the kinds found in western Virginia. Although twenty years ago salamandering was more or less of a hit-or-miss proposition, it has today become scientific. Instead of going to the wildest place one can hear about, one now pores over physiographic and topographic maps for hours in an effort to work out the probabilities of distribution based on physiography, geography, and faunal and climatic conditions.

The rarer salamanders of the woodland group live in dark, damp forests at high elevation. Experience has shown that a few kinds are found in every such forest. A thorough knowledge of the distributions as far as known is a prerequisite to a study of the various types of maps, chiefly topographic ones. This perusal of the maps invariably brings to light many fascinating gaps in our knowledge of this or that species. Here is an area of the preferred type of forest from which no salamander has been recorded. Will this particular forest prove to be inhabited by a salamander known to occur somewhat farther north, or will it be in partial or total possession of one common to the south? Or perhaps its heavily blanketed floor conceals an entirely new species. It is, of course, the principles of animal ecology and geography involved that make the work valuable from a scientific point of view.

The kind of salamander investigation described here can no longer be carried on with specimens preserved in a museum. This is why the worker himself must go out and find the animals. As a matter of fact, some herpetologists still attempt to draw conclusions from "pickled" salamanders, but the cleverest student is apt to go astray. One of the chief reasons for this is the instability of color in salamanders. The markings may so completely disappear that identification becomes excessively difficult. A scaly animal like a snake or lizard that has lost its color is more easily named than a scaleless creature like an amphibian.

One of the most striking of the southeastern woodland salamanders was first found in 1902 by Dr. Franklin P. Sherman, who was then State Entomologist for North Carolina. He sent two specimens to Dr. C. S. Brimley, who forwarded them to the United States National Museum where they were stored as specimens of the common slimy salamander. Not until 1916 were they recognized by Dr. Emmett R. Dunn as belonging to an entirely new species, which was named *Plethodon yonahlossee* after the region in which it lives. Dr. Sherman had made a note to the effect that the two specimens when he found them had had red backs but the National Museum herpetologist, unconvinced, took no action; their backs had turned black long before he saw them. This case shows not only how unstable are salamander colors but also how hard it may be for a small animal to get a big name.

WYOMING QUARRIES YIELD SEAFARING NOTHOSAURS

By RAINER ZANGERL
CURATOR OF FOSSIL REPTILES

During middle Triassic time, some 187 million years ago, the geography of Western Europe was very different from what it is today. There were sea basins in which large quantities of limestone and shale became deposited. The shorelines of these sea basins were populated with a variety of animals, among them many invertebrates, several kinds of sharks, and a considerable variety of fishes with ganoid type scales, as in the living gar pikes. There were also many different kinds of reptiles, of which the most conspicuous and typical group were the nothosaurs.

Nothosaurs were seafaring creatures well adapted for swimming and feeding in the water. Most likely they never went ashore, or if they did, it was only for the purpose of laying their eggs or basking in the sun.

Until 1935, nothosaurs had been known from Central Europe only; not even a fragment had been identified from any deposits in the New World. During the summer of 1935, Don Allsen, a student at the University of Wyoming, discovered some bones embedded in pieces of hard limestone on a quarry dump near Goose Egg, Wyoming. The rock had been quarried for road gravel and was derived from a relatively thin band of hard, partially dolomitic limestone, the so-called Alcova limestone of Central Wyoming. This limestone bank belongs to a formation 1,200 feet thick that consists mostly of sand and siltstone, the so-called Chugwater Formation. The Alcova limestone is only about 20 feet thick, but it is very conspicuous wherever it crops out because it forms vertical cliffs that can be seen from great distances. Since all of the Chugwater Formation has furnished very scanty fossil materials, and some parts of it none whatever, the value of the discovery of a partial skeleton of a nothosaur from the Alcova limestone is very great indeed, both from the geological and the biological standpoint.

The first specimen was described by Dr. E. C. Case of the University of Michigan in 1936 as *Corosaurus alcovensis*. The specimen comprised the skull, a large part of the vertebral column, the shoulder girdle, and the front limb. The pelvic girdle and the rear limbs are missing.

It seemed desirable for several reasons to plan an expedition with the specific purpose of obtaining more materials from this formation. Such an expedition was organized by Chicago Natural History Museum last summer, with the result that about a dozen additional specimens, presumably of the same species, were obtained, besides a large number of isolated bones and a specimen of another reptile whose systematic position cannot be determined until it is prepared.

Securing specimens from a hard bank of limestone belongs to the more difficult paleontological field operations. In this case, it involved the peeling off of coarse-surfaced slabs, each of several inches' thickness, over areas up to 400 square feet, and from the surface of the formation to a depth of up to six feet. Removing this mass of hard rock by hand, that is, with no tools heavier than tool steel chisels, sledge hammers, and crow bars, requires a great amount of exceedingly hard physical labor. The skeletons are buried either inside the rock, in which case they cannot be detected except on the break surfaces of the slabs, or they lie on the bedding planes of the formation and thus are visible when the slab covering them is being removed.

The preparation for study of this material will require patience, time, and great skill on the part of the preparator, because the bones are much softer than the surrounding rock.

The members of the party were Mr. William D. Turnbull, preparator in the Museum, Mr. George Snyder, geology student at Dartmouth College, and the writer. Mr. Allan Jaeger, Mr. Ben Moss, and Mr. Stefan Kraszewsky each spent a month with the expedition.

DIGGING SEA BOTTOM—IN WYOMING!

A paleontologist's life is not an easy one. Dr. Rainer Zangerl (left), Curator of Fossil Reptiles, and his expedition assistant, Mr. George Snyder, geology student from Dartmouth, really toil and sweat as they pry into the rocks for specimens of ancient marine creatures whose fossils indicate that nearly 200 million years ago an ocean covered the state now famous for cowboys and rodeos.