

Fascinating Dinosaurs

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When I was a child, I heard stories about fire-breathing dragons and similar monsters with wings, huge claws, terrifying scales and nasty serpentine tails. However, I never heard about dinosaurs. Today my eight-year-old grandson, Cameron, can easily pronounce the names of, and distinguish between Tyrannosaurus rex (Fig. 1), Triceratops (Fig. 2), Brontosaurus (Fig. 3) and Oviraptor (Fig. 4). This is thanks to the Jurassic Park movies, which brought the dinosaurs, which became extinct 65 million years ago, 'back to life'. Today we can eat dinosaurs in the form of sweets and biscuits, we can see them on television or on DVD, read about them in books, visit them in museums, play with them as toys and collect and learn about them through STAMPS.

Our theme, 'Dinosaurs on Stamps', raises some questions that need to be answered. These questions are:

What are dinosaurs? The answer is that they are extinct reptiles. The name 'dinosaurs' was coined by the British scientist Sir Richard Owen in 1841. In 1991, Britain issued a set of four stamps commemorate the 150th anniversary of the naming of these impressive creatures (Fig. 5). Sir Richard was impressed by the large size of bones that had been unearthed from rocks in Southern England, which showed a marked similarity to the much smaller bones of some modern lizards. The name 'dinosaur', derived from two Greek words, deinos and sauros, meaning 'terrible' and 'lizard', seemed a good name.

Are dinosaurs merely big lizards? No. Dinosaurs had upright legs (Fig. 6), whereas all lizards have sprawled legs (Fig. 7). Therefore none of the dinosaurs were actually lizards, and not all of them were large and terrifying. In size they ranged from the size of a chicken, to a length of as much as 30 metres. A large dinosaur could have weighed as much as 30 tons! This makes them the largest animals that ever walked the Earth.

Did the dinosaurs belong to a single group



Fig. 1: Tyrannosaurus rex

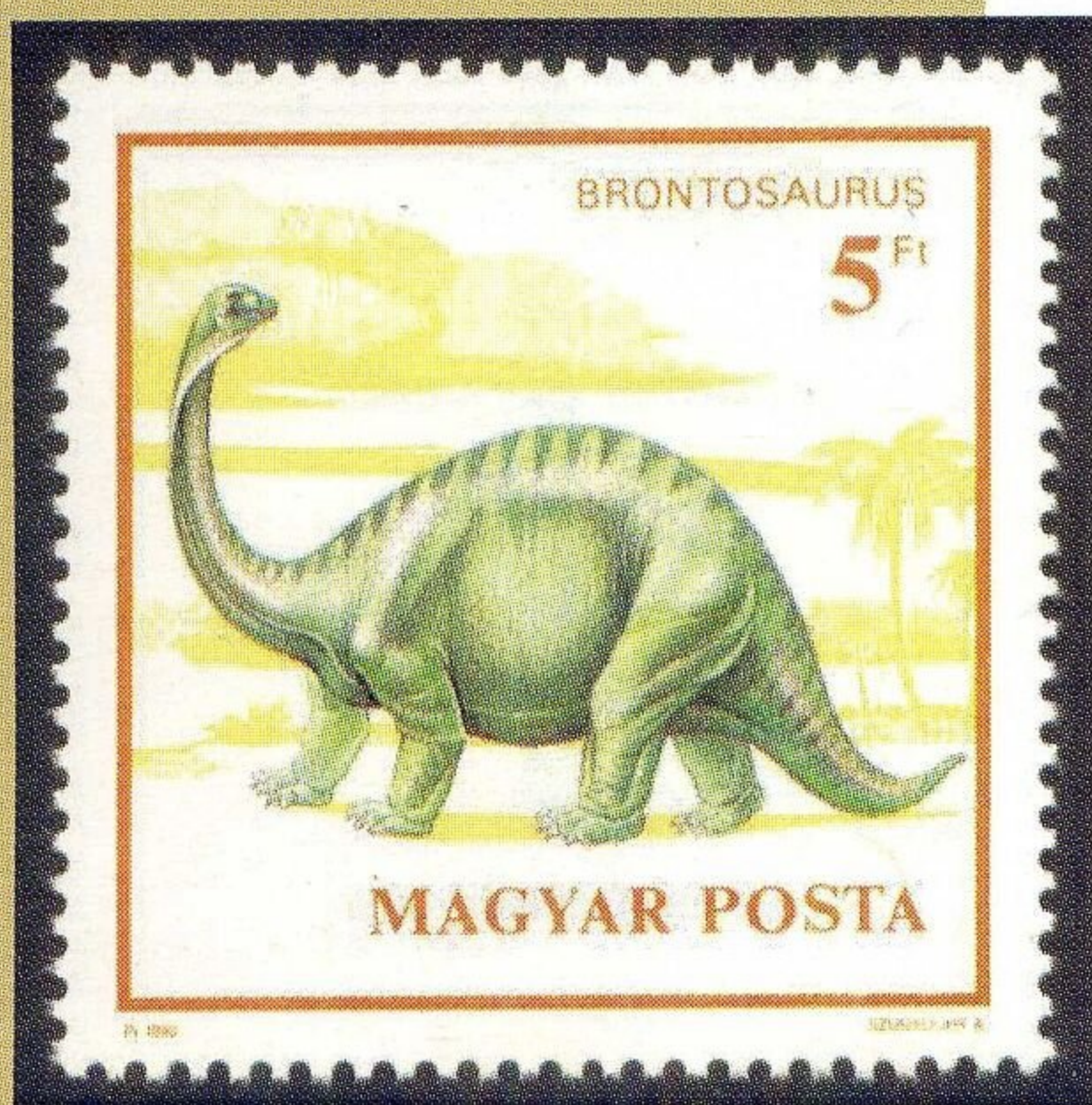


Fig. 3 Brontosaurus

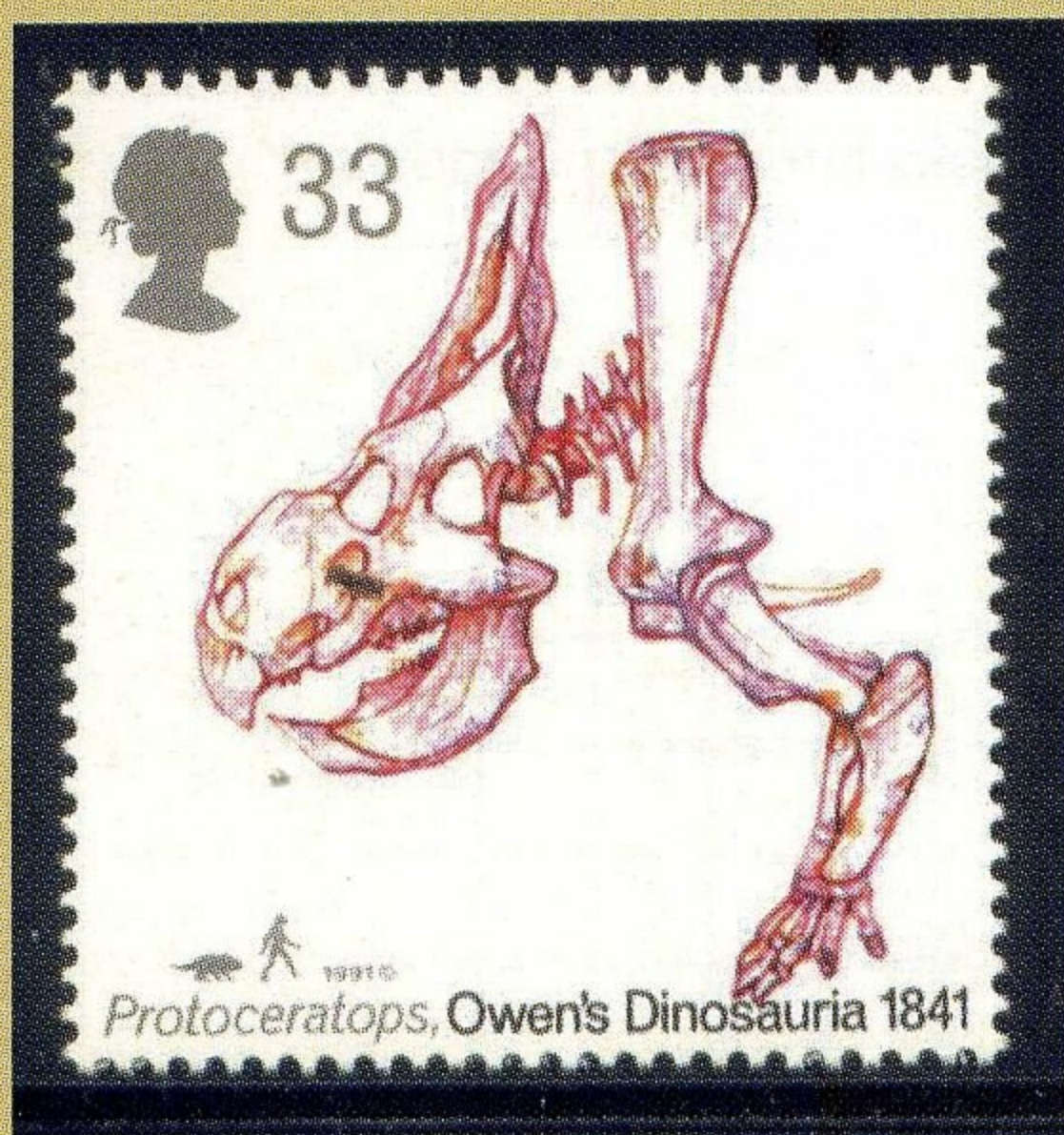


Fig. 5 Naming of dinosaurs



Fig. 2 Triceratops



Fig. 4 Oviraptor



Fig. 6 Iguanodon

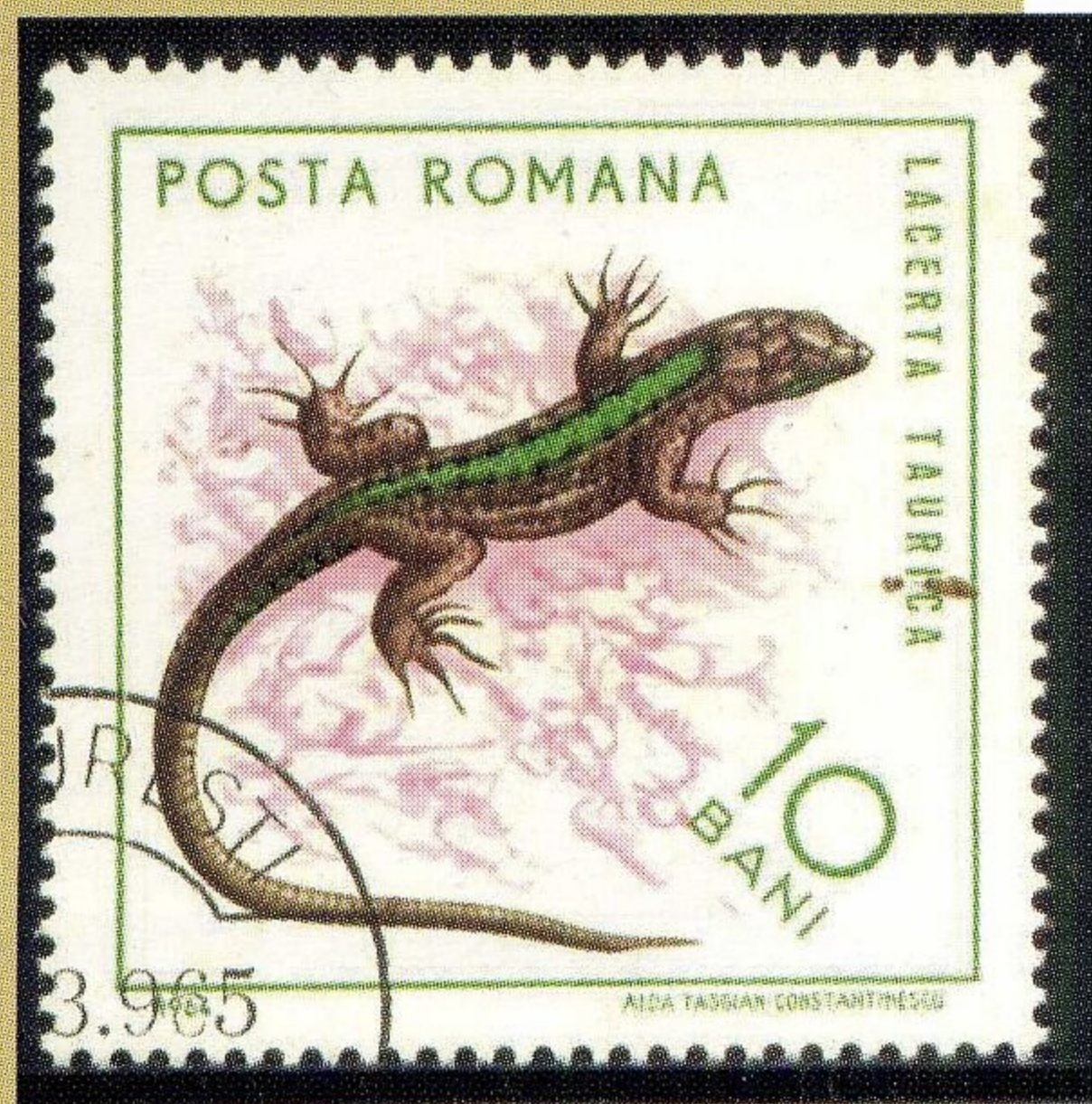


Fig. 7 Modern lizard



Fig. 9 Triceratops



Fig. 11 Fossil skull of Stegosaurus



Fig. 13 Scientists at work

of animals? No. During their existence, which lasted approximately 160 million years (from 230 million to 65 million years ago), they evolved into a great variety of flesh- and plant-eating animals. Scientists classify them into two distinct groups: 'bird-hips' or Ornithischia, which have bird-like pelvises, and 'lizard-hips' or Saurischia, whose pelvises were similar to those of lizards. You can now arrange your dinosaur stamps biologically into two groups representing 'bird-hips' and 'lizard-hips' respectively. However, you will not be able to discern between the two kinds by simply looking at the stamps - you will have to consult a book like *Dinosaurs A to Z* by Don Lessem (ISBN 0-439-16591-1), or to look under 'dinodata' on the Internet, where you will find many links. The bird-hipped dinosaurs (Ornithischia) on the stamps shown here are: Triceratops, Stegosaurus, Iguanodon (Fig. 6) and Lufangosaurus. Tyrannosaurus, Brontosaurus, Oviraptor, Plateosaurus, Deinonychus (Fig. 23). The Brachiosaurus belongs to the lizard-hipped group of dinosaurs (Saurischia).

Did all these dinosaurs live at the same time? No, they did not. For example, the Stegosaurus (Fig. 8) and the Triceratops (Fig. 9) would never have met, but the Tyrannosaurus and the Triceratops, shown fighting on the stamp in Figure 10, lived during the same period. The Stegosaurus lived during the Jurassic Period, and the Tyrannosaurus and Triceratops millions of years later during the Cretaceous Period. You might prefer to arrange your stamps chronologically, i.e. according to time periods during which the dinosaurs depicted on them roamed the Earth. This could be done by recreating the fauna assemblages for the three Mesozoic periods, named the Triassic, Jurassic and Cretaceous Periods, to show how the dinosaurs changed over time, and what kinds of dinosaurs lived at the same time, thus creating your own Triassic, Jurassic or Cretaceous Park. This will have to be done on a worldwide scale. But now you have to find the answer to the next question:

Did all the dinosaurs live together in the same region? Let us first look at how and where dinosaur bones have been excavated. Petrified remains are found in rock layers



Fig. 8 Stegosaurus

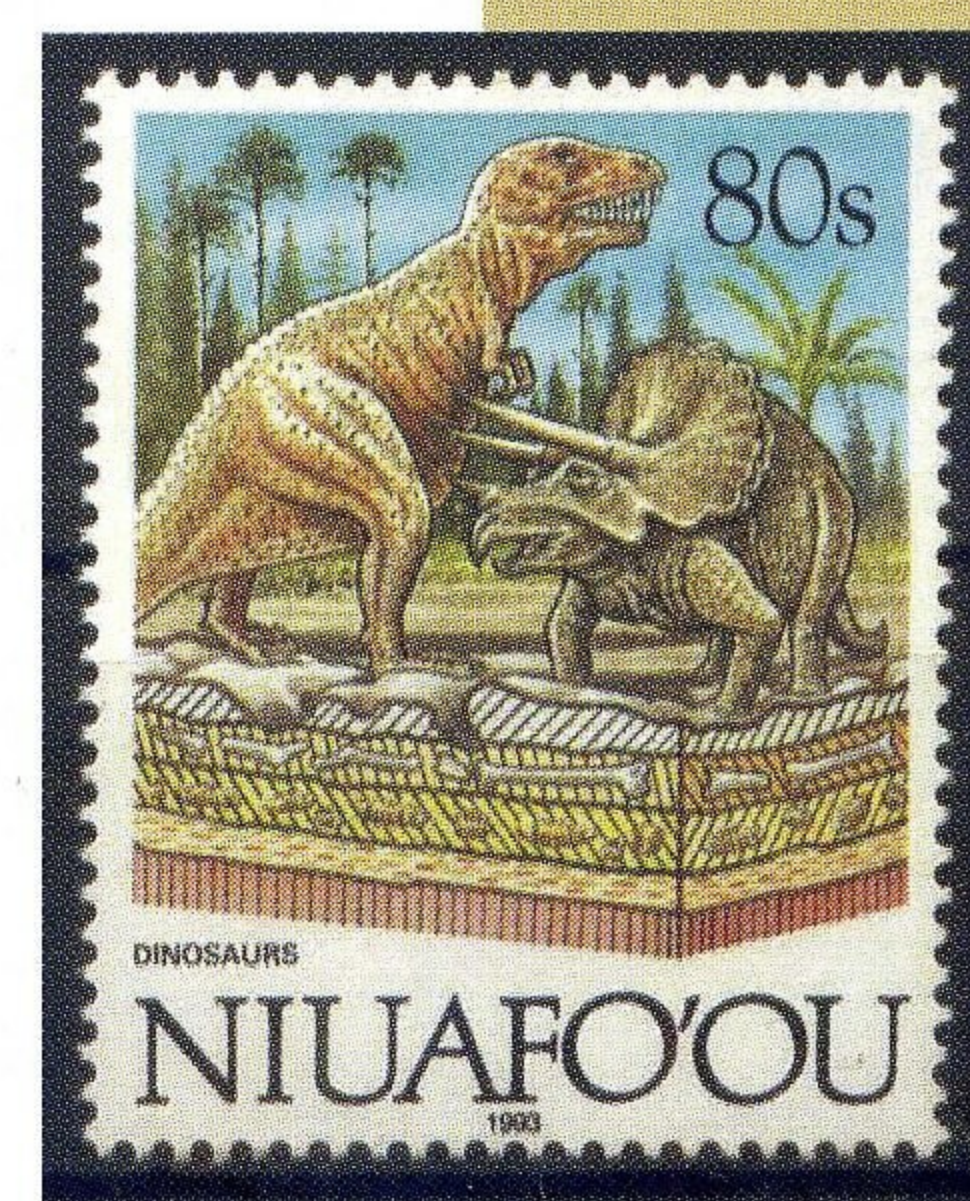


Fig. 10 Tyrannosaurus and Triceratops fighting



Fig. 12 Complete skeleton of Brachiosaurus in the Berlin Museum



Fig 13: Scientists at work



Fig. 15: Miniature sheet showing four South African fossil reptiles



Fig. 17: Plesiosaurus, a marine reptile

where they have been buried by sand and mud that eventually turned into stone (Fig. 11). Complete skeletons (Fig. 12) are scarce and scientists have to rely on single bones for the reconstruction of a skeleton (Fig. 13). The now extinct dinosaurs must have moved around in the areas where the bones occur. That makes it possible for us to tell where they lived and with which other members of the dinosaur family they shared their territories. Use the information that you find to arrange your stamp collection according to the geographical regions where the different dinosaurs once existed (Fig. 14). You will discover, for example, that the same types of dinosaurs lived in Europe, North America, India, Antarctica, China and South Africa. Since dinosaurs lived on land, this tells us that millions of years ago all these continents, now separated by oceans, must have been linked together. South Africa's *Lystrosaurus* (Fig. 15, top right-hand stamp) has, for example, also been found in other parts of Africa, India, Antarctica, Russia and China. From this it is clear that these now separate regions were once part of a super-continent, which scientists have named Gondwanaland.

The final question that needs to be answered is:

Were all pre-historic extinct reptiles dinosaurs? Here the answer is once again 'no'. Dinosaurs could not fly, nor did they live in the sea. Flying reptiles like the *Sordes* (Fig. 16) and 'sea monsters', such as the *Plesiosaurus* (Fig. 17), are therefore not dinosaurs, but belong to other groups of reptiles. Dinosaurs lived on land only - never in the sea or in the air!

This should be enough learning for today. Let us now look at some stamps: In 1958, China became the first country in the world to depict a dinosaur, the *Lufangosaurus*, on a stamp (Fig.18). The first sets depicting extinct animals, including various dinosaurs, were issued by Poland (Fig.19) and San Marino (Fig. 20) in 1965. During the more than 40 years that have since passed, several countries, including South Africa (see Fig. 15), have issued almost 5000 stamps depicting dinosaurs as skeletons or as reconstructed animals, or containing examples of their footprints (Fig. 21). Around 300 stamps have been

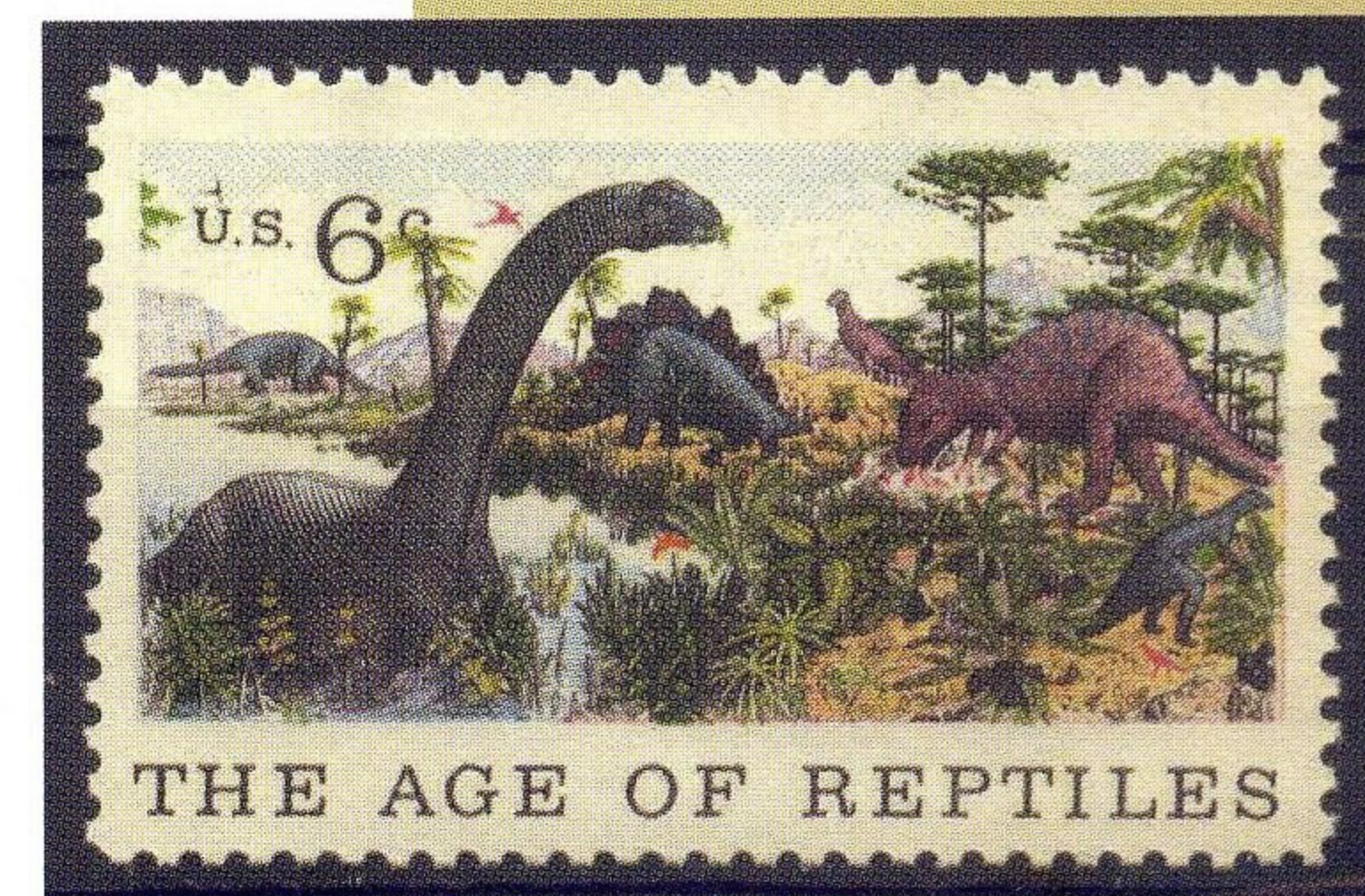


Fig. 14: Dinosaurs that lived in America



Fig. 16: Sordes, a flying reptile



Fig. 18: Lufangosaurus



Fig. 19: Tyrannosaurus



Fig. 21: Plateosaurus tracks

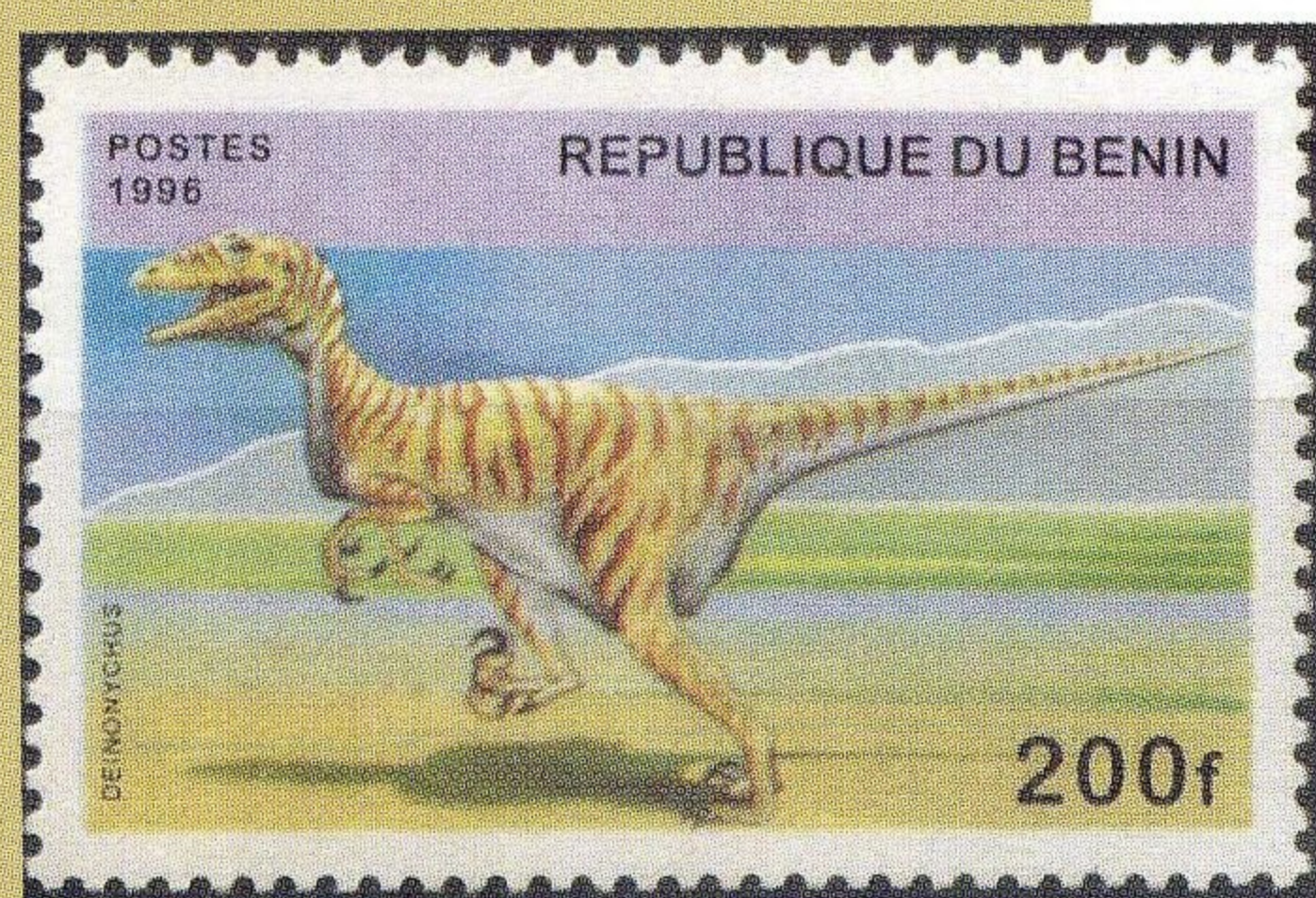


Fig. 23: Colouring of Deinonychus

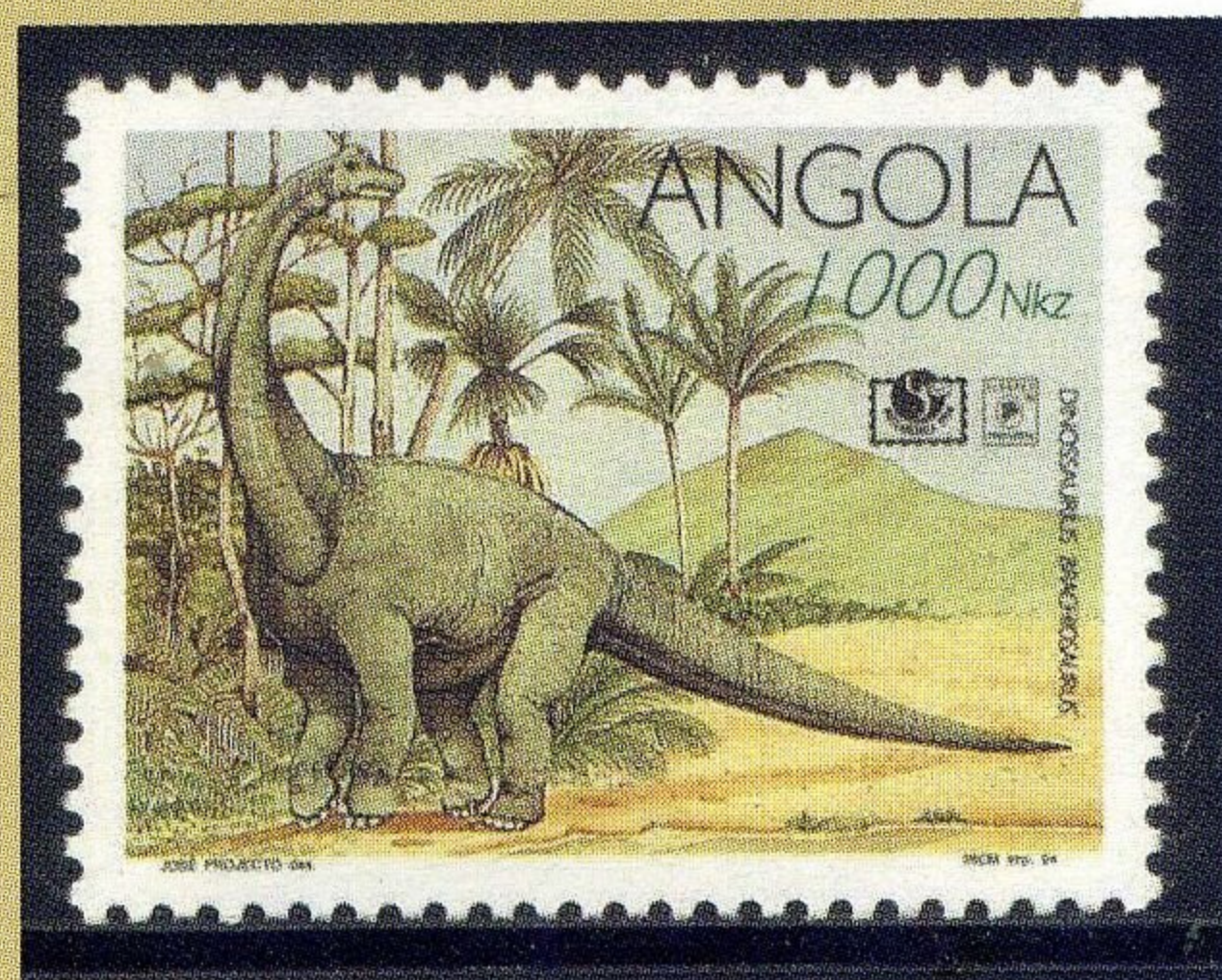


Fig. 25: Brachiosaurus on dry land

dedicated to the most famous dinosaur, Tyrannosaurus rex (abbreviated T. rex) which lived in North America during the Cretaceous Period. T. rex was over 14 m long, had a metre-long skull and teeth that measured 15 cm (Fig. 22). This creature was probably the most fearsome killer of all time. Looking at your stamps (Fig. 23) you might ask: If we have only bones, how do the stamp artists know what the colouring of the dinosaurs was? The truth is that they do not know. In their work, they are guided by the colours of reptiles that live today. Stamp designs also show us how scientists' ideas regarding the way dinosaurs lived have changed over time. Previously it was thought that Brachiosaurus could only support its enormous weight (four times that of an elephant) by living half submerged in water. (Figures 14 and 24). More recent illustrations show it living on dry land and feeding, like a giraffe, from the top branches of large Late Jurassic trees (Fig. 25). In earlier stamps, T. rex was depicted as a three-legged, clumsy 'lone wolf', using its tail for support (Figures 20 and 23). More recent stamps show these dinosaurs as agile predators, hunting in packs or prides and raising their tails to balance their bodies (Fig. 26).

Why are there no dinosaurs around today? While the dinosaurs lived on Earth, different kinds were continuously becoming extinct (dying out). When one kind disappeared, other types took their place.

Why were all the dinosaurs erased so suddenly from the face of the Earth at the end of the Cretaceous period, 65 million years ago? This remains a mystery. Temperature changes, epidemics, egg-eating mammals, a meteor impact, and the disappearance of the plants on which the dinosaurs fed have all been suggested as possible answers to this question. However, no satisfactory explanation has yet been found for the sudden and complete extinction of the most spectacular animal group that ever walked the Earth. Birds are the closest living relatives of the dinosaurs. Bird stamps form another great subject for a delightful and educational thematic stamp collection. If you do not particularly like dinosaurs, you might enjoy making bird stamps the focus of your collection!



Fig. 20: Tyrannosaurus



Fig. 22: Tyrannosaurus



Fig. 24: Brachiosaurus submerged in water



Fig. 26: Tyrannosaurus hunting in a pack or pride