

PALEONTOLOGY

Reconstruct Weird Beasts

Accurate reconstruction of the appearance of a group animals from their fossil footprints has been made possible by a scientist's studies.

► AN ACCURATE PICTURE of weird beasts that trod the earth about 200,000,000 years ago, leaving perfect footprints on mudflats but apparently no skeletal remains, has been drawn by Dr. Frank Peabody, working in the paleontology laboratories of the University of California.

The beasts were a group of animals that ranged in size from a chicken to a dinosaur-like animal standing six feet high at the hips. The family name of *Chirotherium* has been given to the entire group. The name means "hand animal," because of the remarkable resemblance of the hind foot to the human hand.

How a body of scientific evidence was built up, from which *Chirotherium's* appearance was deduced, on the basis of the beast's "fingerprints," is recited in a new University of California publication by Dr. Peabody, who is now at the University of Kansas. In the course of his eight-year study he was able to set up criteria for determining the anatomical characteristics and general appearance of any animal on the basis of its tracks alone.

Dr. Peabody began his studies in 1938, when he was a member of a paleontology party from the University working in the sandstone beds of the Meteor Crater region of Arizona. Several trackways of *Chirotherium* were included in the material.

Dr. Peabody, then a graduate student, became interested in these tracks, and devoted all his graduate work to their study.

He soon found that while many studies had been made of individual tracks of *Chirotherium* and other animals, no systematic work had been done on a trackway, that is, three or more consecutive steps.

So he began several years of painstaking work by studying the trackways of all living salamanders. He took trackways of salamanders in their usual environment, and he made the animals walk across smoked paper and laboratory mudflats.

He analyzed the characteristics of the foot, the length and width of stride, orientation of feet, tail marks. He studied a number of other factors, such as what he calls pace angulation, the angle formed by three consecutive steps.

As a result, he found that he could establish criteria by which he could classify all living salamanders on the basis of trackways alone, determining their size, length of body, height, weight, etc. His next step was to compare living salamander tracks with 20,000,000-year-old fossilized salamander tracks taken from an old gold

mine in the Sierra Nevada. He found no significant changes in salamanders during the past 20,000,000 years. He extended his studies to living mammals and reptiles.

Using the "yardsticks" he had established with living and recent animals, Dr. Peabody began to work in earnest on *Chirotherium*. With the help of his colleagues, he excavated more trackways from the Painted Desert of Arizona.

The end result was a verification of the reconstruction of *Chirotherium* by a German scientist, Wolfgang Soergel, though Dr. Peabody's conclusions were based upon more solid evidence than had been available before.

Dr. Peabody's studies have made it possible to predict more accurately what the skeletal remains of *Chirotherium* should be like, so that scientists will be able to iden-

tify them more easily if its bones are ever found.

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PHYSICS

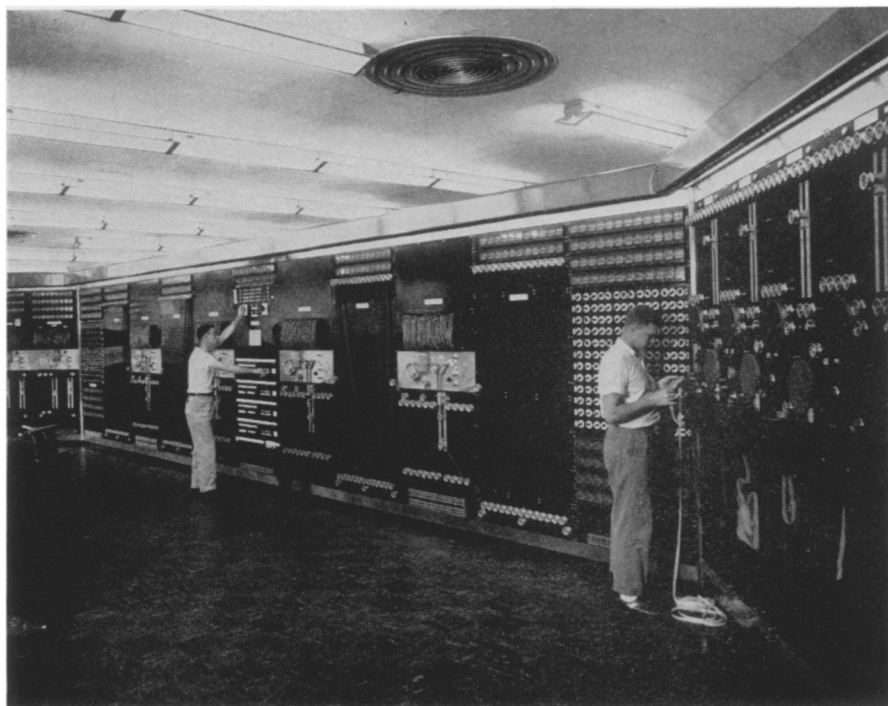
Spectrographic Methods Detect Traces of 1080

► LATTER-DAY Lucrezia Borgias may find the going tough if they use the new super-rough-on-rats, 1080, on inconvenient aunts or straying sweeties. Two new methods for detecting it in almost infinitesimal quantities were described before the meeting of the American Chemical Society in Detroit, by Dr. Charles W. Rankin of the New York State Police Scientific Laboratory at Albany.

Both methods are spectrographic, depending on the position of characteristic bright lines in the artificial rainbows made by splitting light from electrically burned specimens of material suspected of containing 1080. Both methods, Dr. Rankin stated, are capable of detecting the presence of as little as 100 micrograms of the poison.

A microgram is one millionth of a gram, or one twenty-eight-millionth of an ounce.

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25-TON MECHANICAL CALCULATOR—This shows the front of the *Aiken Relay Calculator* installed at the Naval Proving Ground, Dahlgren, Va., for use in guided missile computations. Operator at left is at one of the control panels and man to right is in front of the specially adapted teletypes which punch out the answers on paper tape. Four sequence mechanisms allow the calculator to handle, pass on or transfer numbers at the rate of 60 per second. Addition of numbers running into the billions can be done in less than one-fifth of a second.