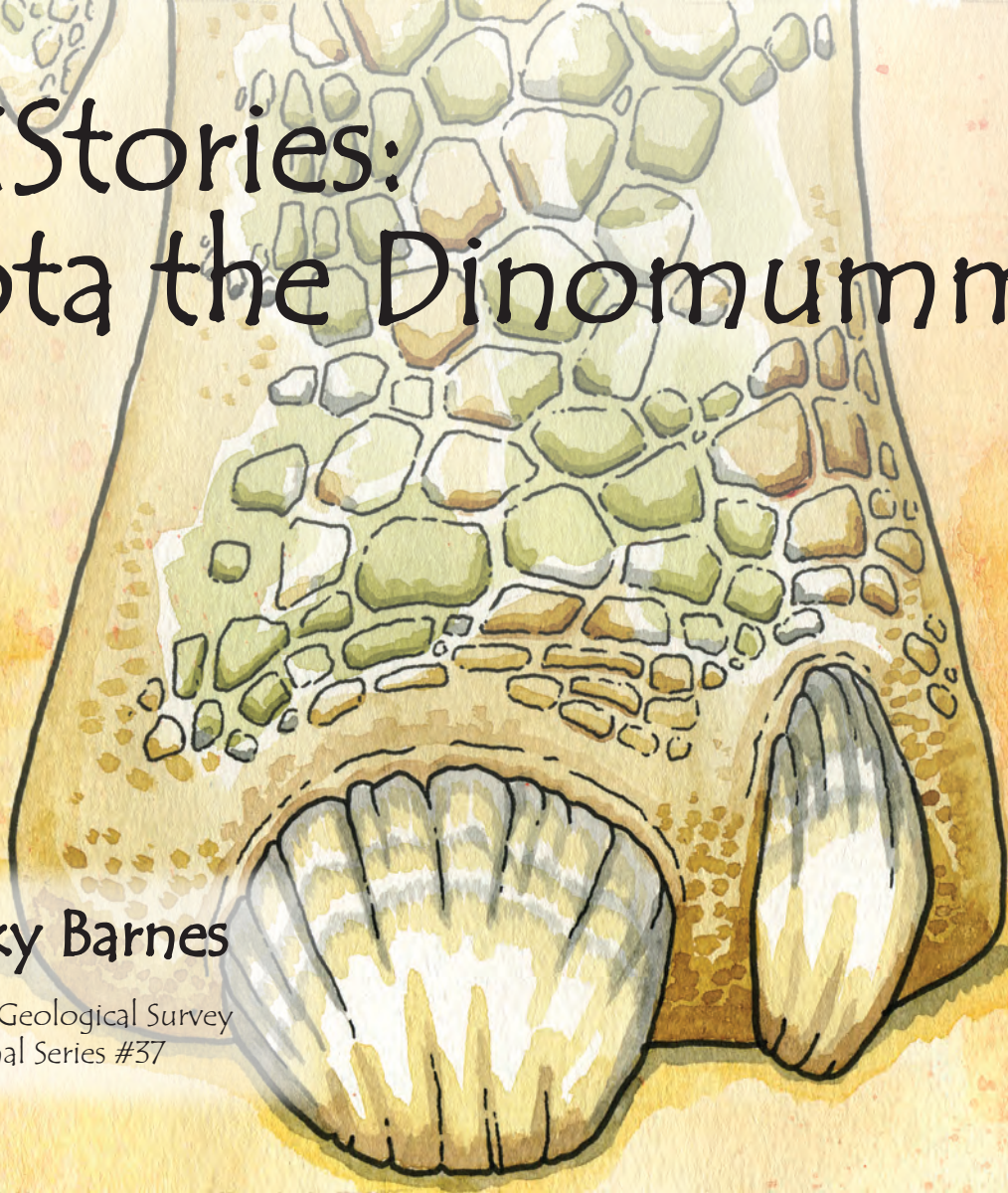


PrehiStories: Dakota the Dinomummy

By Becky Barnes

North Dakota Geological Survey
Educational Series #37



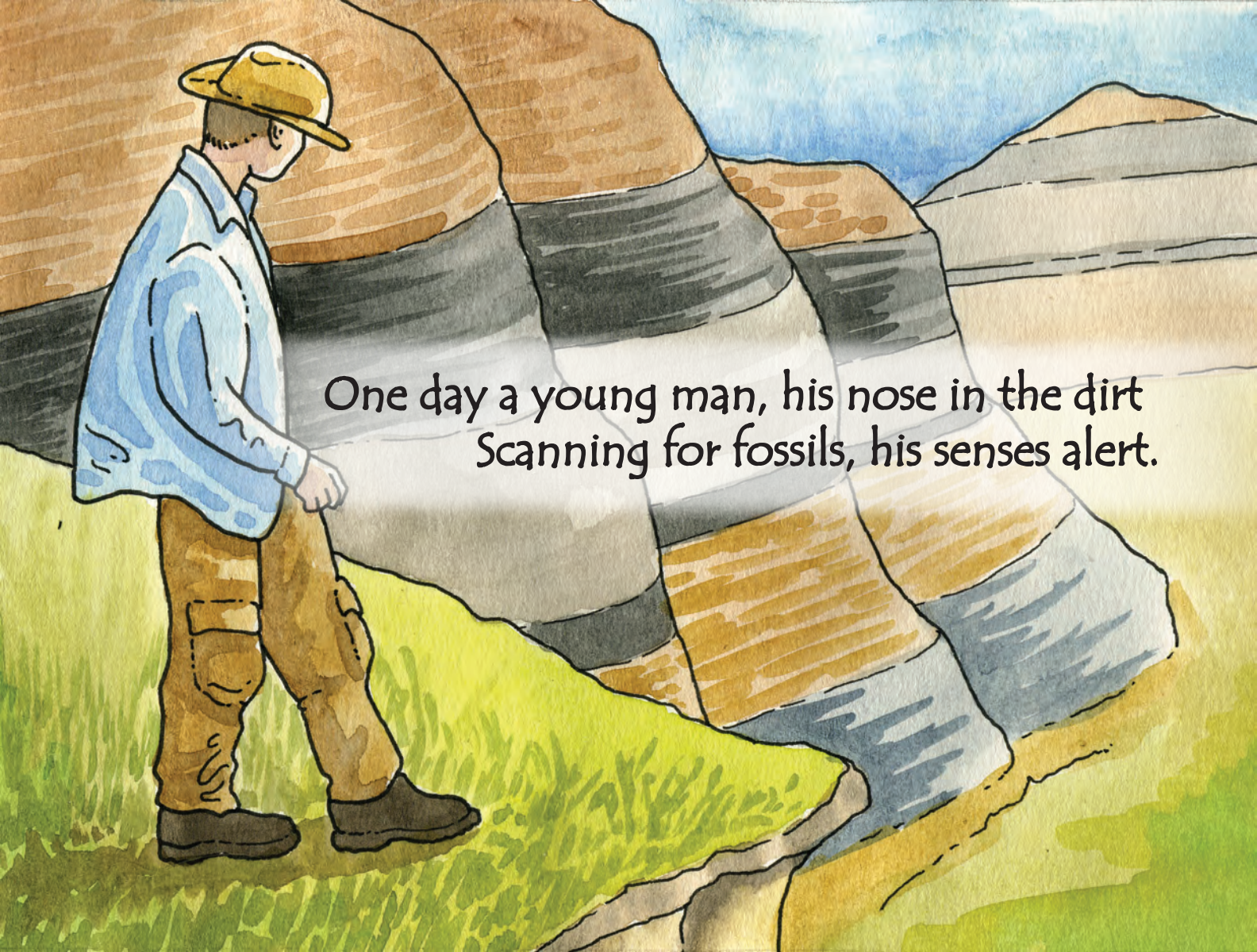
North Dakota Geological Survey
600 East Boulevard
Bismarck, ND 58505
<https://www.dmr.nd.gov/ndfossil/>

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Educational Series #37

Text and illustrations by Becky Barnes



One day a young man, his nose in the dirt
Scanning for fossils, his senses alert.

He picked up a bone,
A piece from a tail,



This fossil unique, all covered in braille!

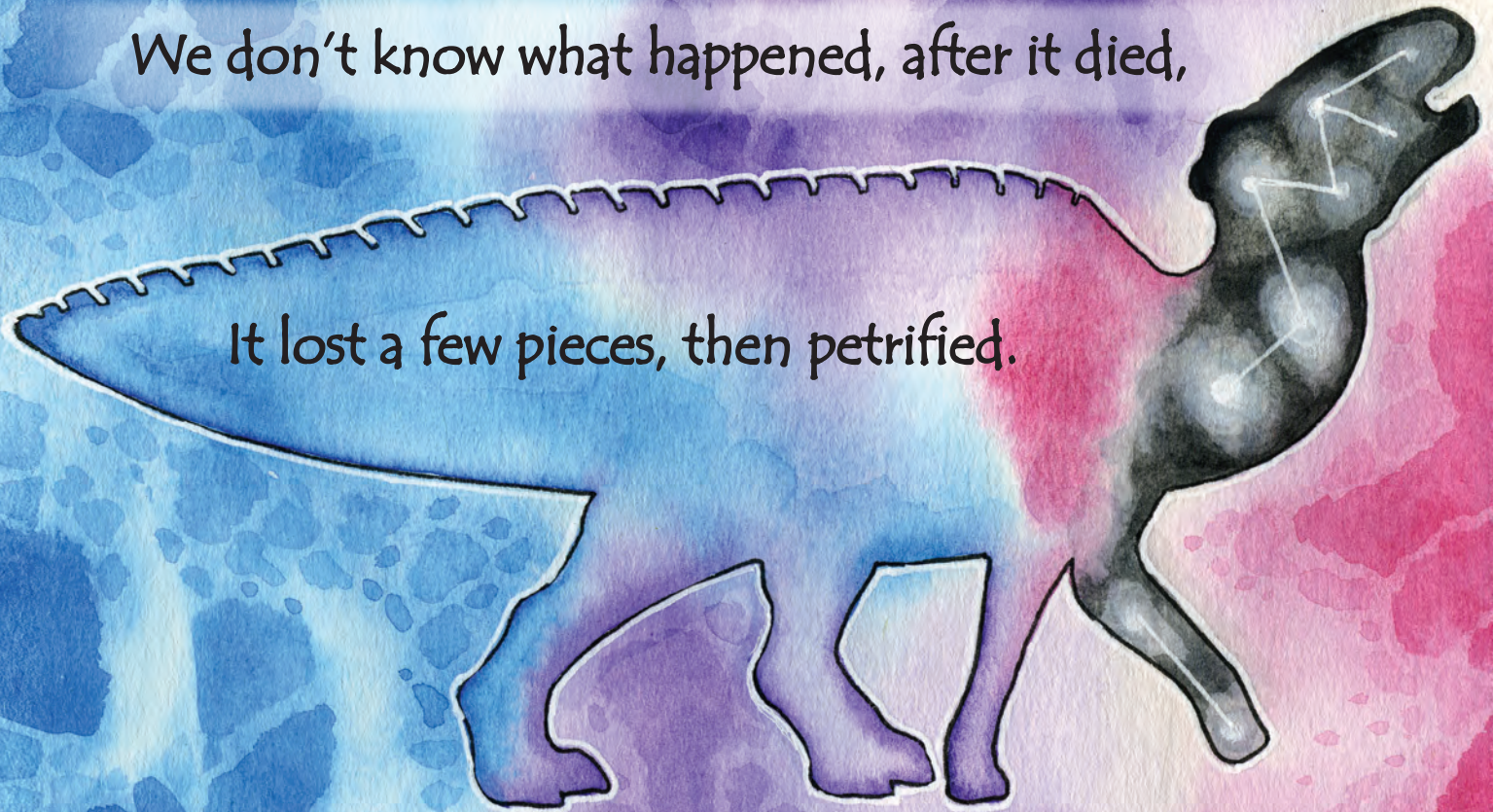
Two summers were spent,
Unearthing his find,

Hauled back to the lab,
Ready to refine.



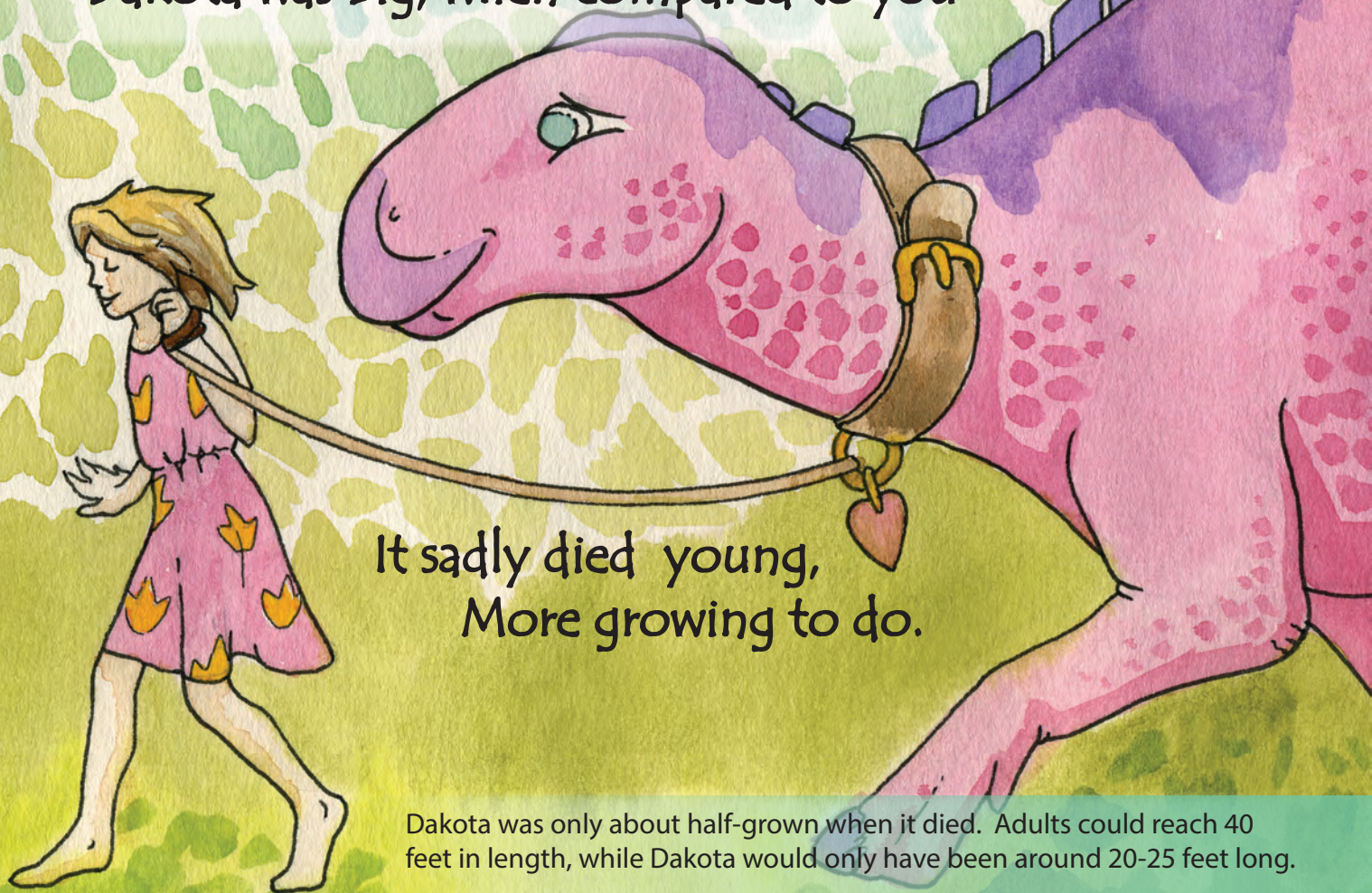
We don't know what happened, after it died,

It lost a few pieces, then petrified.



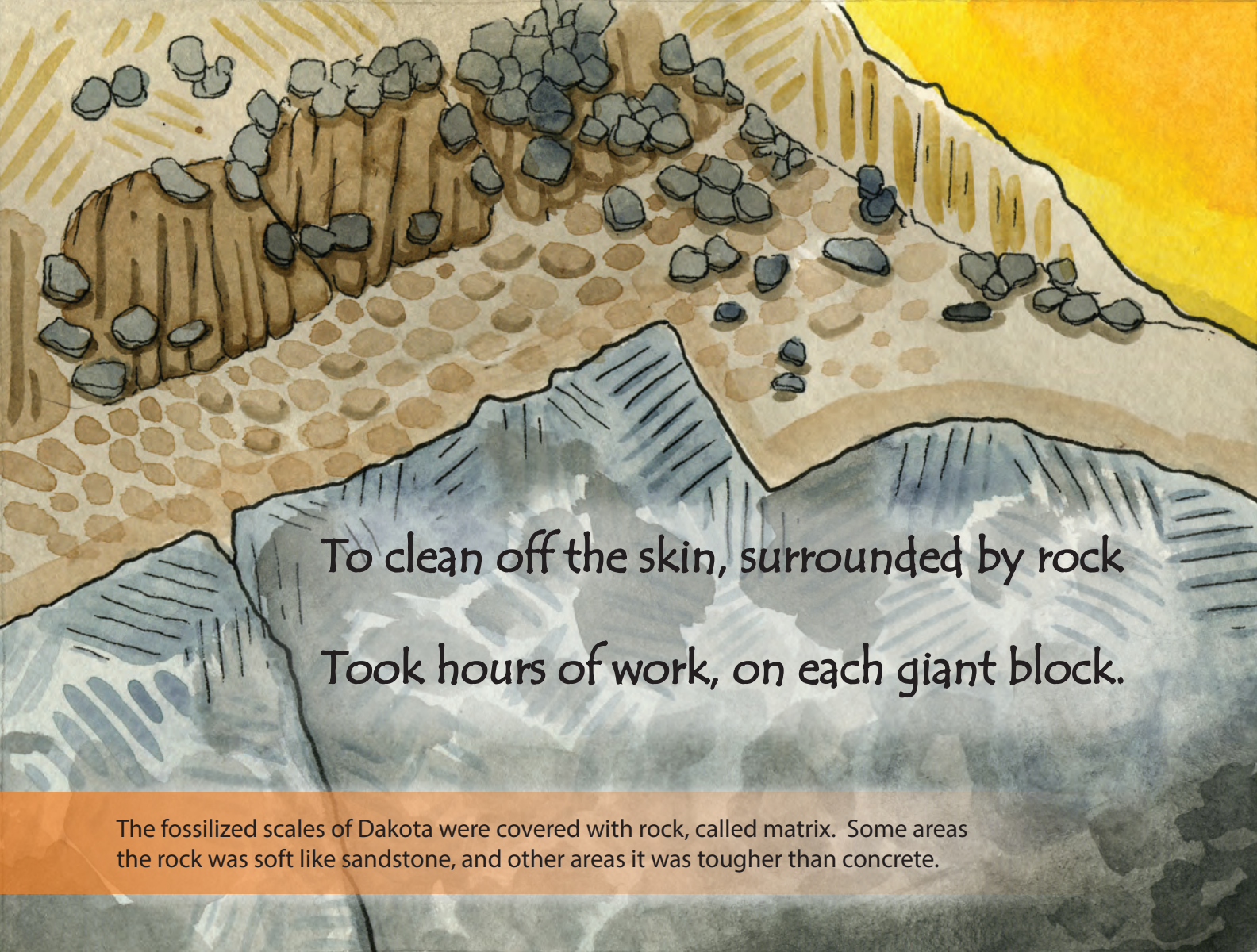
Most of Dakota was found - but it is missing the skull and left arm.

Dakota was big, when compared to you



It sadly died young,
More growing to do.

Dakota was only about half-grown when it died. Adults could reach 40 feet in length, while Dakota would only have been around 20-25 feet long.




To clean off the skin, surrounded by rock
Took hours of work, on each giant block.

The fossilized scales of Dakota were covered with rock, called matrix. Some areas the rock was soft like sandstone, and other areas it was tougher than concrete.

Tiny jackhammers,
That fit in your hand,



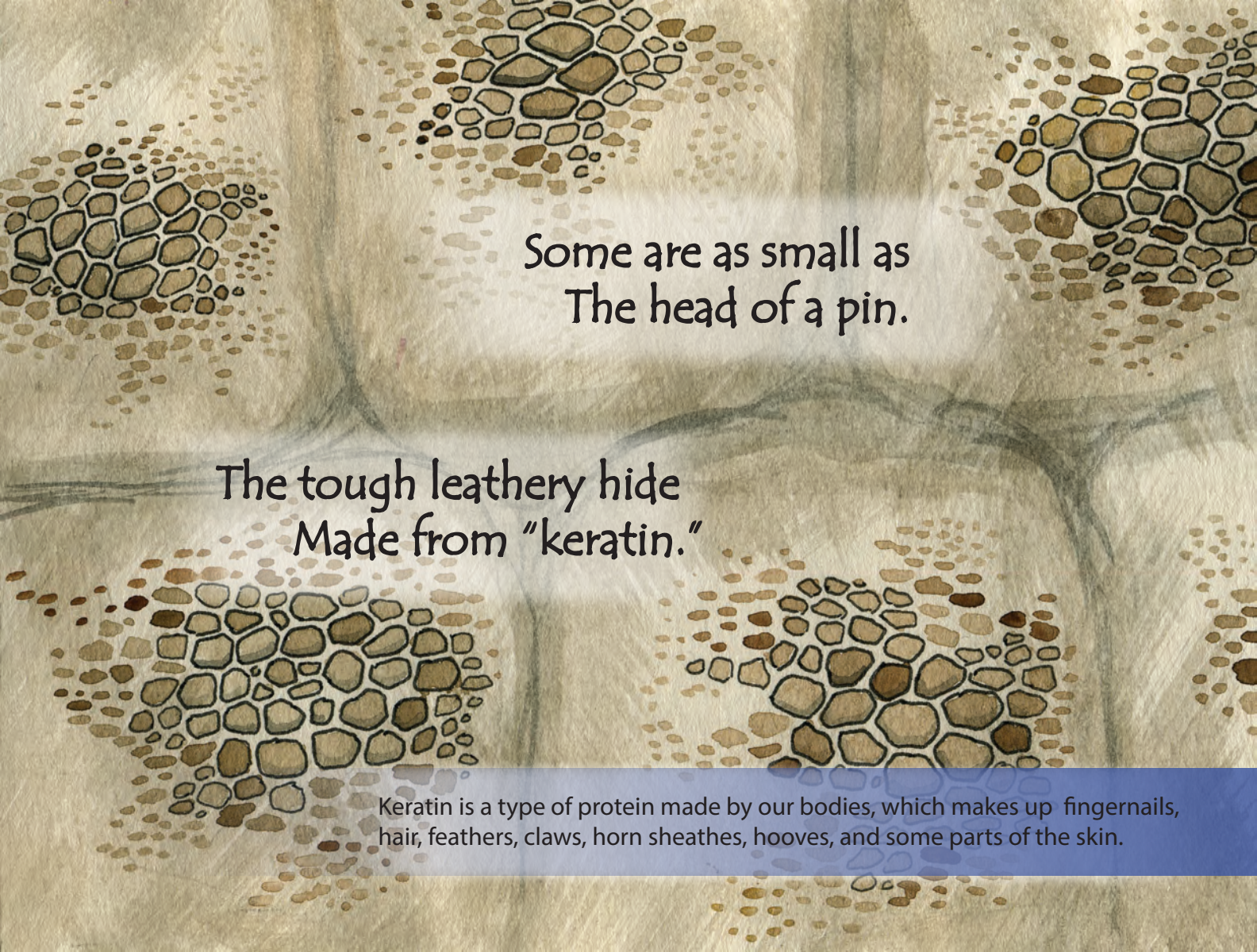
Thousands of hours,
With iron and sand.

The background of the slide is a detailed illustration of fish scales. The scales are arranged in a regular, overlapping pattern, each with a central point from which fine lines radiate outwards, giving them a star-like appearance. The color palette for the scales ranges from light tan to dark brown. In the upper right corner, a portion of a US dime coin is visible, showing the profile of Franklin D. Roosevelt and the text "LIBERTY", "10c", and "2020". This coin is placed to provide a sense of scale for the size of the scales.

Some scales were quite large,
The size of a dime.

Like other reptiles,
Not covered in slime.


Fish and amphibians (frogs & salamanders) can be covered with slime or mucous, giving their skin or scales a slippery feeling. Reptiles (snakes, lizards, turtles, etc.) have dry skin and scales.

A microscopic view of skin tissue, showing several clusters of cells. The cells are arranged in a honeycomb-like pattern, with some cells being larger and more rounded, and others being smaller and more elongated. The cells are stained with a brownish-yellow dye, and the overall texture is grainy and fibrous.

Some are as small as
The head of a pin.

The tough leathery hide
Made from "keratin."

Keratin is a type of protein made by our bodies, which makes up fingernails, hair, feathers, claws, horn sheathes, hooves, and some parts of the skin.

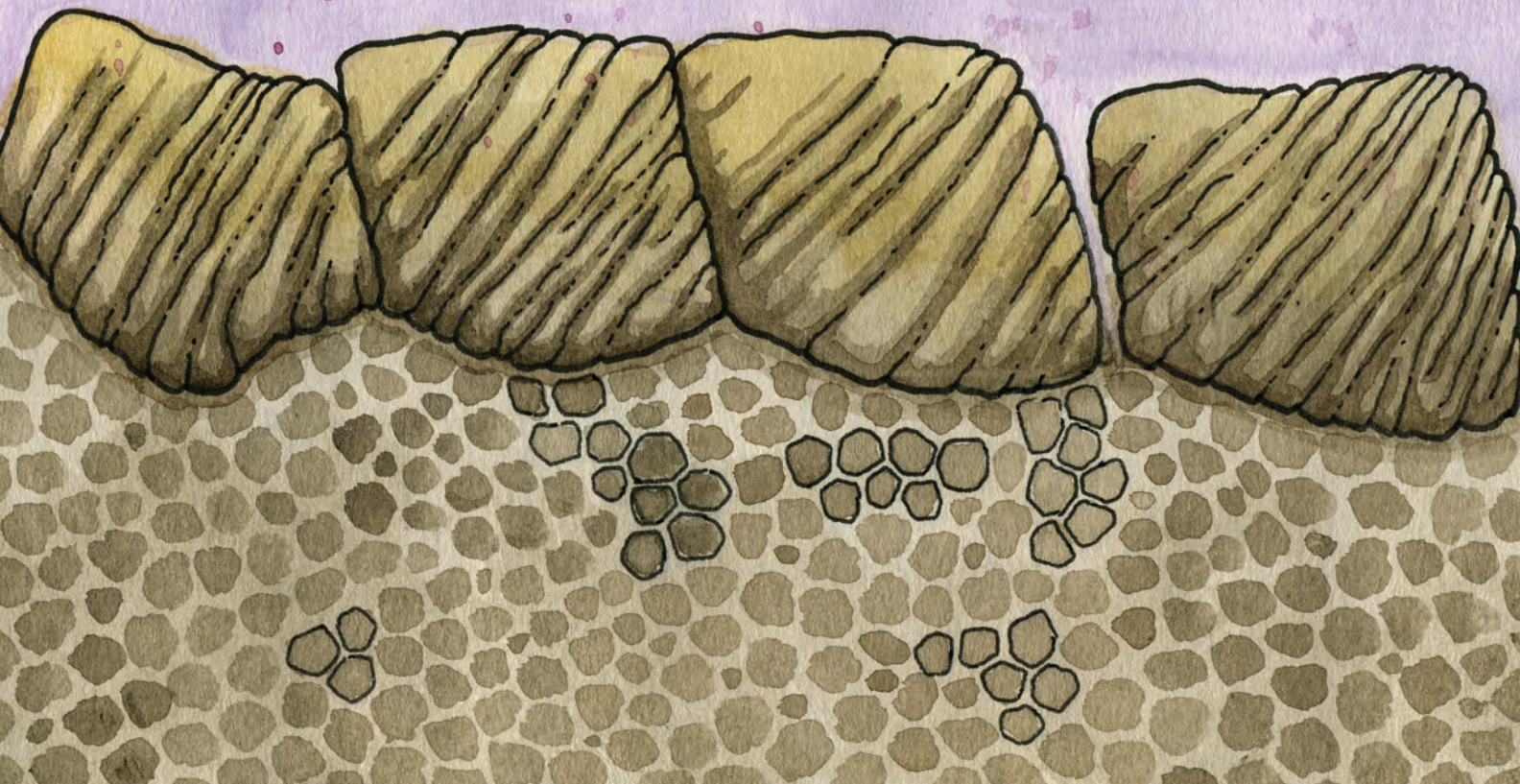
A watercolor illustration of a hand with a pinkish skin tone, pointing its index finger towards the left. The background is a textured, brownish-gold surface with numerous small, dark brown spots, resembling scales or a rough paper texture. The hand is positioned on the left side of the frame, with the thumb visible at the bottom left.

This strong material that makes up scales,

Is also found in your hair and your nails!

A frill of square scales ran all down the back,

Perhaps used to tell who lives in each pack?



We all have wrinkles, so did the mummy!

On hands, feet, and tail, even its tummy.



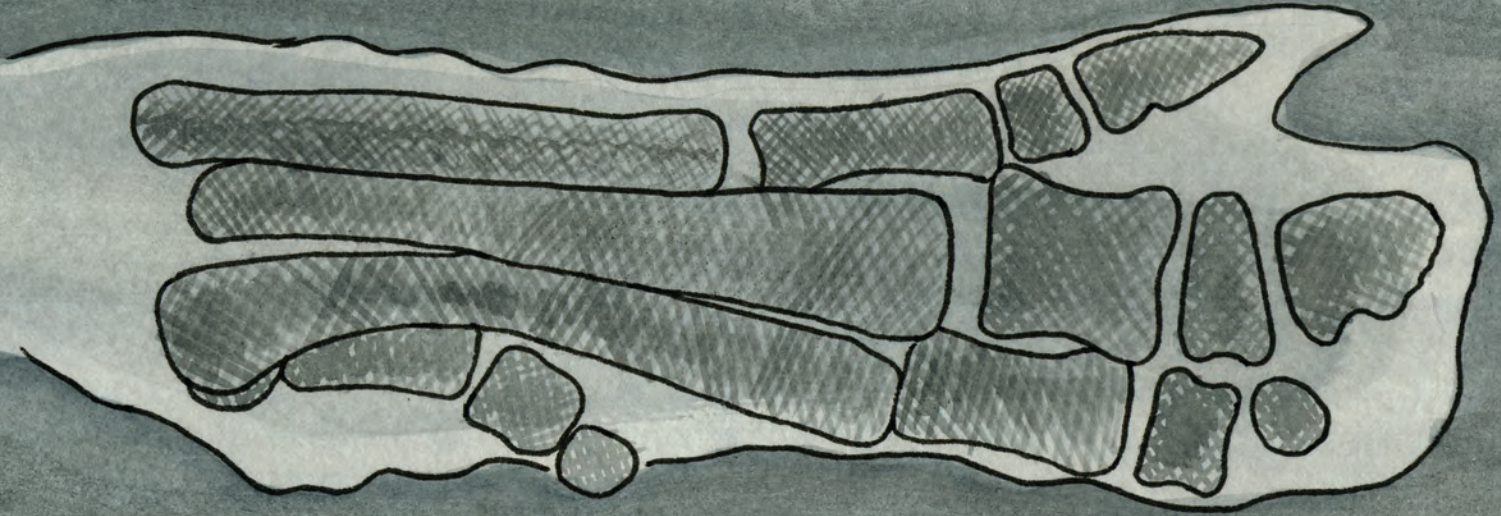


Where there is movement,
In places like joints,

Skin quilts and flexes
At all of these points.

Its hand like a mitten, all wrapped up tight,

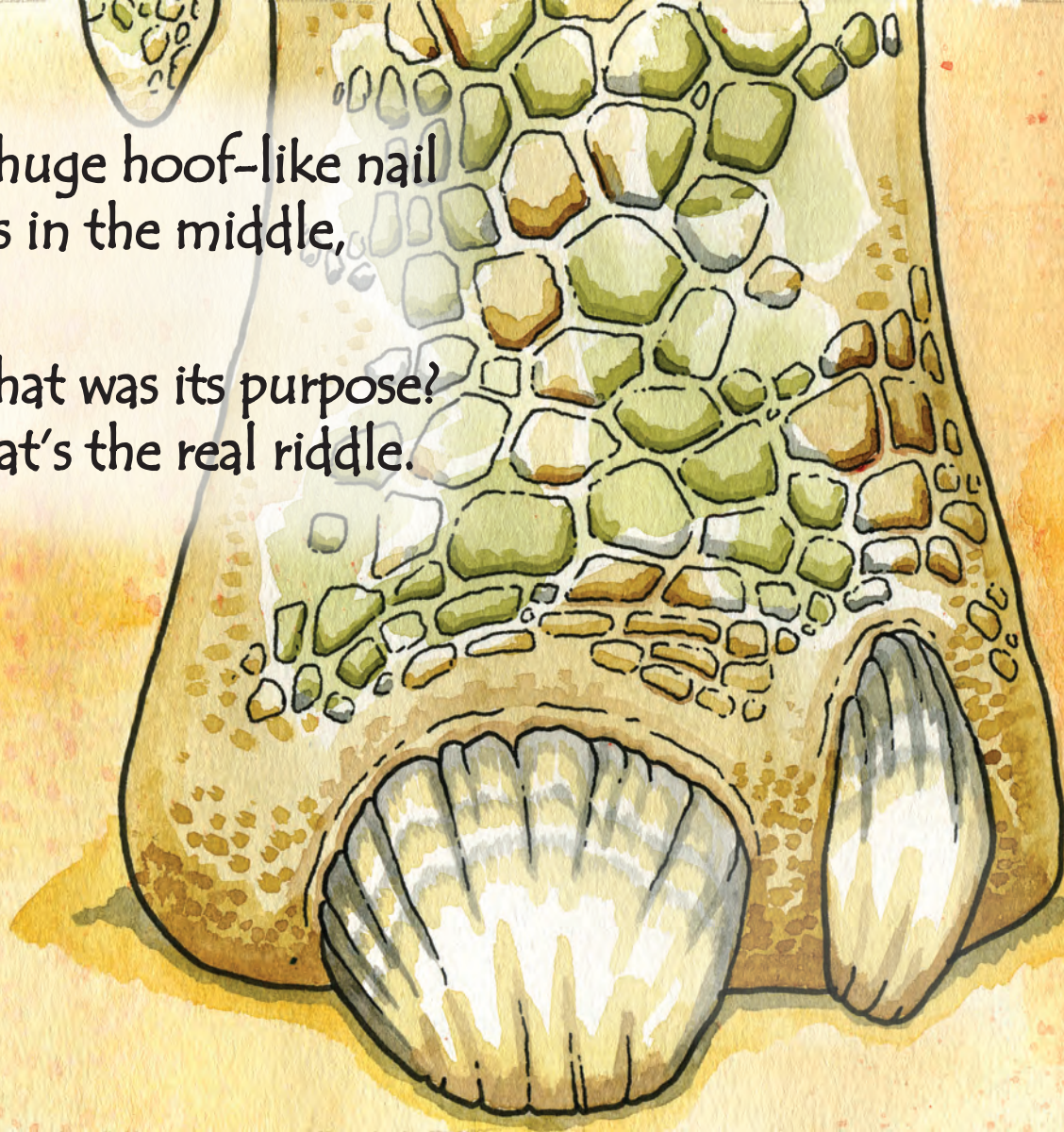
Three fingers bear weight, but no thumb in sight.



The right hand of Dakota the dinomummy was CT scanned in 2019 to see inside the rock. It showed how all the hand and finger bones are locked in place inside the hand.

A huge hoof-like nail
Sits in the middle,

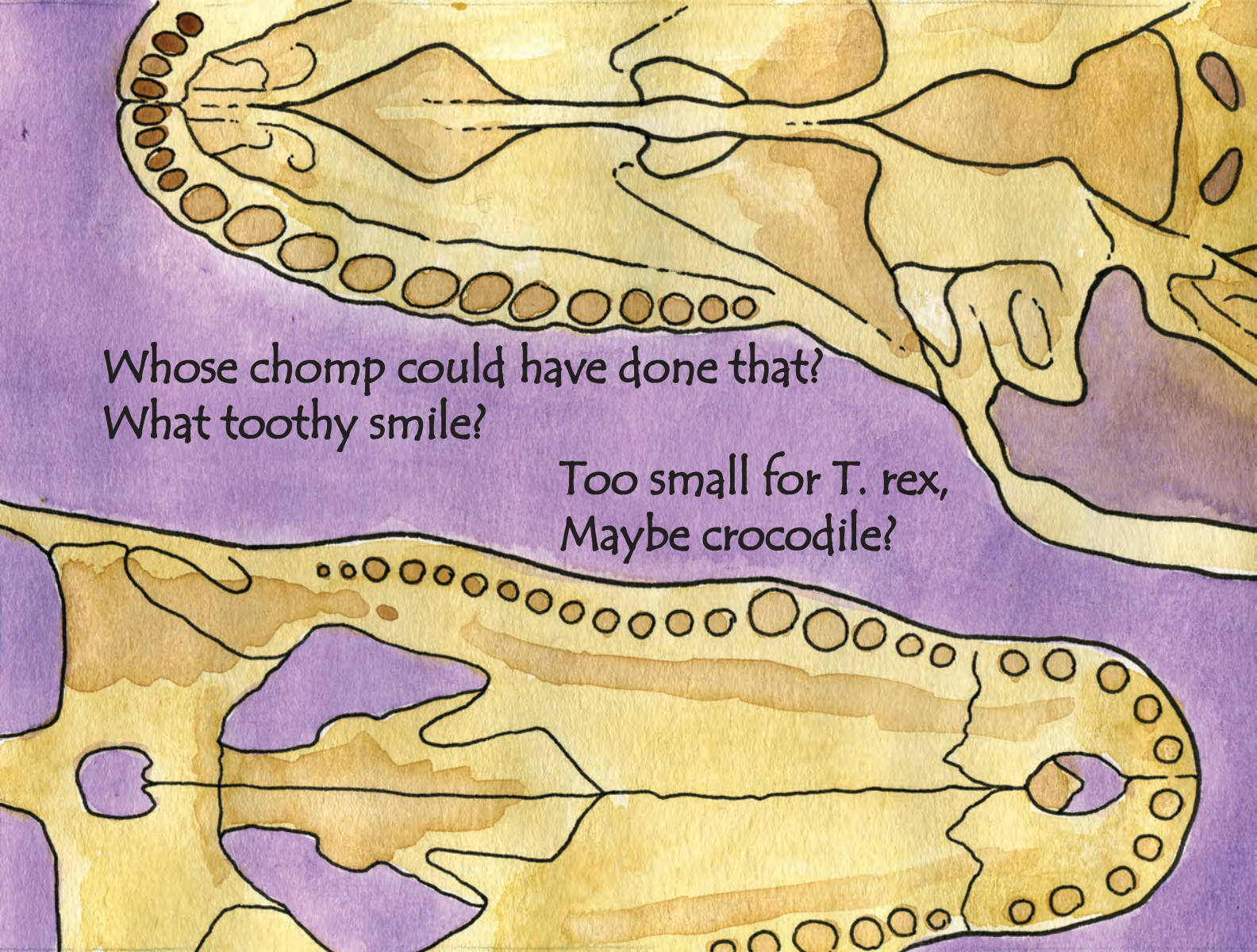
What was its purpose?
That's the real riddle.





One section of arm looked all inside-out,

With holes punched through in the shape of a snout.

A watercolor illustration of a dinosaur skull and jaw, shown in profile. The skull is light brown with dark brown outlines. The jaw is open, revealing a row of small, round, brown teeth. The background is a solid purple color.

Whose chomp could have done that?
What toothy smile?

Too small for T. rex,
Maybe crocodile?



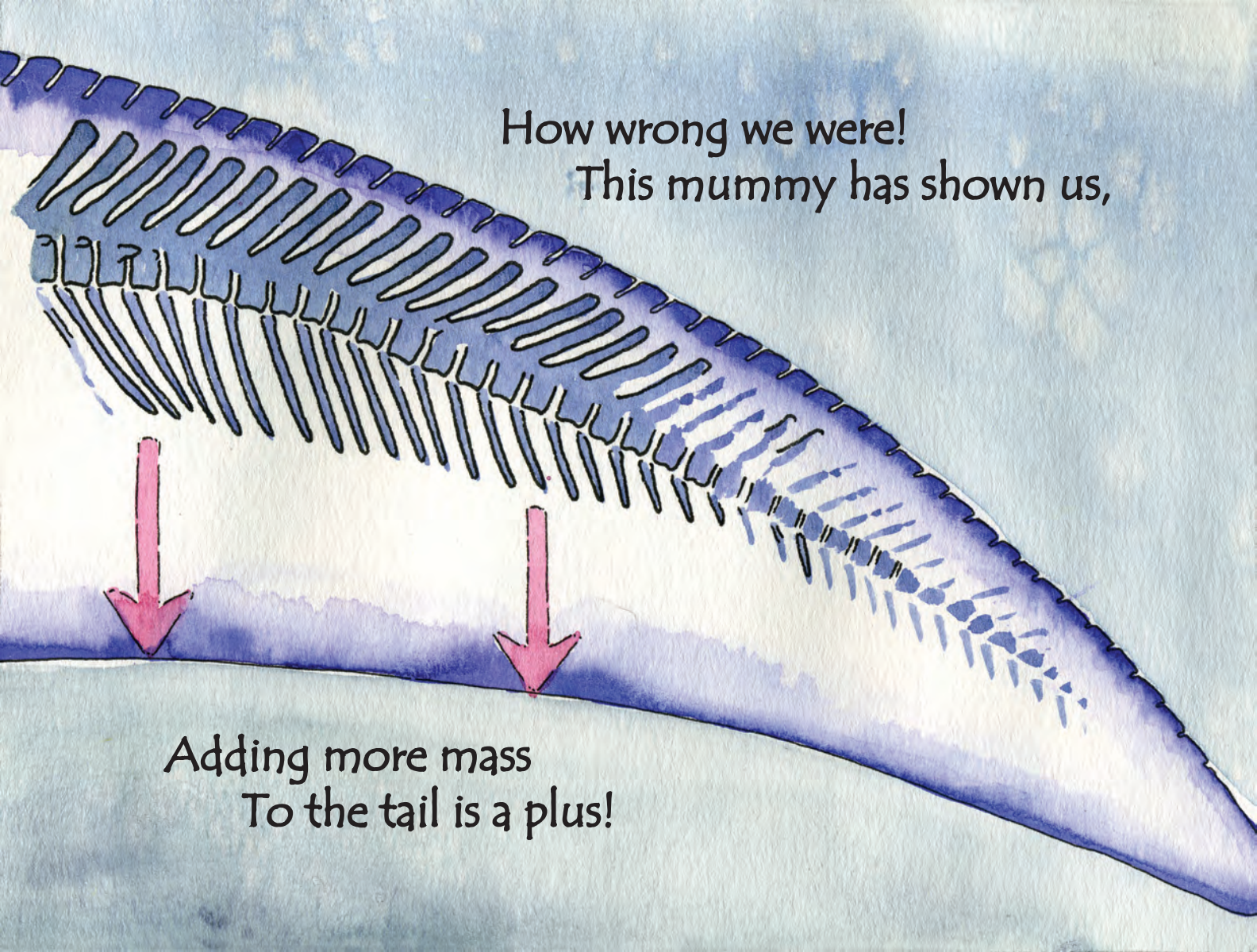
We used to restore
The tail depth quite small.

No room for muscle,
It did not stand tall.

How people have drawn dinosaurs has changed a lot - and keeps changing. From lumbering lizards, to kangaroo-posed critters and skinny, emaciated beasts. More research is being done today to learn about where muscles should be - and new art is showing more muscular dinosaurs.

How wrong we were!
This mummy has shown us,

Adding more mass
To the tail is a plus!



A watercolor illustration of a green dinosaur, likely an Edmontosaurus, in a swampy environment. The dinosaur is shown from the side, with its head turned back to look over its shoulder. It has a large, yellow eye and a small, dark eye. Its mouth is open, showing a pink tongue and some green foliage. The background features a large, brown tree trunk on the left, a green vine hanging from a branch on the right, and a green, mossy ground. In the foreground, there are green lily pads and a pink lotus flower.

In history past they lived in a swamp,

But look at these toes! On land they would romp.

Scientists used to think that *Edmontosaurus* and other hadrosaurs lived in swamps or watery habitats.

As caribou spread
Their hooves for the snow,

Weight bearing pads
Adorn each giant toe!



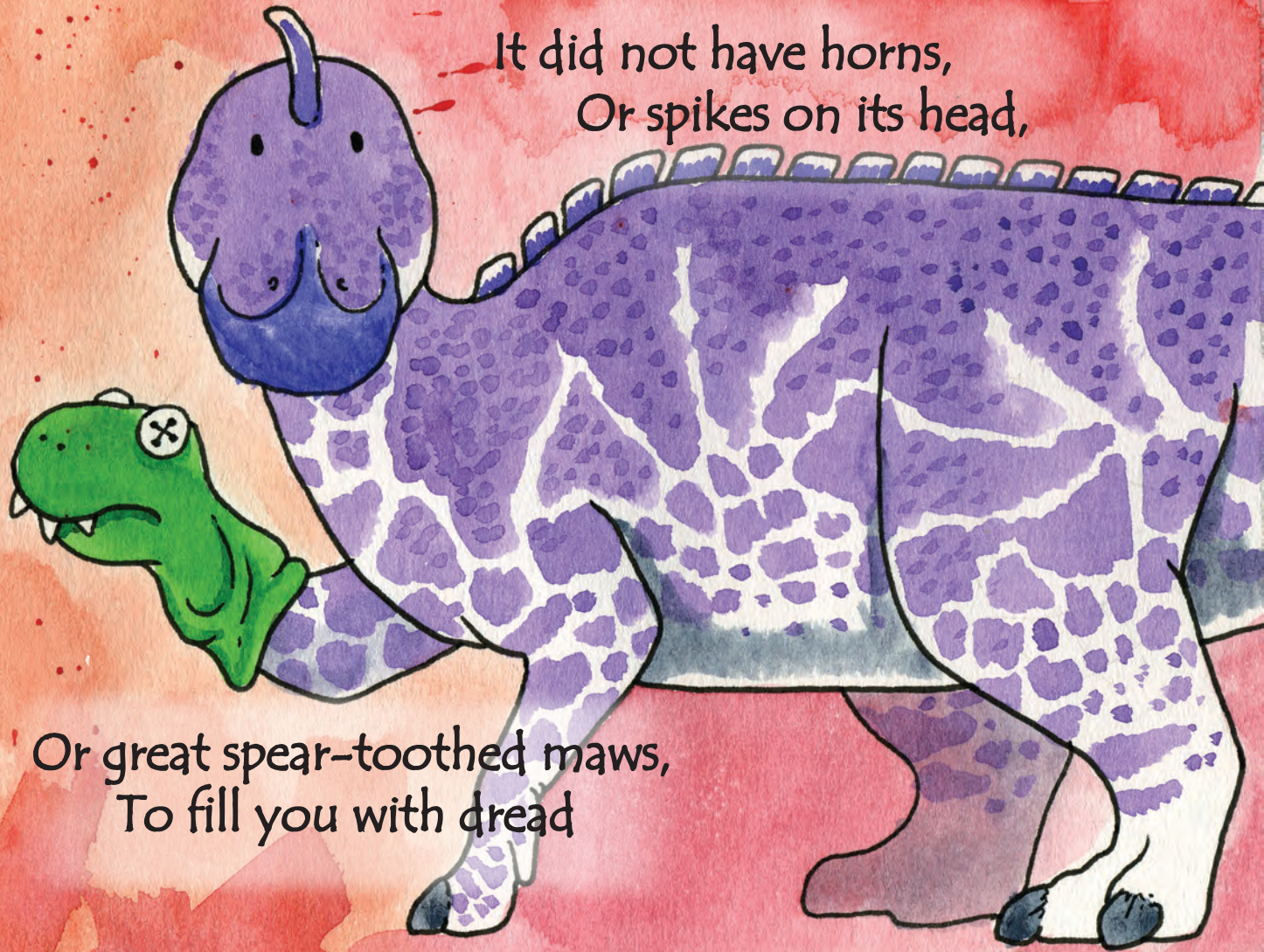
A fleshy cocks comb
On top of its head,

Was it bright color?
Or was it plain red?




Dakota was found without a skull, but another duckbilled-dinosaur was found in Canada that had the comb-like structure. While we can't say for sure Dakota had one, we can't say it *didn't* either!

It did not have horns,
Or spikes on its head,

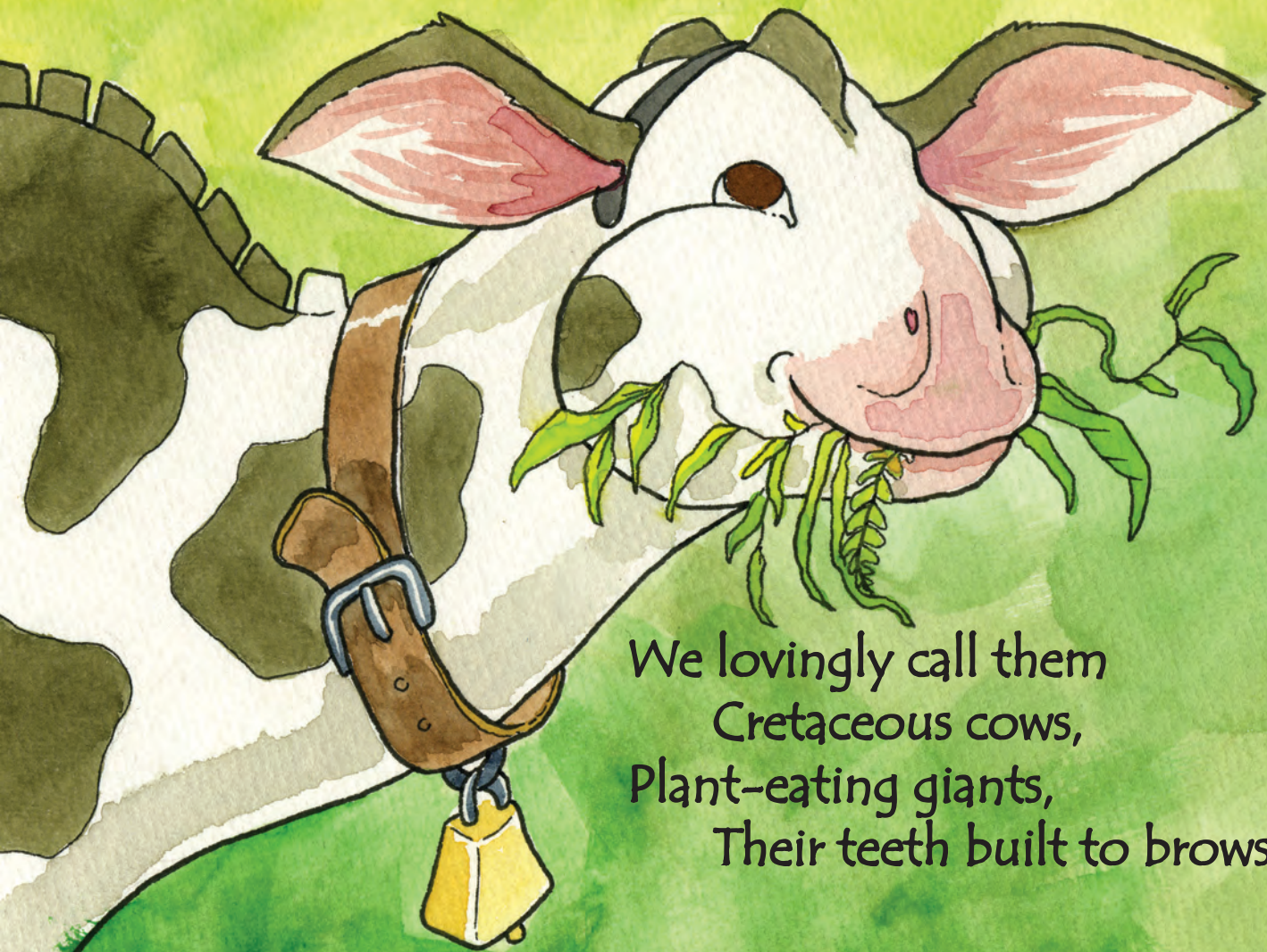


Or great spear-toothed maws,
To fill you with dread

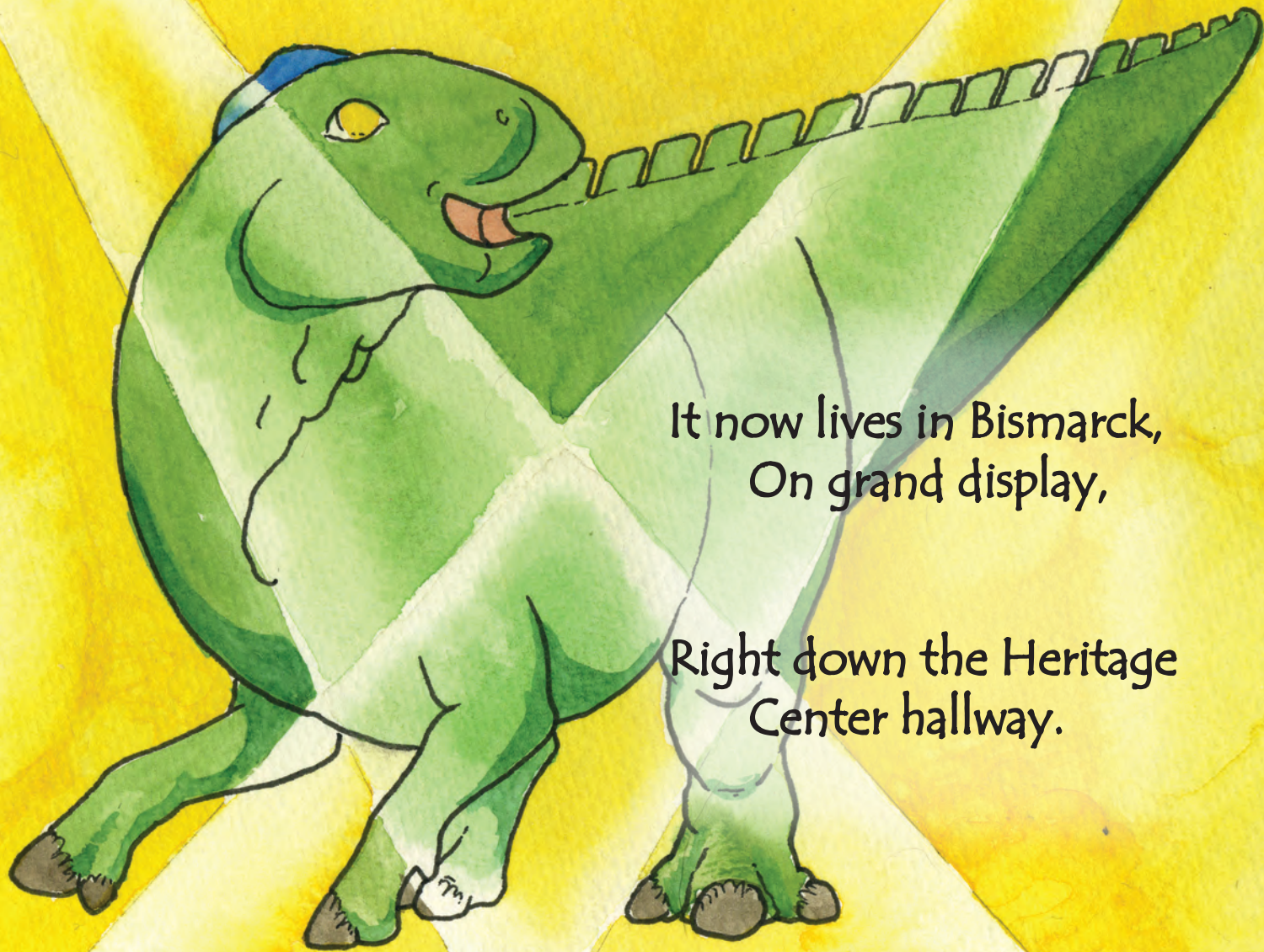


These dinos were plain, and lived in vast herds.

When seen together, their outlines were blurred.

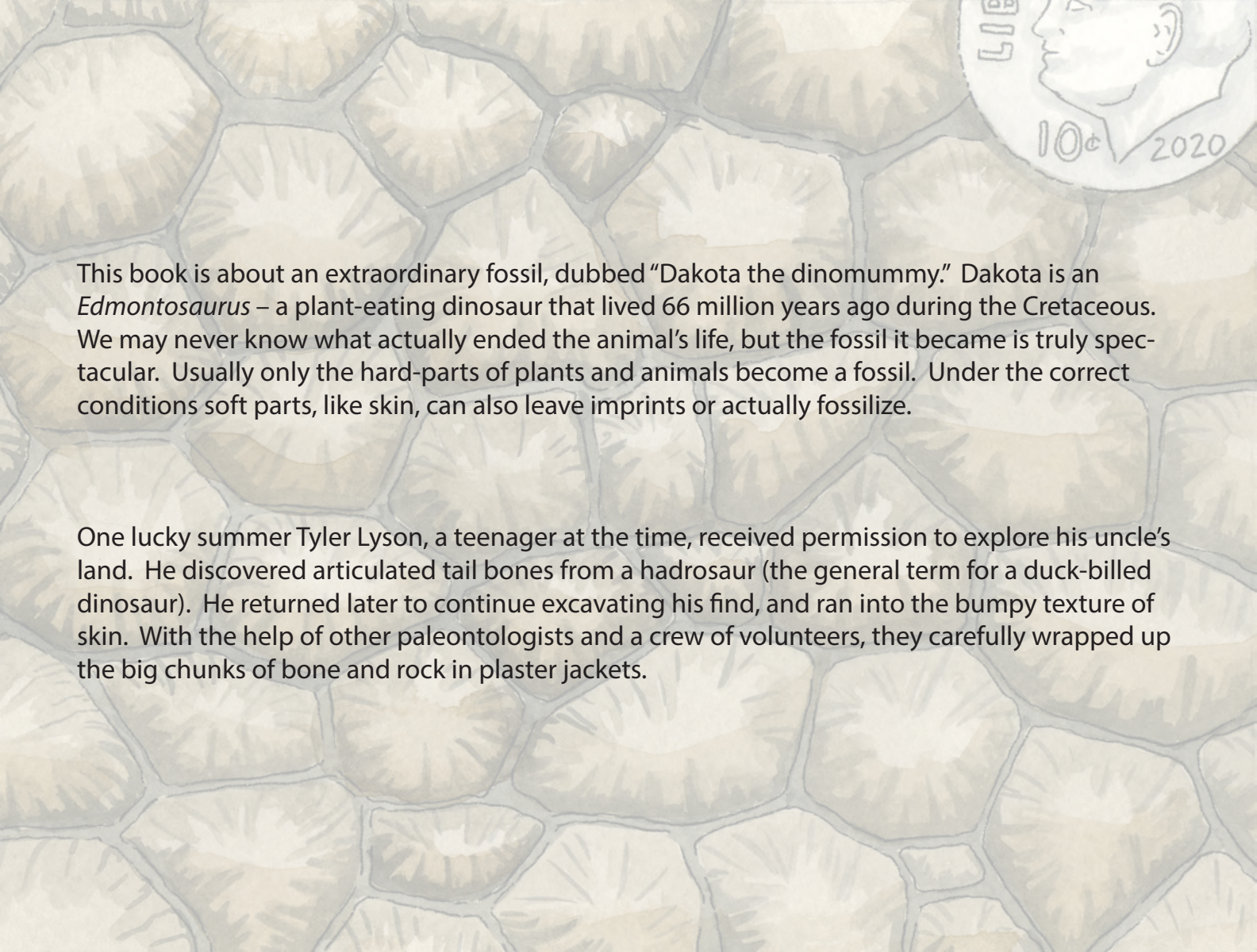


We lovingly call them
Cretaceous cows,
Plant-eating giants,
Their teeth built to browse.



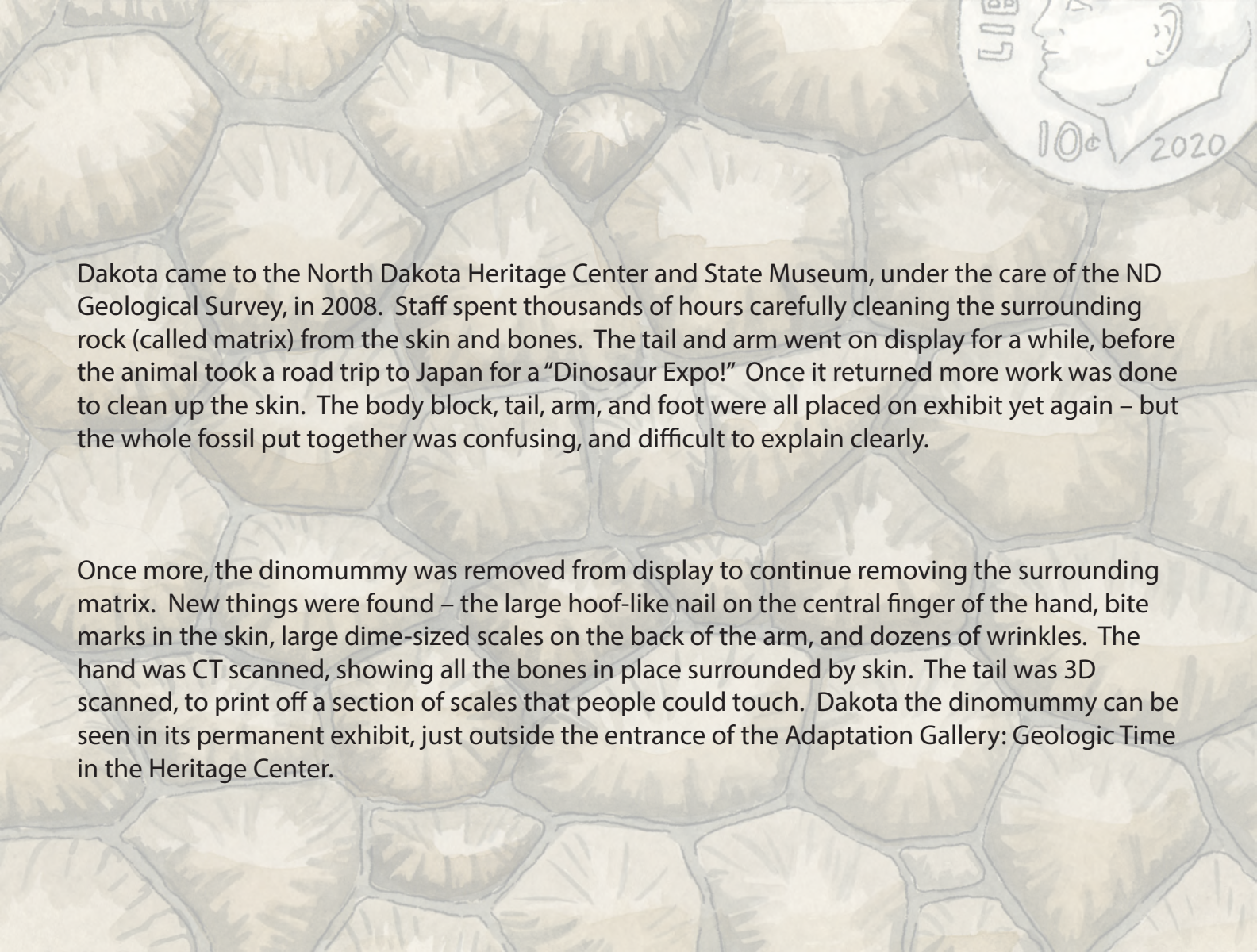
It now lives in Bismarck,
On grand display,

Right down the Heritage
Center hallway.

The background of the slide features a repeating pattern of fossilized plant cells, specifically radiolarians, which are circular structures with radial internal patterns. In the top right corner, there is a partial view of a silver 10-cent coin (a dime) from 2020, showing the profile of Queen Elizabeth II and the text "10c" and "2020".

This book is about an extraordinary fossil, dubbed “Dakota the dinomummy.” Dakota is an *Edmontosaurus* – a plant-eating dinosaur that lived 66 million years ago during the Cretaceous. We may never know what actually ended the animal’s life, but the fossil it became is truly spectacular. Usually only the hard-parts of plants and animals become a fossil. Under the correct conditions soft parts, like skin, can also leave imprints or actually fossilize.

One lucky summer Tyler Lyson, a teenager at the time, received permission to explore his uncle’s land. He discovered articulated tail bones from a hadrosaur (the general term for a duck-billed dinosaur). He returned later to continue excavating his find, and ran into the bumpy texture of skin. With the help of other paleontologists and a crew of volunteers, they carefully wrapped up the big chunks of bone and rock in plaster jackets.

The background of the slide is a detailed illustration of a fossil matrix, showing various irregular, sunburst-like fossil impressions in shades of tan and brown. In the top right corner, there is a partial illustration of a 2020 US dime, showing the profile of Franklin D. Roosevelt, the year '2020', and the denomination '10c'.

Dakota came to the North Dakota Heritage Center and State Museum, under the care of the ND Geological Survey, in 2008. Staff spent thousands of hours carefully cleaning the surrounding rock (called matrix) from the skin and bones. The tail and arm went on display for a while, before the animal took a road trip to Japan for a “Dinosaur Expo!” Once it returned more work was done to clean up the skin. The body block, tail, arm, and foot were all placed on exhibit yet again – but the whole fossil put together was confusing, and difficult to explain clearly.

Once more, the dinomummy was removed from display to continue removing the surrounding matrix. New things were found – the large hoof-like nail on the central finger of the hand, bite marks in the skin, large dime-sized scales on the back of the arm, and dozens of wrinkles. The hand was CT scanned, showing all the bones in place surrounded by skin. The tail was 3D scanned, to print off a section of scales that people could touch. Dakota the dinomummy can be seen in its permanent exhibit, just outside the entrance of the Adaptation Gallery: Geologic Time in the Heritage Center.

For more books about North Dakota's prehistory and paleontology, please visit:
<https://www.dmr.nd.gov/ndfossil/>

The Paleo Primer Educational Series (#33 and #35) are available free online, along with our first PrehiStories: Mosasaur (E.S. #36).

