

Ammonites

from Mythology & Folklore to Geological Relevance

By

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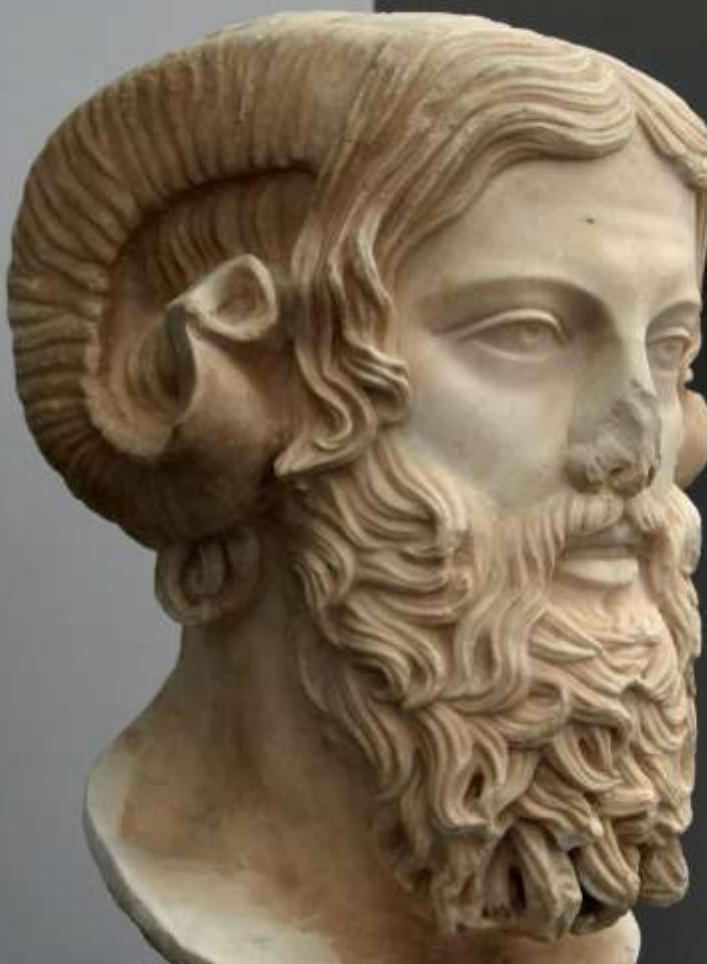


Bath Geological Society Lecture

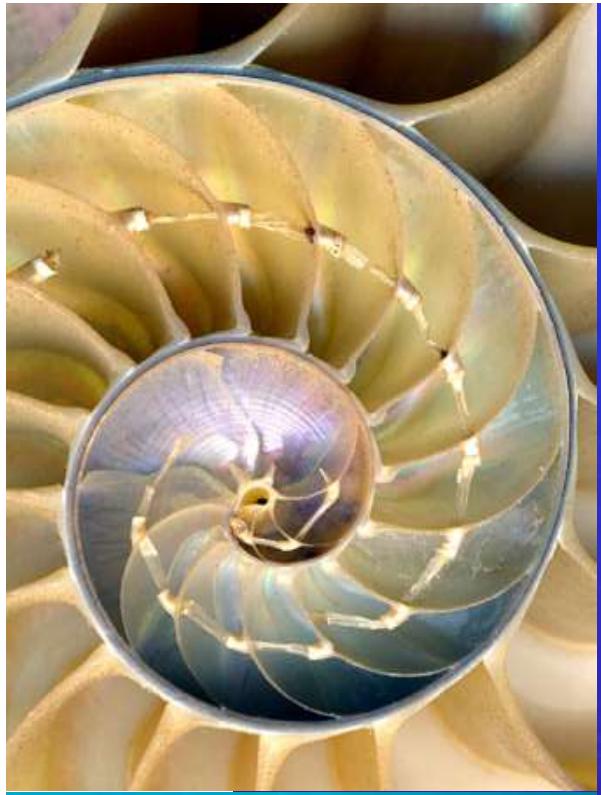
Ammonites

- Mythology/Folklore
- Origins
- Living Organisms
- Evolution
- Extinction
- Fossilization & Preservation
- Geological Relevance

Folklore





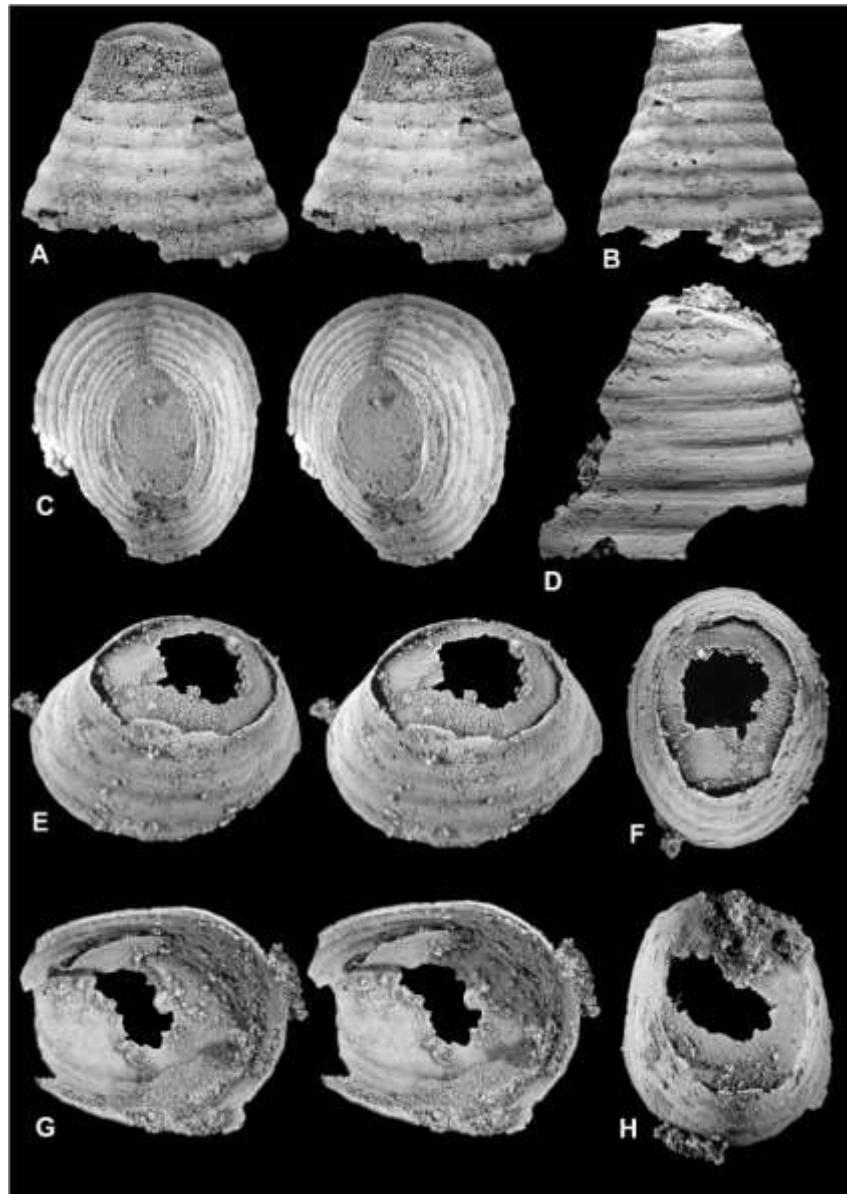


The appearance of Cephalopod Molluscs

Lower Cambrian

Tannuella

Thin shells – shallow depth



Ordovician Orthocone Nautiloid



5.0 mm

Orthocones



Devonian Orthocones & Goniatite

Why go spiral?



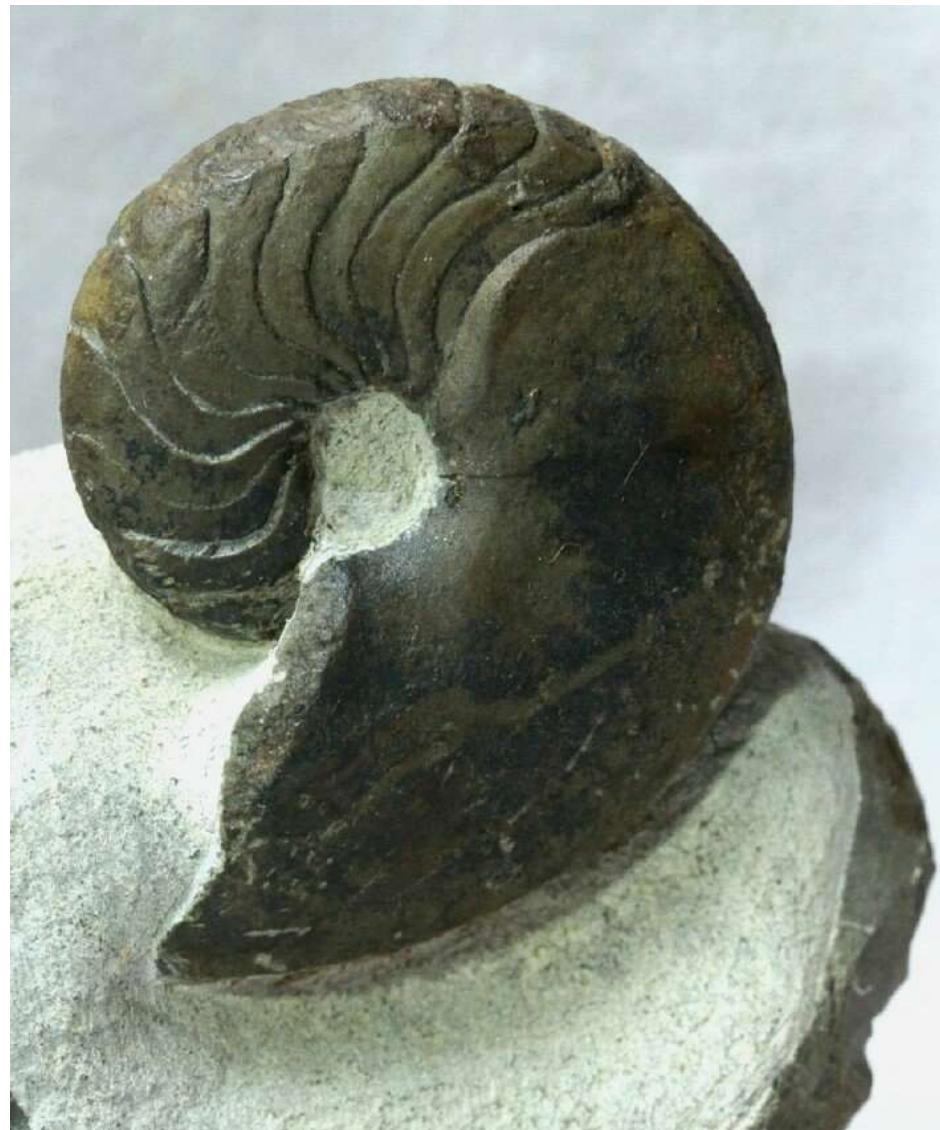
Less shell required

Stability – Centre of Mass near centre of buoyancy

More manoeuvrable



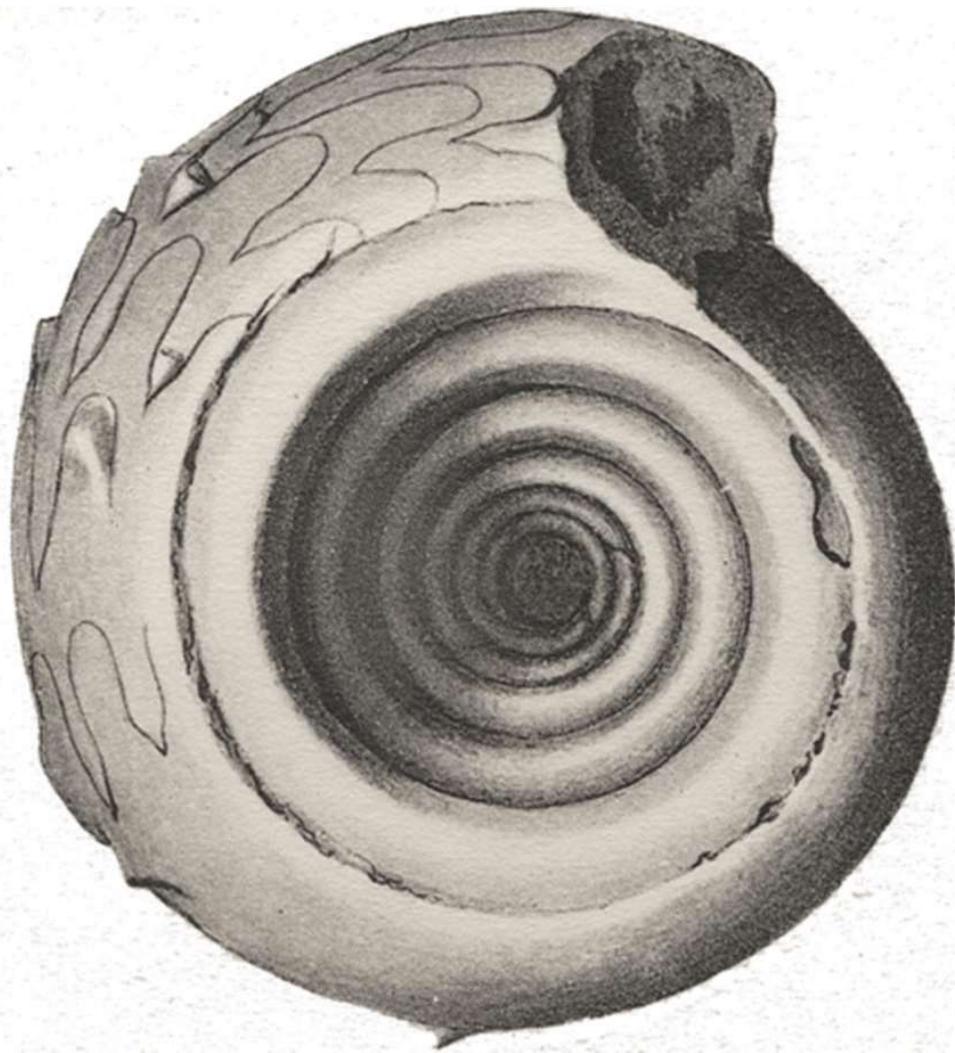
Devonian Ammonoids



Devonian-Carboniferous Goniatites



Permian Ammonoids

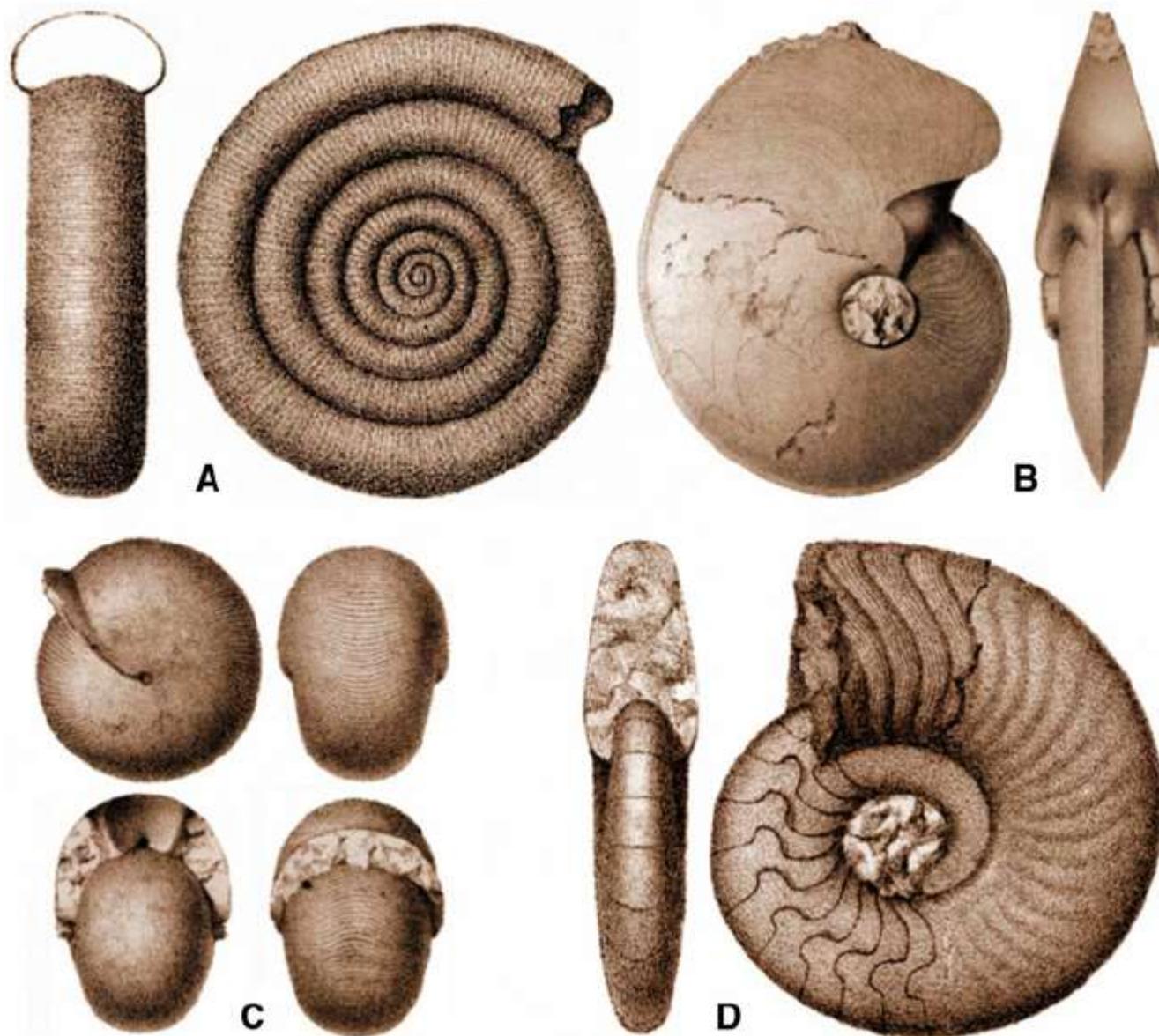


Metalegoceras

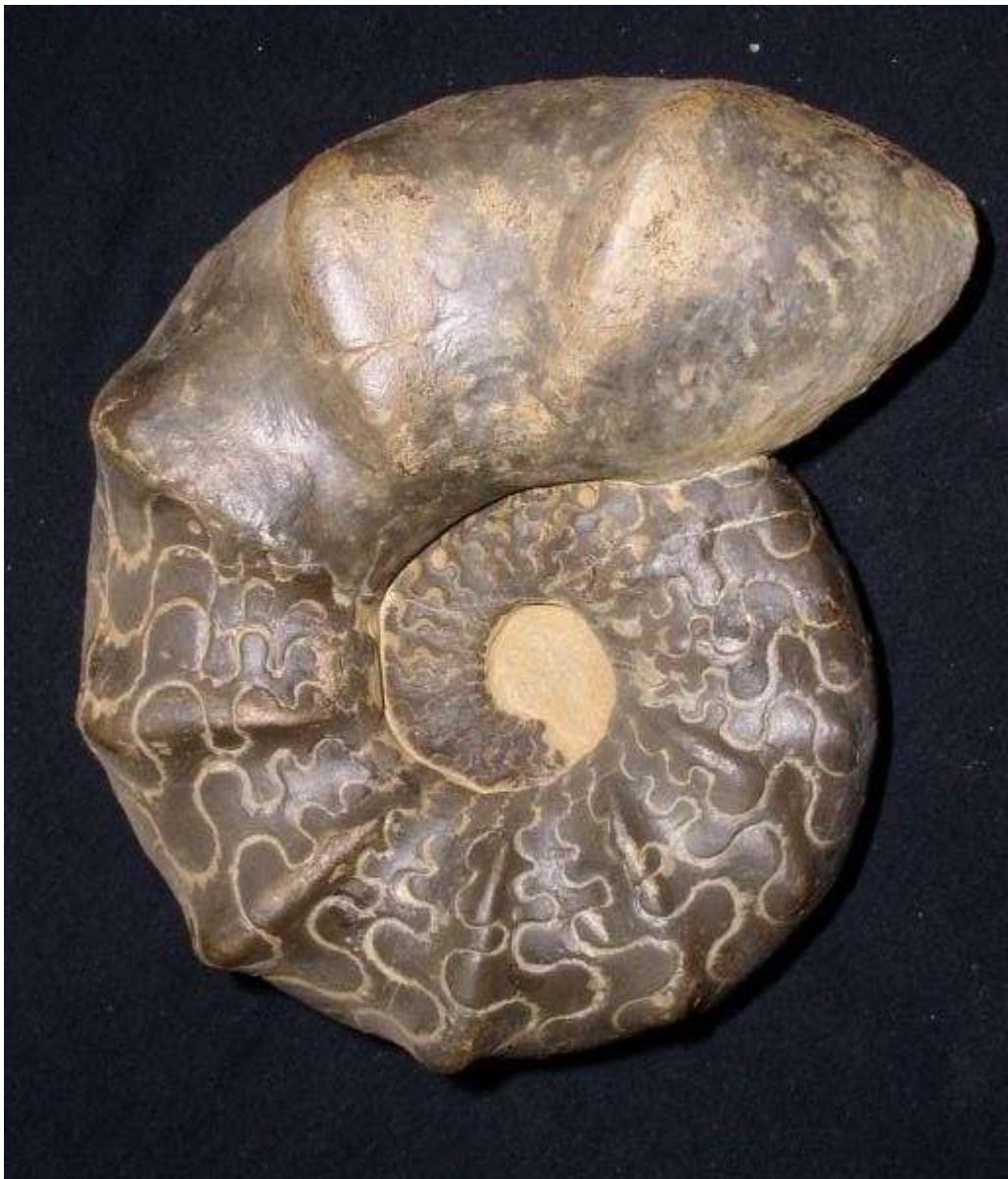


Uraloceras

Range of Palaeozoic ammonoid morphology



Triassic Ammonoids



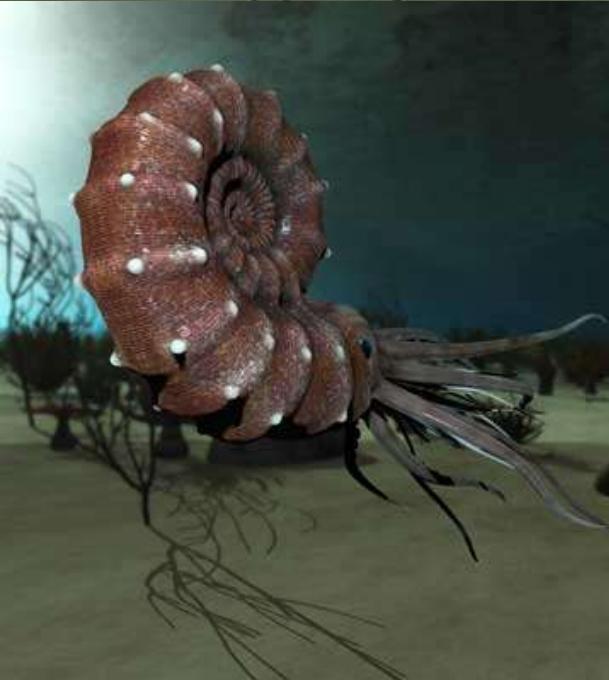
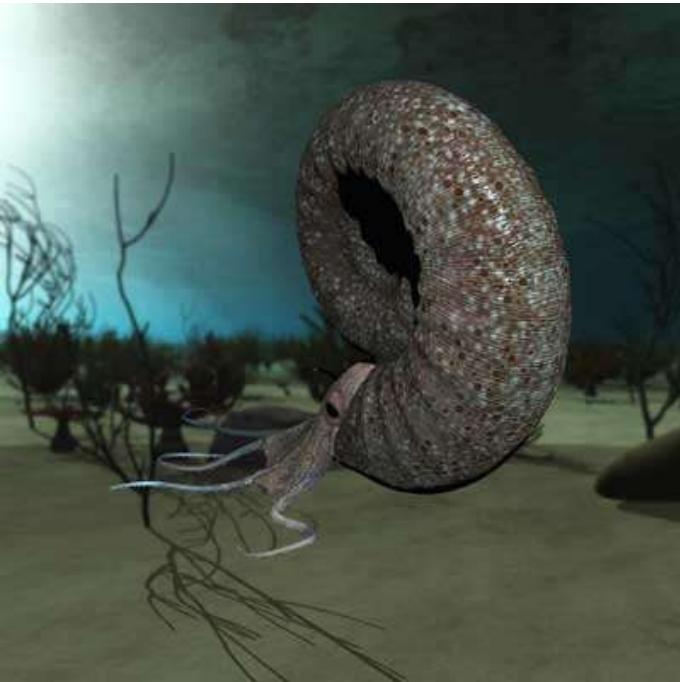
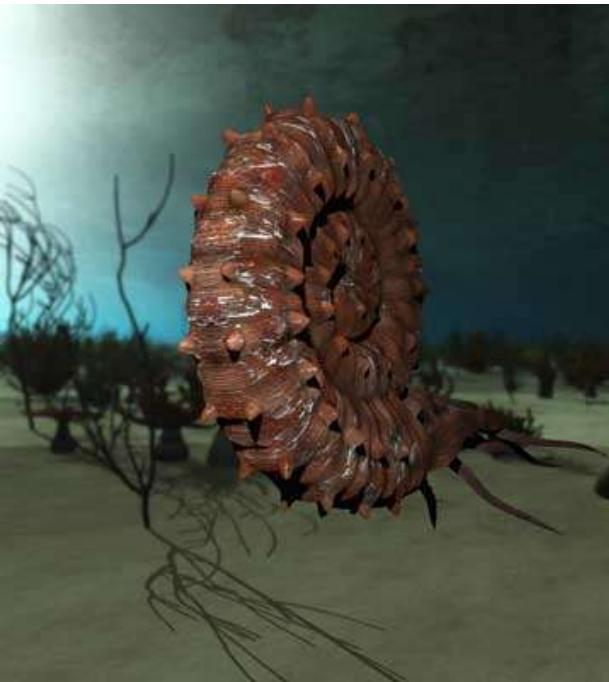
Survivors into the Jurassic Period

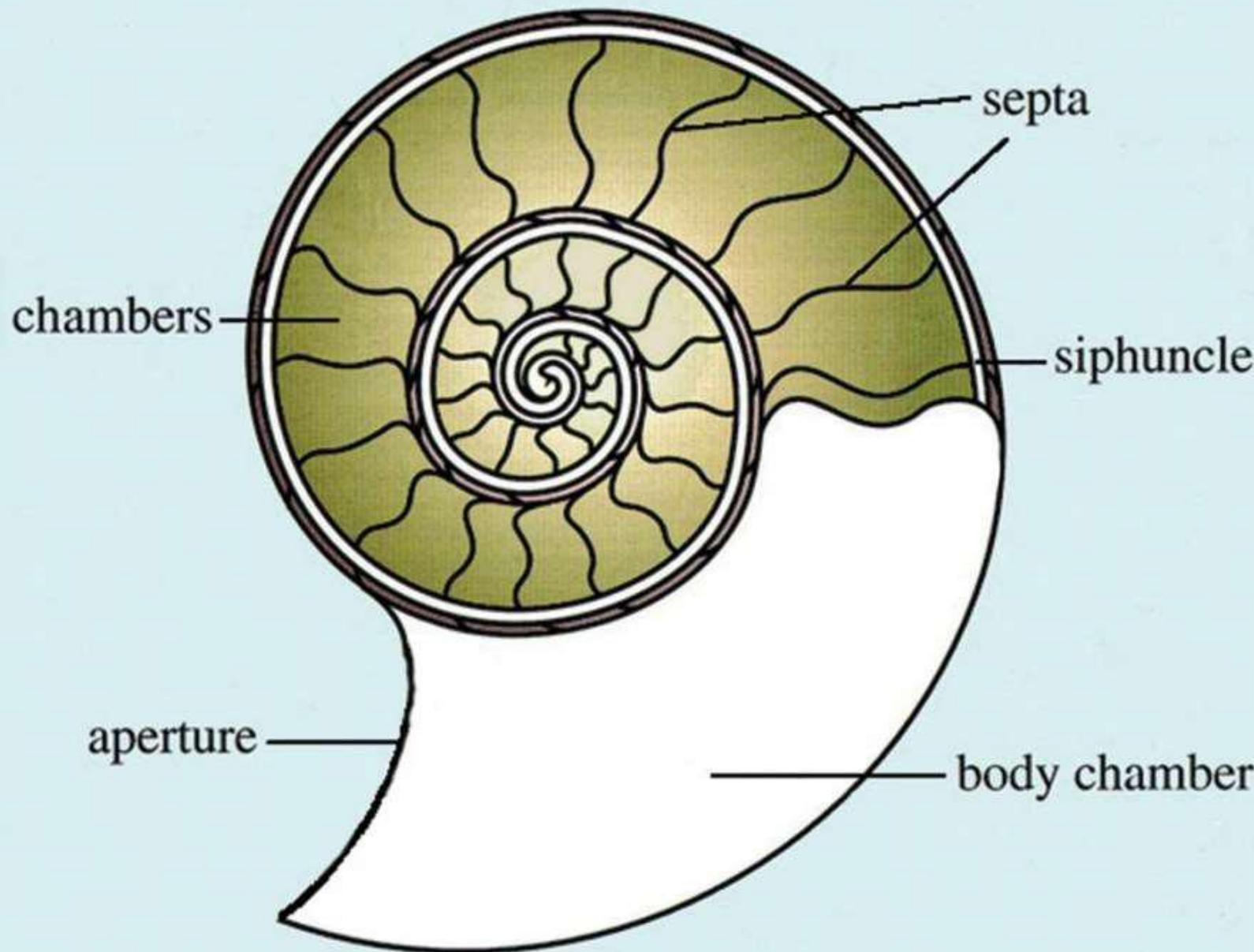


Phylloceras

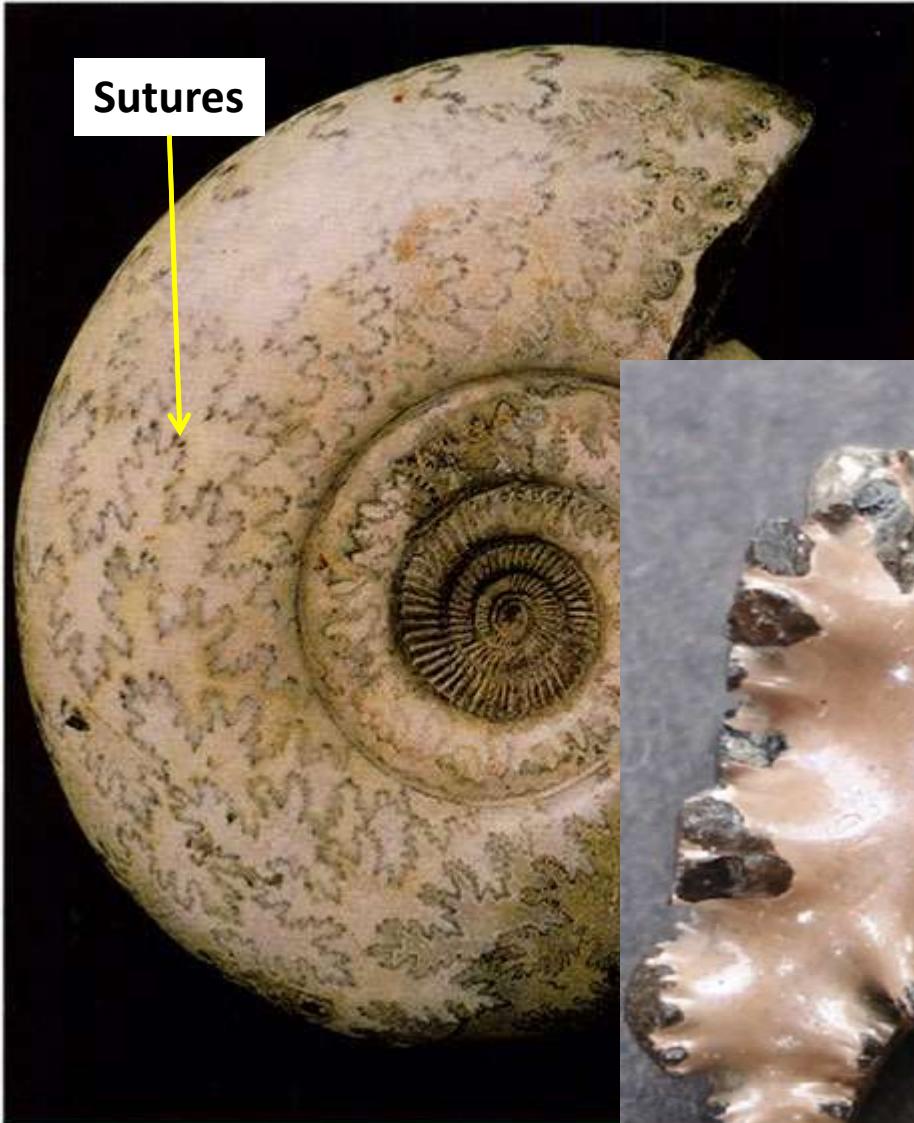


Lytoceras





Shell Structure



Ammonites' life cycle



Differentiation between the sexes (dimorphism) *Lobokosmoceras* sp



Microconch (m)

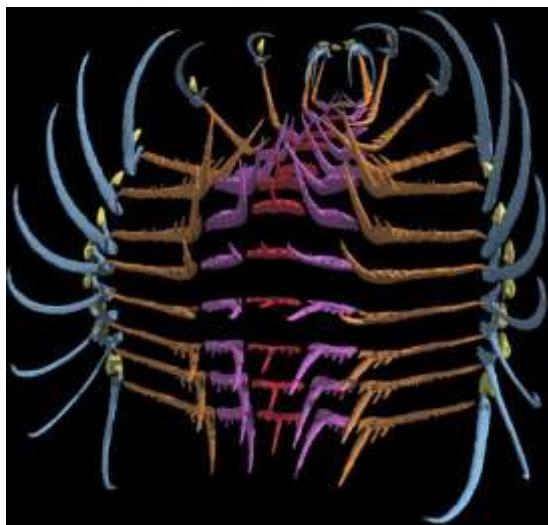


Macroconch (M)

Adult aperture modification



Feeding



Living Organisms

N° MNHN A52993

Anaptichus (Corneaptichus)
Toarcien
Boil (Wurtemberg)

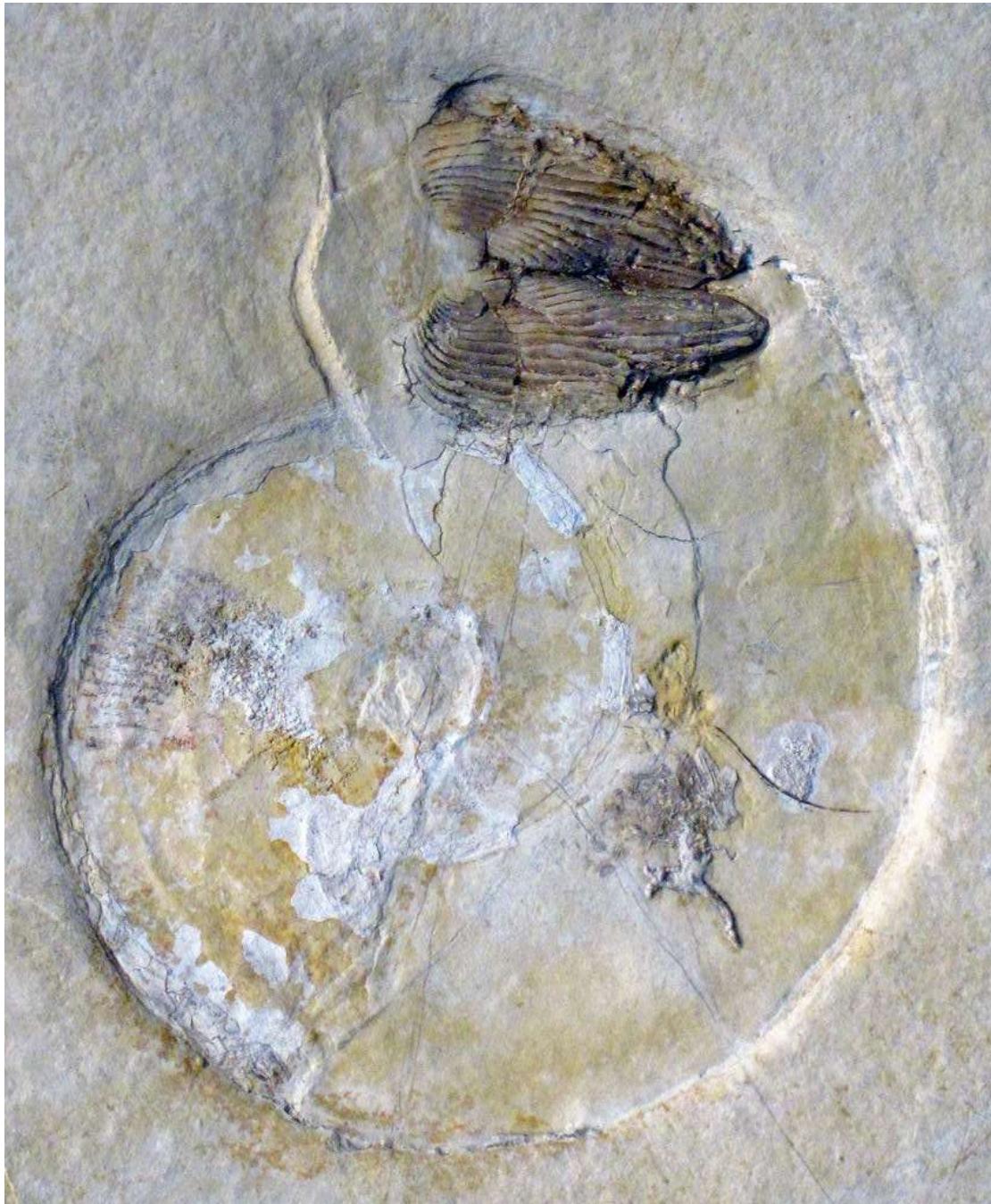
aptychus très écrasé visible sur la trace de la dernière loge d'une ammonite.



1928-6

Epaspidoceras lusitanicum
Choffat
Rauracien (Charente-Maritime)

échantillon montrant l'aptychus en place dans la coquille.
N° MNHN A52991



Jaw apparatus

A



B



C



D



Eat....or, be eaten



50 mm



Pterodiscus moultoni
with ammonite rostrum from neck
of cephalopod

Size Range



Parapuzosia seppenradensis

Geographical Range

France

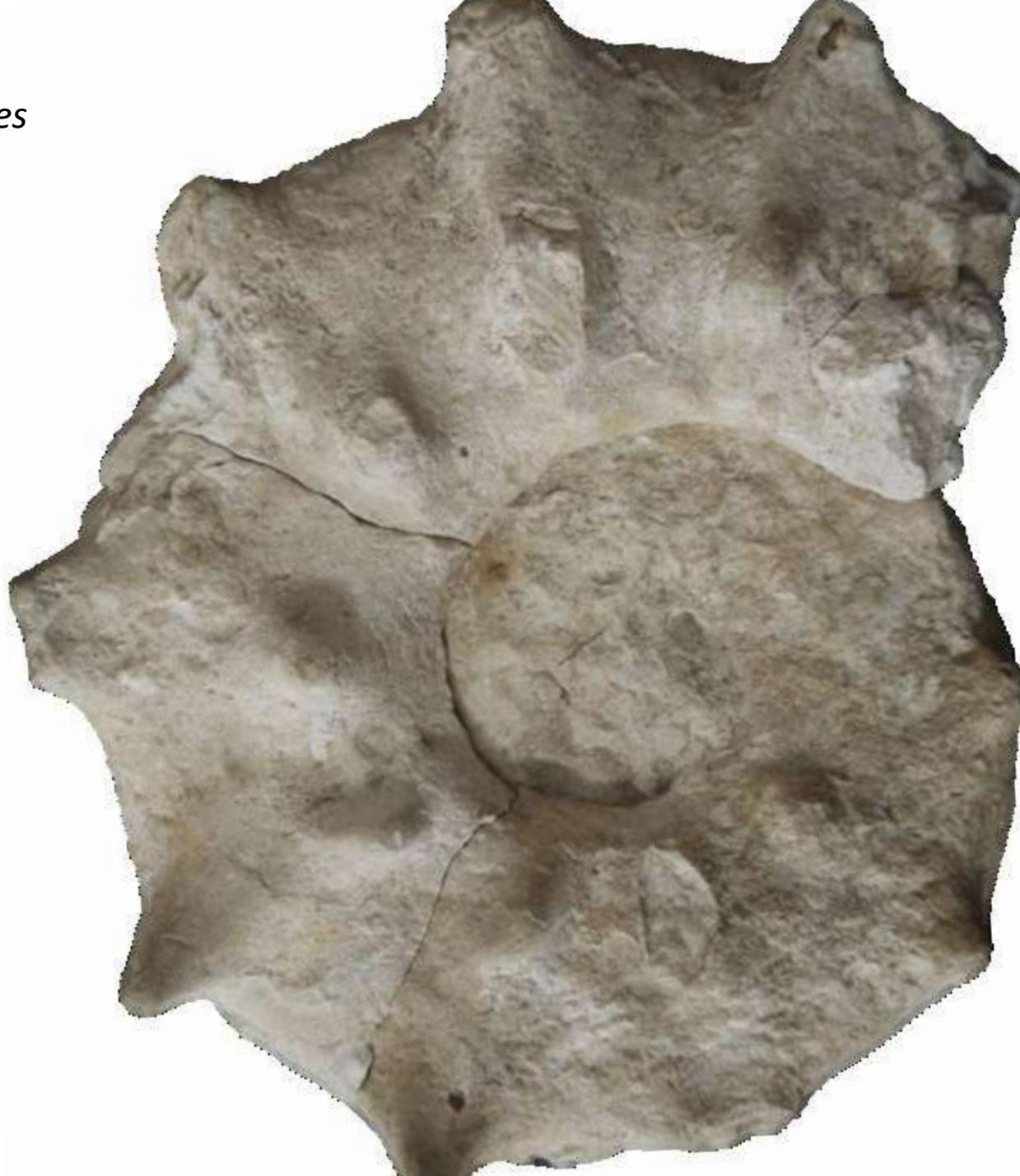


Reinekeia aniceps

India



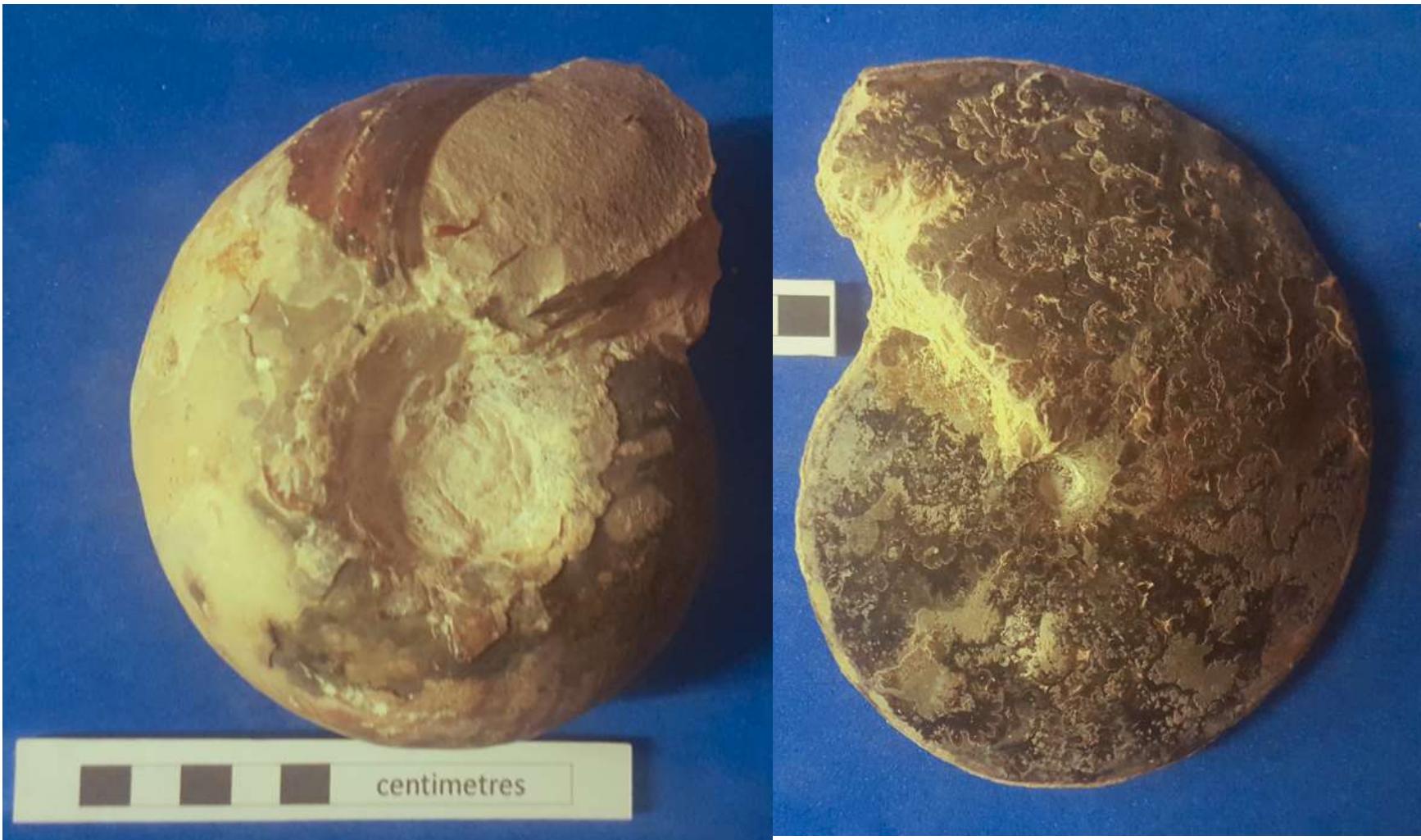
Mamites nodosoides



Tragodesmoceras – first record on East side of Atlantic



Fagesia peroni and *Choffaticeras segne*



Lower Cretaceous, Agadir



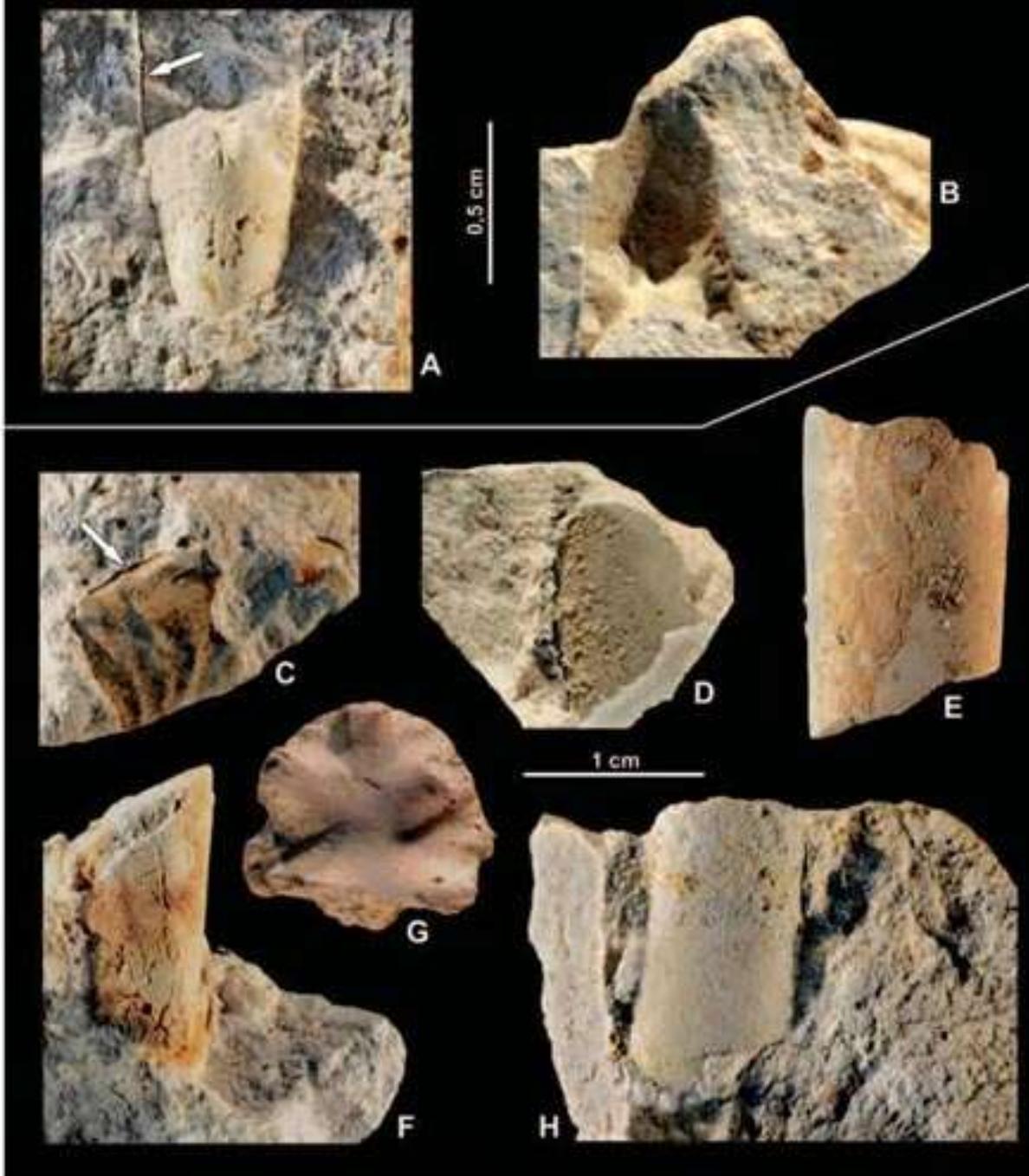
Late Cretaceous Heteromorphs



Extinction

65 million years ago

End Cretaceous

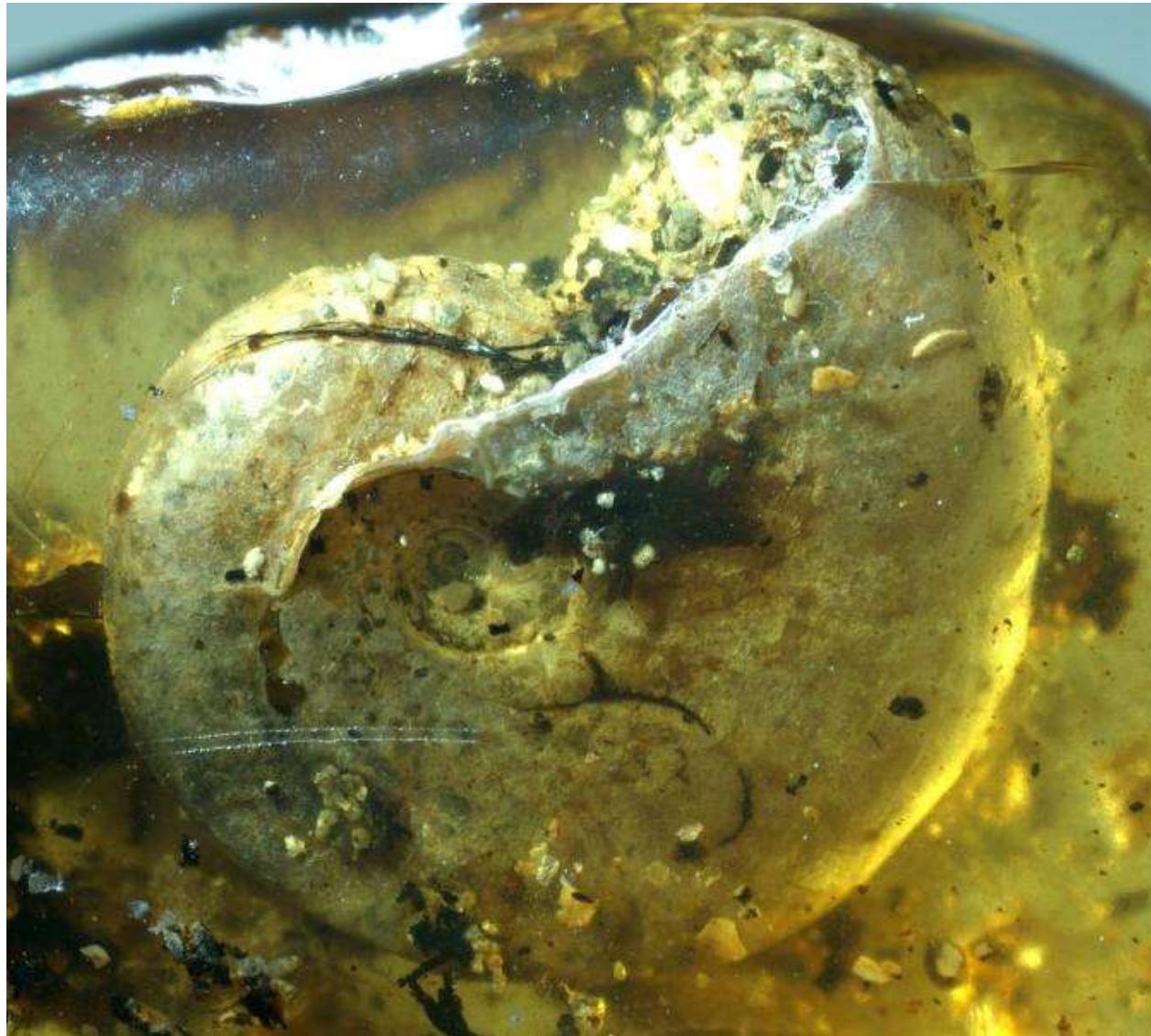


Fossilisation & Preservation









An amber-encased ammonite juvenile belongs to the subgenus *Puzosia* (*Bhimaites*), in 99-million-year-old amber.

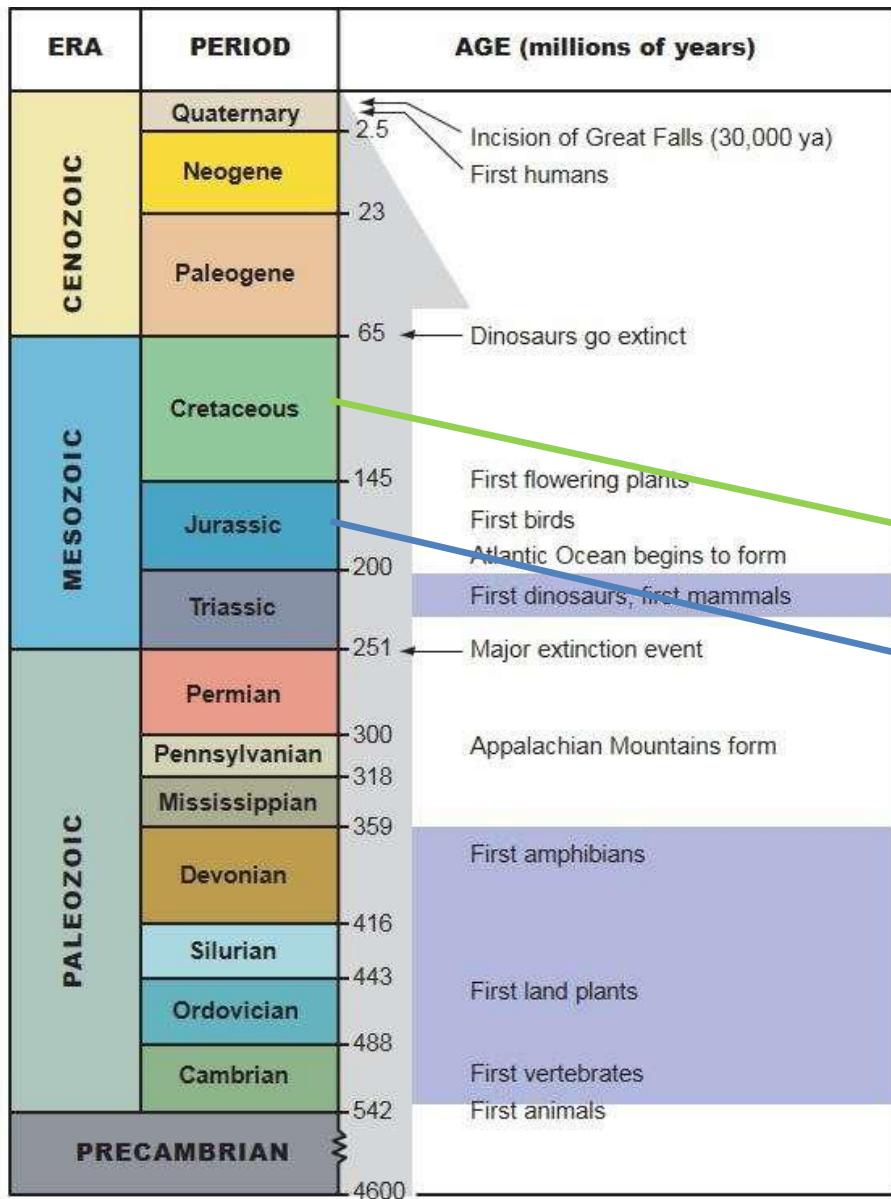




Preparation



Where to find Ammonites



Geologic time scale with major geologic and evolutionary events

Dorset Coast - Lyme Regis



Yorkshire Coast – Whitby area



Ammonite depot







Ammonites in Stratigraphy



Friedrich Quenstedt (1809–89)



Albert Oppel (1831–65).



Aplanatum



Macdonelli



Raricostatoides



Densinodulus



SUBZONES

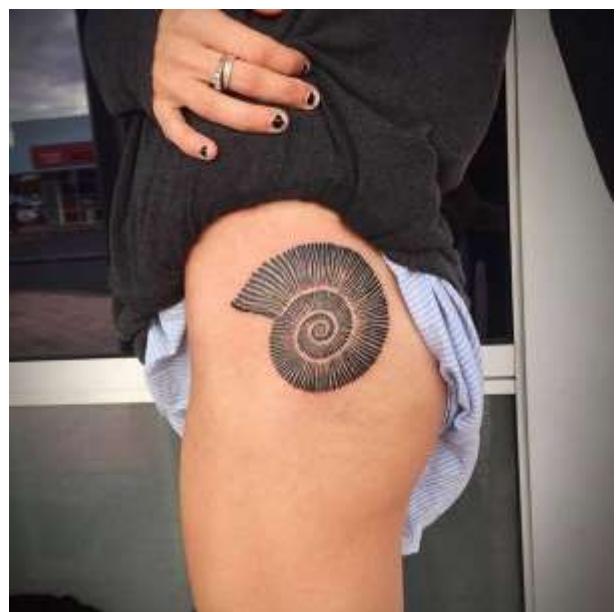
Ammonites make excellent guide fossils for stratigraphy because:

- they evolved rapidly - ammonite species have a short duration
- they are found in many types of marine sediments
- they are relatively common
- They are reasonably easy to identify
- they have a worldwide geographical distribution
- The rapidity of ammonite evolution is the single most important reason for their superiority over other fossils for correlation
- Such correlation can be on a worldwide scale













- Spines?
- Scale on size range - smallest ammonite slide