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### Blasensand

Blasensand is widely met and should thus be more thoroughly discussed.

Blasensand is formed when sedimentation of dried out sand is suddenly flooded from above: Reineck (1956).

Blasensand as a phenomenon has been known already for a long time: Kindle (1936), Emery (1945) and Van Stratten (1954) all mention it. Reineck (1956) looked into the build-up of Blasensand also by laboratory investigations and postulated that there would be air bubble holes which do not build up in the sediment. He excluded fossil preservation. Here a further explanatory investigation should be undertaken. Sand grains are not spherical, geometrical bodies; they have irregularly arranged, more or less smooth facets. This also applies to well rolled quartz grains, as they are present on Mellum. They are built up by waves, flow or wind, certainly to stratified sediment, but the most dense packing of individual grains is by no means reached thereby.

After the drying out of the sand, if a flooding occurs due to rain or high water level, then a part of the water is sucked into the inside by capillary action, flat surfaces of the sand grains fall together by cohesion, and holes filled with interstitial air arise. This interstitial air cannot escape anymore. Through the cohesion occurrence, a stratification density is reached around the holes which would not be achieved by mechanical means (table 11. fig. 40-41). The porosity also reduces and the air remains trapped.

Blasensand as such does not lead to a change of volume of the sediment; not until loading (stressing?) does the structure break up. However, in contrast to the original sediment, a volume loss arises thereby.

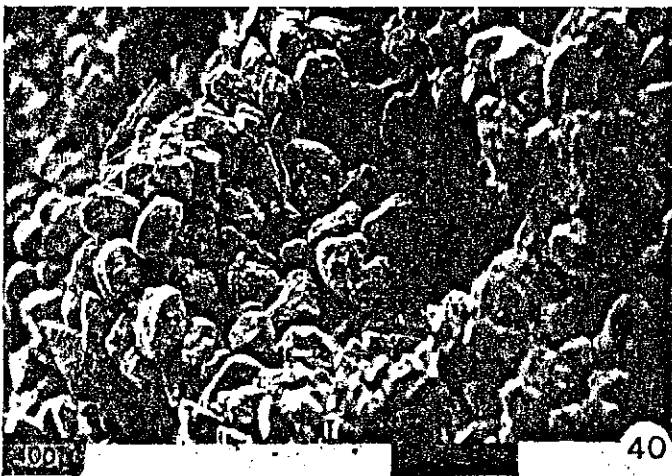
In order to know approximately the value of this variation in defined sediment, shore sands each of the same layer type, with and without Blasensand formation were set out in the laboratory with equal and defined shock loadings. By this means sediment without Blasensand experienced 7 -10% volume loss, whereas Blasensand lost 10 -20% of its total volume.

These amounts lie within about the same values which Harris (1974) ascertained for the settlement of Blasensand.

In fossils a certain lack of definition of the sediment structure concerned would certainly not have sufficed for a knowledge of the bathmetrically important phenomenon Blasensand, moreover Gammariden can create similar false grains (grain disguises??). However, in sediments suspected of Blasensand the density of stratification and its form could possibly permit a response even in fossils.

On the flat surfaces of North Mellum, but also in the immediate surf area, Blasensand is visibly more resistant to wave action than was supposed by Reineck (1956). In moderate northwest winds, Blasensand was met with, during and after the influence of surf in the upper beach area.

Blasensand makes its appearance in the investigation area on the high surface, the transition zone and in the middle and high parts of the wet beach. In the drainage areas of the neighbouring mudflat channels of the High Way (or Ridge Way), Blasensand makes its appearance in spite of twice a day flooding. (Wunderlich 1969).



Tafel 11.

- Fig. 40. Blasensandvakuole. — Das Zusammenklappen der Quarzkornflächen durch Kohäsion führt zu geringerer Porosität; bei Auflast brechen die Vakuolen zusammen, das Porenvolumen wird geringer. — Mellum, Hochfläche hinter dem Nordstrand. — REM-Aufnahme.
- Fig. 41. Blasensand. — Zwischen den einzelnen Vakuolen ist das ursprünglich rippelgeschichtete Sediment nicht so dicht gepackt wie an den Vakuolen selbst. Mellum, Hochfläche hinter dem Nordstrand, gleiche Probe wie Fig. 40. — REM-Aufnahme.

### **Notice**

Please note that these translations were produced to assist the scientific staff of the FBA (Freshwater Biological Association) in their research. These translations were done by scientific staff with relevant language skills and not by professional translators.