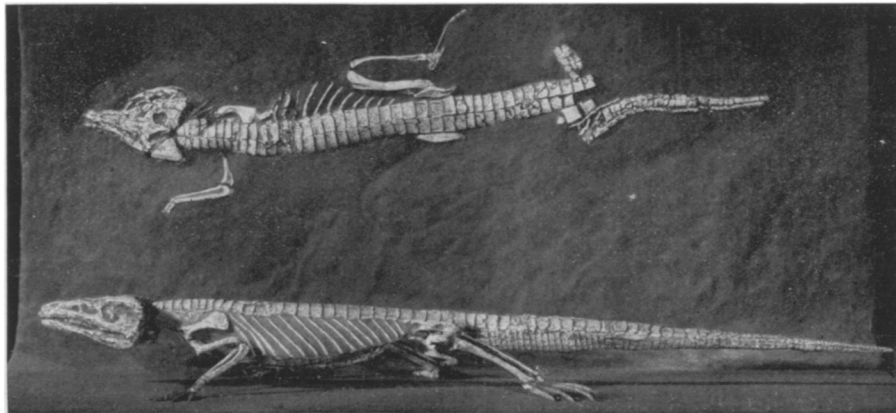
PHYSIOLOGY

## Rat "Digests" Quarter Of a Steel Ball Bearing

**T**HE POWERFUL eroding effects of the acids in the digestive tract have been strikingly demonstrated in an experiment on a rat, performed by Frederick Hoelzel of the department of physiology of the University of Chicago.

Mr. Hoelzel made a laboratory rat swallow a steel ball bearing, which passed through the animal's digestive tract in fifteen days. On emerging, it weighed 24 per cent. less than it had at the beginning of its alimentary journey. To another rat, Mr. Hoelzel administered a hundred small pieces of iron, which were all passed out of the digestive tract by the end of about ten days, with a loss of 12.5 per cent.

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GRANDDADDY OF ALL CROCODILIANS

ARCHAEOLOGY

# Ancestors of Crocodiles Studied At American Museum

**T**HE GREAT GRANDFATHER of all crocodiles and alligators, a curious primitive reptile skeleton about three feet long, is now at the American Museum of Natural History in New York. It lived in what is now the state of Arizona, in Middle Triassic times, about two hundred million years ago, says Barnum Brown, paleontologist who has studied its nearly complete skeleton and supervised its restoration from the somewhat broken condition in which it appeared when carefully sculptured out of the slab of sandstone in which it was embedded.

The crocodile family has apparently followed the rule that holds for the evolution of almost all animals: starting small and growing large. The American Museum specimen is no bigger than the infant offspring of the huge "crocs" that make life interesting in African lakes, or of the big 'gators that used to lurk in the swamps and slow rivers of our own South.

### Resembles Young and Old

It resembles a very young 'gator, too, in the length of its head. Its snout is short and stubby, although it is an adult specimen. The highly developed elongated jaws of modern crocodilians, that reach the limit for all their kind in the gavia of India, are the products of later evolution. But they have the conical teeth of modern crocodilians, and there is a pair of large openings through the top of the skull that present-day "crocs" and 'gators also have. Certain details in the structure of the pelvic girdle, of

critical value in determining the animal's zoological position, are of primitive character. Like its modern descendants, this ancestor-crocodile had a little toe that was very little indeed—a mere vestige.

The formidable armor of bony plates that cases modern crocodilians is not so highly developed in this creature, but there is an effective roof of V-shaped plates over the backbone, and the belly is covered with close-set squares.

### Triumph of Technique

The restoration of the skeleton is a triumph of modern museum technique. First, it had to be very carefully sculptured out of the slab of sandstone in which it was embedded when it arrived at the Museum. This was done by working at it from both sides, until its back and belly projected on either side of the slab, leaving a supporting sheet of stone in the middle. This exposed the bones in the somewhat broken and dislocated position in which the ages had left them.

Then a mould of the two surfaces was made by painting with a warm solution of a new plastic made from milk curd, until both sides were coated three-quarters of an inch thick. In the two halves of this mould casts of beeswax were made. The two half-casts were united by warming and shaping them wherever they were out of alignment, and when the wax model was finally complete it was duplicated in a more durable cast of plaster and jute, which was painted to the natural color of the bones.

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