DR. A. C. MCFARLAN, professor and head of the department of geology at the University of Kentucky, has spent the greater part of the summer studying the ordovicious stratigraphy of several counties in the Blue Grass, and identifying the different formations outcropping in various communities, in an attempt to correlate them with known formations elsewhere. Clark, Anderson, Scott, Campbell, Pendleton and Grant Counties have been visited and the study of these counties will be compared with compiled information on the stratigraphy of southern Ohio, Indiana and central Tennessee, in an attempt to work out the early geographic history of the area and the nature of existent life at that time.

THE small auxiliary schooner, *Aleda,* owned by John Lippincott, of the Corinthian Yacht Club, Philadelphia, has sailed with fifteen Princeton students from Halifax for the west coast of Newfoundland, where an extensive study will be made of iron ore and chrome deposits, and the shore line itself. The *Aleda,* which is manned by the students, is commanded by Mr. Lippincott. The expedition is under the direction of Dr. A. K. Snelgrove, instructor in the department of geology, and John Streeter, psychologist, of Princeton University. After a month in the north, the party will return to New York.

ADDITIONS to the collections of the British Museum (Natural History), South Kensington, include the skin and skull of a young Menelek's bushbuck, shot at Monnegesha in Abyssinia, presented by the Duke of Gloucester. Ninety-five heads and skulls of Asiatic and American ungulates and carnivora have been selected from the collection of the late Mr. C. St. George Littledale. In addition to three record heads, the collection contains a number of exceptionally fine specimens, including the skull of a wild camel from Lob Nor in the Gobi Desert and a collection of over 60 skulls of ungulates and lions from Northern Rhodesia. The collections brought back by Mr. Bertram Thomas from the Ruba el-Khali are now being worked out, and a selection is on exhibition in the Central Hall. The 82 specimens of reptiles and amphibians represent about 25 species, some of which appear new to science. The collections include 500 entomological specimens. All the larger orders of insects are represented in about 120 species, of which some 20 appear to be new to science. A large collection of mammals has been received from the Game Department of Uganda, collected for the most part by Mr. J. Jardine. The museum has also obtained a further abnormal tusk of a Uganda elephant from Mr. W. A. Bowring, of Gibraltar. An unusual type of stony meteorite which fell at Karoonda, South Australia, on November 25 last has been given to the Mineral Department by Professor Kerr Grant, of the University of Adelaide.

DISCUSSION

EXPULSION OF GAS AND LIQUIDS FROM TREE TRUNKS

ABELL and Hursh's recent paper on gas and water pressure in oaks[1] recalls some observations made on three days in July, 1916, but hitherto unpublished. At that time I was engaged in making a study of the growth of standing trees at elevations of about 1,500–2,000 feet in Letcher County, Kentucky, the increment borer being used in this work. Inasmuch as these few observations include species of other genera than oak, they are here offered as a further contribution to the subject.

In one instance, as the increment-borer bit was withdrawn from a tree of black gum (*Nyssa sylvatica*), a pronounced blast of gas expelled some of the wood dust perhaps three inches from the 0.6-inch bark. This tree was 14 inches in diameter at breast height, 16 at the level of boring, and about 135 years old at this level. The bit had penetrated 4 inches through solid wood to a somewhat decayed heart.

While a boring was being made in a red oak (*Quercus rubra;* 13 inches in diameter at breast height, 15 at the level of boring) an outward blast started which increased suddenly and explosively when the increment-borer bit was withdrawn. The tree was 42 years old at this height; and apparently sound for the outer 3 inches of core.

In the case of a chestnut tree (*Castanea dentata*), 15 inches in diameter at breast height, 18 at the level of boring, a stream of discolored liquid was expelled a maximum distance of 30 inches, the flow lasting 20 seconds. When a boring was made 1 inch above the first hole, liquid flowed out of the lower hole for 90 seconds. The tree was 34 years old at the height of the upper hole and the wood was sound for 4 inches of radius. There had been rain the preceding night.

In the case of a hickory tree (*Hicoria glabra* ?; 21 inches at breast height, 25 at the level of boring), liquid began running out during the boring and be-

[1] C. A. Abell and C. R. Hursh, "Positive Gas and Water Pressure in Oaks," SCIENCE, 73: 499, 1931.

came a considerable stream when the bit was withdrawn. Gas expulsion, indicated by bubblings, continued for 5 minutes or more. The age at the boring level was 58 years. The outer 4 inches of core was apparently sound.

The gas pressure in a hollow hickory tree blew a 2-inch section of wood out of the end of the increment-borer bit. This tree was 11 inches in diameter at breast height, 14 at the boring level.

It is to be noted that these trees, like those mentioned by Abell and Hursh, were all dicotyledonous Angiosperms, and all defective. Except for the last-mentioned all the manifestations above recorded were observed in the morning. The trees in which such phenomena occurred constituted a relatively small proportion of those bored, but no precise figures on this phase of the study are now available.

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CATFISH FEEDING ON THE EGGS OF THE HORSESHOE CRAB, LIMULUS POLYPHEMUS

THE horseshoe or king crab, *Limulus polyphemus*, is very common along the gulf coast of southern Florida. It lives in mud or sand just below low tide level, and never leaves this except in early spring when in great numbers it comes inshore to spawn in the sand near high water mark. The female in the lead, followed by one or more males, excavates a shallow hole in the sand in which the eggs are deposited and covered with milt. The eggs are about 2 mm in diameter, are pale Nile-green in color, are laid singly and are not protected by any gelatinous mass or capsule. They hatch within three to six weeks, after which time the young may be seen making their way to deeper water.

Early in April, 1930, while collecting mollusks on a sandy flat near the mouth of the Caloosahatchee River, my attention was attracted by a great commotion involving a considerable area of shallow water. Here were hundreds of spawning *Limulus* attacked by other hundreds of catfish which were voraciously and joyously devouring the eggs as fast as deposited. Each spawning female king crab and her attending males were surrounded by many catfish in groups which may perhaps best be described as "bouquets" or "rosettes." These catfish stood almost vertically on their heads, with their tails out of water, whipping the surface of this into a maelstrom in their ecstasy of feeding. Crabs and catfish were pushed and shouldered about by other fish circling about the groups in a determined effort to reach the feast. Literally hundreds of both horseshoe crabs and fish were concerned in this phenomenon which was watched until the rising tide made further observation impossible.

But one other observation (and it an incomplete one) of this kind seems to be on record, and it as far back as 1897. In the *American Naturalist* for this year (vol. 31, p. 347–348) H. C. Warwell records his observations on "Eels Feeding on the Eggs of *Limulus*." He states that in 1892 or 1893, in the latter part of May he was walking about dusk along the Kickemuit River between Warren and Bristol, Rhode Island, when he noticed many king crabs or "horse-feet" as he calls them, crawling on the sandy bed of the river. Here are his own words:

> The tide was high, and they [the "horse-feet"] had come in from the outside, as is their habit at high water. What attracted my attention the most was the fact that, as they lay there on the river bottom, many eels had worked their way into the clefts between their heads and abdominal regions, and were apparently feeding. Some of the eels were very large, and made a strange sight with their heads under the shell [of a crab] and their tails sticking out sideways. Sometimes two or three were under one horse-foot, and if I had had an eel spear I could have caught a good mess. I have since wondered what the eels were eating. Sometimes I think it might have been something on which the horse-feet were feeding; but my uncle, who was with me, said that they were after the spawn; and I have since come to the conclusion that he was right, for it was the spawning season, and the eels were only gathered around the large female horse-feet.

In the light of my observation it would seem to be clear that the eels were feeding on the eggs of the horseshoe crabs, and that at the breeding season the eggs of these crabs are preyed on extensively by predatory fishes

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THE LACK OF CORRELATION BETWEEN ANEMIA AND THE PELLAGRA-LIKE SYMPTOMS IN RATS[1]

IN a recent article Bliss[2] has presented evidence claiming to show that pellagra as it exists in humans, and black-tongue of dogs—which is considered to be analogous to human pellagra—are both due to iron deficiency. He points out that pellagra is more prevalent among women than among men, resulting possibly from the loss of iron by women in menstruation. He calls attention to the fact that the foods rich in vitamin G and in the black-tongue preventive factor are almost without fail rich in iron—liver, egg yolk, beef and yeast. Further, he states that in Goldberger's work "those diets which prevented or cured black-tongue in dogs are just those to which had

[1] Published by permission of the director, Journal Article No. 61 (n. s.).
[2] Sidney Bliss, SCIENCE, 72: 577, 1930.