(heart urchin traces), *Palaeophycus* and *Planolites* (traces of worms, molluscs, ...). They occur as horizontal convex epireliefs at the interface between hard and loose layers. In the hardened layers proper traces are lacking. The very fine sediment of those hardened banks suggest they originated in a mud environment with slow sedimentation.

In the loose strata all ichnofossils, except one, are oriented vertically. The crab trace *Ophiomorpha* occurs frequently, which indicates a probable sandy littoral or shallow sublittoral deposit. *Tasselia ordamensis* is common in the lower part of the Merksem Sands, where it forms dense clusters.

Three ichnogenera are present which seem to be undescribed. One forms a continuous level at about 4 m below the top of the Merksem Sands, and consists of hollow tubes (± 10 cm long), broadening towards the top (0.5 to 1 cm in cross section). The upper surfaces of the tubes seem to be slightly eroded. No body fossils were encountered near these tubes, so their originator is unknown.

The loose sandy layers seem to have been formed during a sudden acceleration of the sedimentation. Many of the vertical ichnofossils present in them should be considered as fugichnia. The complete sequence of sandy and clayey layers must have been deposited in a relatively short time-interval, because otherwise bioturbation would have destroyed fragile structures such as *Subphyllochorda* and *Cardioichnus*.

III. ECHINODERMATA AND MOLLUSCA

Paleoecological studies on Cretaceous oysters and the limitations of oyster systematics

by

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Recent oysters from the tidal and subtidal zones have been shown to have morphologically very different ecomorphs, induced by sunlight and by the type of attachment area. The existence of such polymorphy in genera belonging to the family Ostreidae makes paleontological studies of many genera (*Crassostrea*, *Lopha*, *Ostrea*, *Saccostrea* ...) partly pointless; indeed, a reasonable 'species-concept' cannot be applied. Yet, « oyster-types » which obviously sometimes only represent ecomorphs can be recognised in many Cretaceous localities. Oysters occur frequently there in large numbers per 'species' and in a wide diversity of species. An analysis of the oyster faunas in well known Late Cretaceous localities in Europe indicates a number of different faunal associations with clear paleoecological implications. The following faunas can be differentiated :

1. dominance of *Rastellum* species, and numerous *Exogyra*'s, but no or few *Pycnodonte*'s : very shallow, near-shore; if *Pycnodonte*'s are absent probably intertidal (example : Ifö, Sweden),
2. dominance of *Pycnodonte* (*Phygraea*) species, no *Exogyra*'s : relatively deep/cold seas (example : the Northern European White Chalks of the Schreibkreide-type, but also Meudon in the Paris Basin),
3. *Pycnodonte* (*Phygraea*) is relatively rare, but *Pycnodonte* (*Pycnodonte*) occurs frequently, along with *Exogyra*'s and large sized *Rastellum* sp. (example : White Chalks from southern near-Tethys deposits, such as in the Charente or in Crimea, S. USSR).

Paleoecological differentiation in this case also helps paleobiogeography.

Why are regular Echinoids rare?

by

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The ratio of regular to irregular echinoid species and specimens can vary strongly, according to environmental factors. In the actual biosphere, 53 % of all living species are regular.

The abundance of fossil regular echinoids is much lower : only 20 % of the known species of Tertiary echinoids are regular. This rareness is even more pronounced when expressed in number of specimens. Of all species of echinoids of Late Cretaceous age, present in the K.B.I.N. collections, 33 % are regular. Yet, these represent a mere 6.5 % of the specimens.

It is improbable that regular echinoids were less common in the geologic past : on the contrary, the younger the deposits, the lower the abundance of these fossils. There is no reason to presume that this decreasing trend has suddenly been reversed, shortly before present times.

It is equally improbable that actual irregular echinoid faunas are inadequately or incompletely known. This has been demonstrated by P. M. KIER.

Only differences in fossilisation potential can explain why fossil regular echinoids are so rare. This low fossilisation potential is due to structural and etho-ecological factors.

After death many tests of regular echinoids are considerably weakened by the loss of their apical plates. In most irregular echinoids the plates are firmly held in place by interlocking stereom processes. This happens in a much lesser degree with most orders of regular echinoids. These differences in the structure of the test, result in a relative structural weakness of most regular echinoids, which are thus more liable to be damaged or destroyed during transport over the sea-bottom.

Regular echinoids are more vulnerable to damage and destruction than irregular ones because of their mode of life : they live e.g. on weeds, reefs or rocks, all erosive environments. Wave action will destroy most of the tests in such an environment, ro wash them on the beach soon after death. Moreover, the animals are preyed on by fishes, squids and sea-gulls.

Irregular echinoids generally have an infaunal mode of life, burrowing in the sediment. They live in depositional environment. Dead irregular echinoids are often still covered by sediment. The carcasses are thus protected from the destructive action of waves, currents and scavengers.

These differences in structure and mode of life explain the low fossilisation potential of regular echinoids, which causes them to be relatively rare fossils. Many of them, far more than in irregular echinoids, are destroyed before fossilisation can start to take place.

IV. VERTEBRATA

The Crocodiles of the continental Montian at Hainin (Prov. Hainaut, Belgium) and their faunistic environment

by

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The continental vertebrate fauna of Hainin has been discovered in 1970 after the drilling of two boreholes, made to core the marine and the continental Montian, by the geological department of the « Faculté Polytechnique » of Mons.

GODFRIAUX and ROBASZYNSKI (1974) described from the continental levels two positive lacustrine sequences overlaid by a negative sequence. The major part of the herpetological fauna, and especially the crocodilian material were discovered within the negative sequence.

Crocodiles have very porous bones and their fossilisation is often poor. In the Hainin material they are badly preserved. Although most of the fragments do not provide any taxonomical information, some of them, however, give valuable indications about the represented forms.

Characteristically for the Crocodylidae is an incomplete left jugal with strongly sculptured external surface and a postorbital process attached on the internal face of the bone. On the base of the symphyseal part of a left dentary, it is possible to identify more precisely the Tertiary alligator *Allognatosuchus*. Its presence is confirmed definitely by globulous teeth well adapted for crushing hard food. A second type of teeth strongly suggests the presence of the genus *Diplocynodon*.