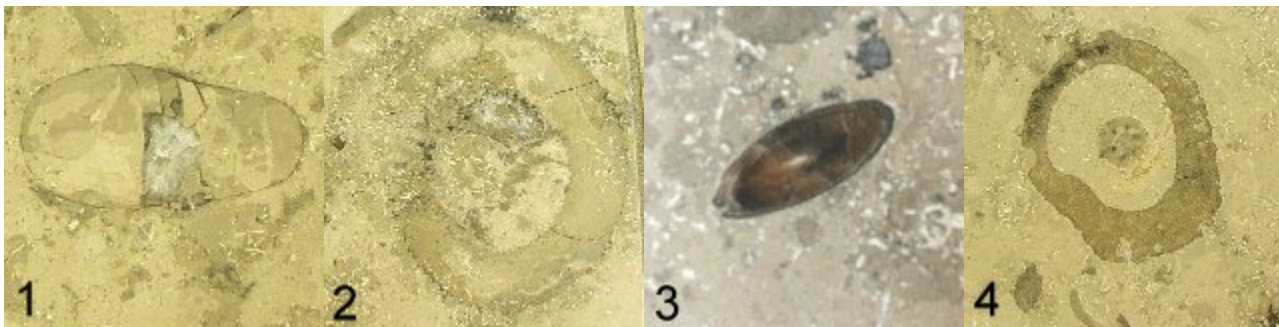


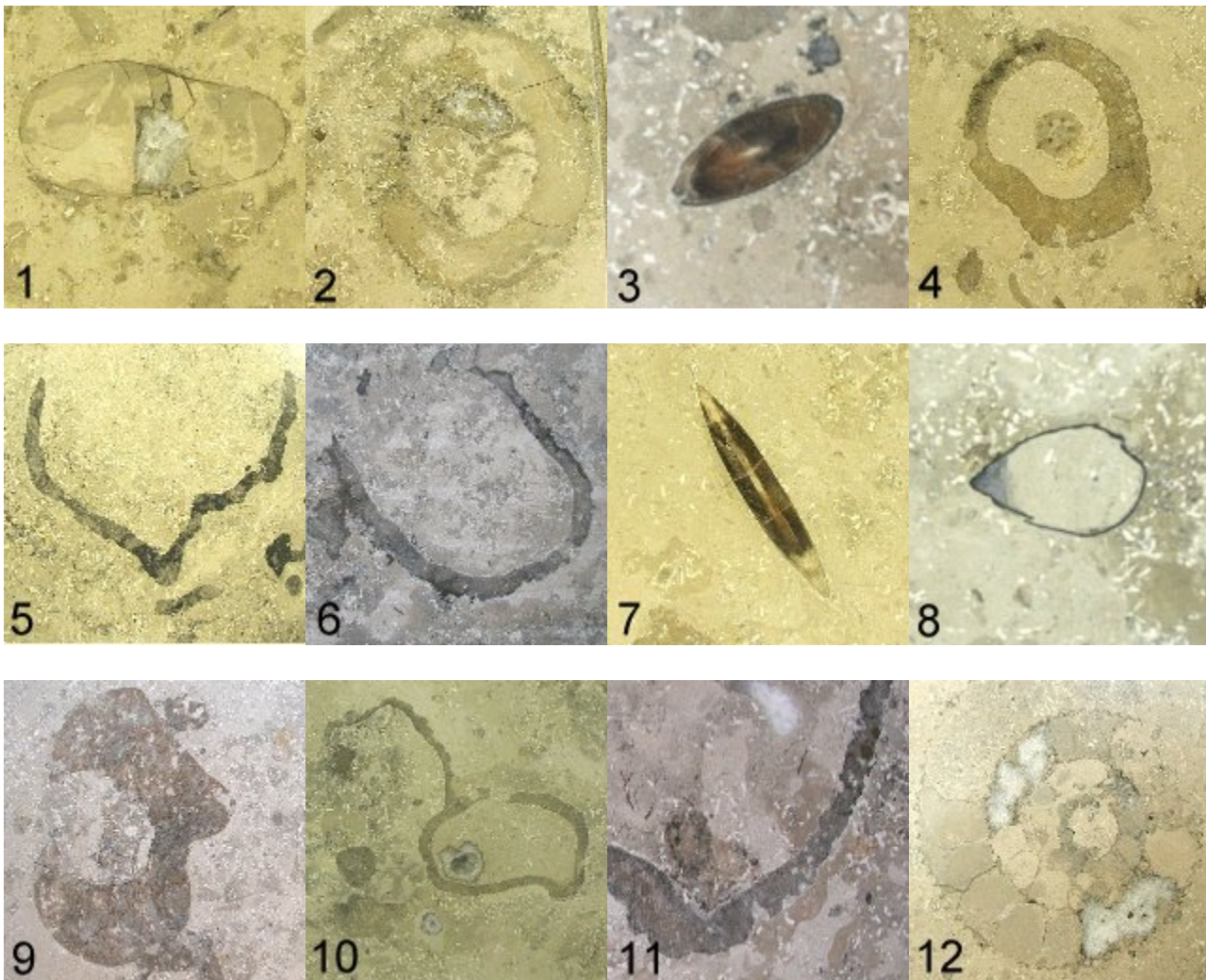
Virtual Trip to Fossils at the W.T. Young Library

The W.T. Young Library is at the University of Kentucky in Lexington , Kentucky . In the library, the floors, stairs, and some of the benches and walls are made from an ornamental limestone imported from Germany , called the Treuchtlingen (TROYKT-ling-in) Marble. This limestone (it's really not a marble) contains abundant fossils, which are shown in this virtual tour. The fossils are the remains of sea life that lived in the seas that once covered Germany . Look at the shapes of the fossils in the following twelve images. How many different kinds of fossils are there? Remember that you are looking at flat, polished surfaces (two dimensions), rather than whole (three-dimensional) shapes of fossils. Some of these fossils represent different slices through the same kind of fossil. Look at the shapes and make a list of similarities (shapes, color, apparent thickness, thin shell, etc.) that you used to choose which fossils were the same type of animal and which were different.



How many different types of fossils are there?

There are 4 different types of fossils in the twelve images.

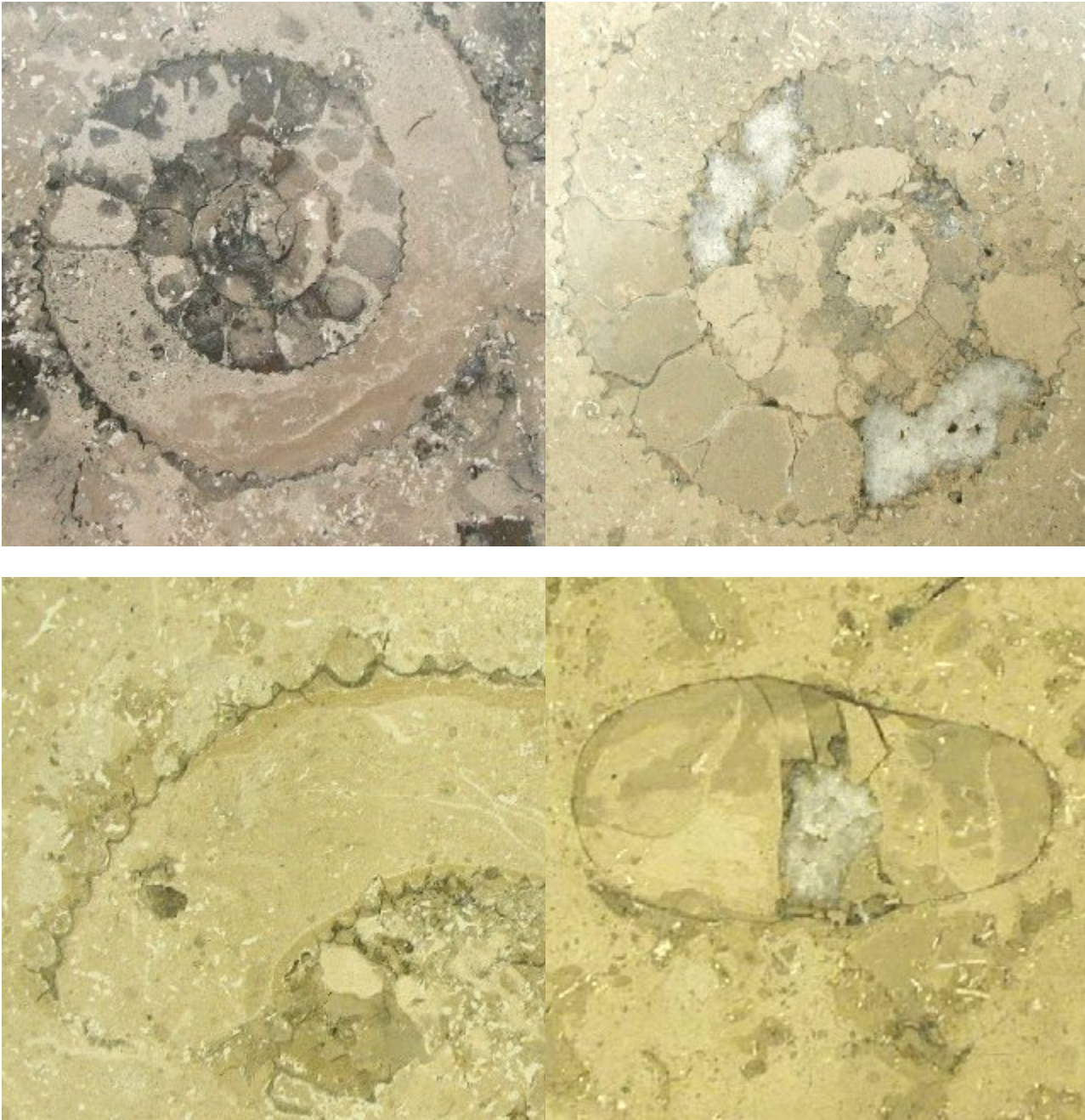


1. Fossils 1, 2, and 12 are slices through one type of fossil.
2. Fossils 3 and 7 are slices through a second type of fossil.
3. Fossil 8 is a slice through a third type of fossil.
4. Fossils 4, 5, 6, 9, 10, and 11 are all slices through a fourth type of fossil.

If you guessed more than four, don't be disappointed; it is sometimes difficult to imagine what an object looks like just from slices through the object. Imagine looking at slices through a door knob. Could you guess the shape of the door knob from the slices? Sometimes, it's not that easy. Now that you have been told that there are four basic types of fossils, see if you can guess the original shape of the fossils by looking at some more pictures.

Fossil 1. Different slices through a spiral-shaped fossil

Look at the next four images and imagine how the entire fossil might look.



The first two images represent slices down the center of the original fossil, as if the fossil was split in half. Both show the spiral shape of a thin-walled (dark) shell. The shell wall is crinkled. You can see that the interior of the fossil sometimes contains chambers. The third image is a slice that was taken at an angle through a fragment of the fossil. The whole spiral shape is not evident, but you can still tell that this is part of a spiral shell, and that the outer wall of the shell is crinkled. The last image is a slice through the side of the fossil, such that you are looking down on the top of the fossil. This slice is at a right angle to the top three images. This view does not show a spiral, but does show chambers. Can you guess the original shape of this fossil from these pictures?

Fossil 2. Different slices through a brown, oval to elongate fossil

Look at the next four images and imagine how the entire fossil might look. This type of fossil is not as common as the spiral-shaped fossils at the library but the brown color is very distinctive.

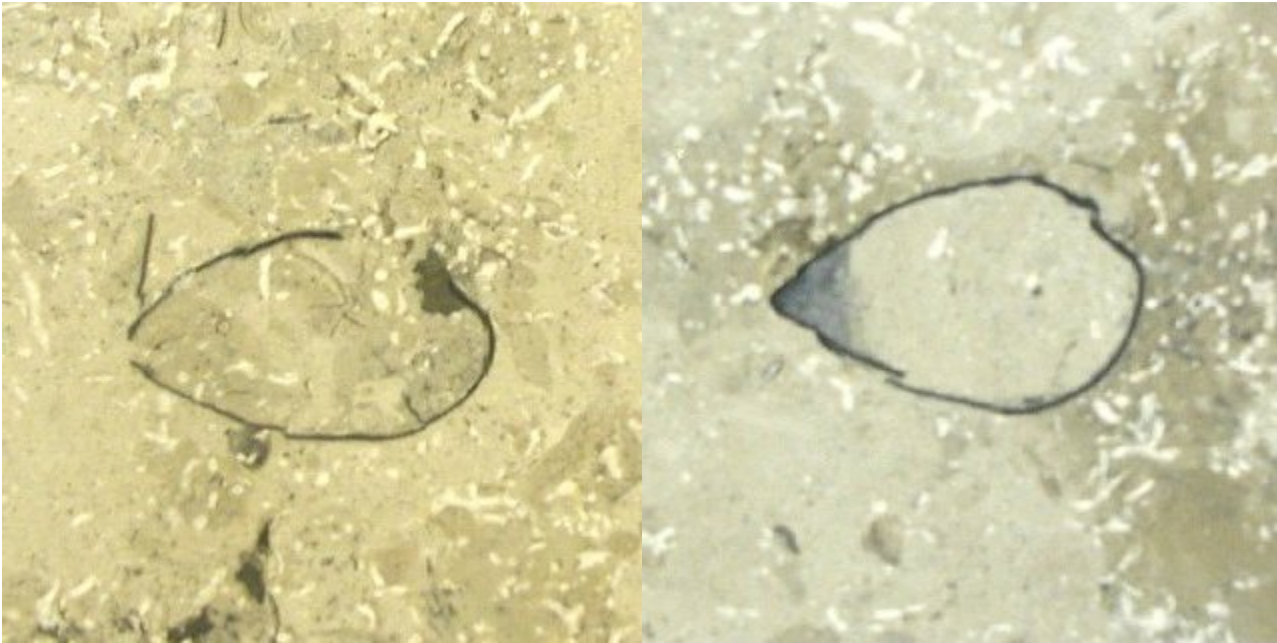


All four of these images are from the same fossil. The first three images represent slices down the long axis of the fossil, as if it were split in half along its length. In most cases, the fossil looks like flying saucers or cigars. This, however, is only part of the fossil. In the third image, you can see that the “cigar” part of the fossil is only half of the original fossil. Many organisms have parts of their skeleton or shell that are more easily preserved than others. Only when you find a complete fossil do you see the part that you are missing. The half of the fossil that is missing in the first two images is elongate and contains chambers. The chambers are similar to the spiral-shaped fossil, except that this fossil is straight rather than spiral. The last image is a slice through the brown part of the fossil, oriented across the elongate shell so that you can see what the shell looks like in cross section. Can you guess the original shape of this fossil from the pictures?

This type of fossil is the state fossil of Delaware

Fossil 3. Different slices through a nut-shaped fossil

Look at the two images and imagine how the entire fossil might look.



The two images are slices through the fossil, as if it were split in half. It is a rare fossil in this German limestone (which is Jurassic in age), although it is very common in the limestone bedrock (which is Ordovician in age) that the library was built upon. In fact, this group of fossils is the state fossil of Kentucky. Can you guess the original shape of this fossil from the pictures?

Fossil 4. C-, O-, U-, and V-shaped slices through the same type of fossil

Although the following pictures have many different shapes, they are all slices through the same type of fossil. These fossils all have thick walls relative to the thin shells of fossils, 1, 2, and 3.





The first two images are slices through the fossil, from top to bottom, as if it was cut in half. The next four images are slices across the fossil, from side to side. In some cases, or at some part of this fossil, it is closed and circular or O-shaped, in others it is partly open or C-shaped.



The next picture is a slice through the fossil, from bottom to top, cut at an angle such that you can see that part of the fossil is thick-walled and closed or O-shaped, and part is open-walled and C-shaped. You can also see that the outer walls of this fossil can bulge in and out. In fact, the organisms that make this type of fossil come in many shapes and sizes. Can you guess the original shape of these fossils from the pictures?

Slices through a modern spiral shell



These are images of the shell of a modern animal, called *Nautilus* . The first, is an image of the outside of a *Nautilus* shell. The second, is an image of the inside of the shell after it has been sliced in half. There are many modern organisms with spiral shells. Snails have spiral shells. Some sea shells (clams, etc.) are spiral shaped. Some crabs use empty shells of snails and clams as their homes. If we cut any of these shells in half, they would have a different pattern than the fossils at the library. The modern animal with a shell most similar to the spiral fossils at the library is the shell of a modern *Nautilus* . The *Nautilus* is a squid that lives in a coiled shell. *Nautilus* is a member of the nautiloids, which are an order of cephalopods. Ancient orders of cephalopods included the coiled ammonites and straight-shelled belemnites . If *Nautilus* became a fossil, the squid (all soft parts) would not likely be fossilized. Only the shell (a hard part), as seen above, would remain. The chambers in the shell, and the way the chambers are organized in the shell are unique to cephalopods. When paleontologists (scientists who study fossils) find ancient shells with similar patterns they know they have found a cephalopod. Although the soft parts are not usually fossilized, paleontologists can use the modern *Nautilus* shell to suggest that the ancient cephalopods (ammonites, belemnites, etc.) had squid-like animals living inside of them.

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