# NEW PLANKTONIC DIATOMS FROM ABU QIR BAY, ALEXANDRIA, EGYPT

*By*

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(with 4 plates and 2 maps)

SUMMARY

During the general survey on the plankton composition of Egypt, three new species of diatoms have been recorded from Abu Qir Bay, on the eastern side of Alexandria. A detailed account of them is given in this paper. These are : *Trachyneis minulis* ; *Navicula simplicis* ; *Surirella delicatis*.

## INTRODUCTION AND SYNOPSIS

In continuation to the author's earlier contribution to the plankton of Egypt (c.f. *Salah* and *Tamás*, 1970; *Salah*, 1971), a number of peculiar diatoms have been found. Some of these have already been recorded (*Salah*, 1967; *Salah* and *Tamás*, 1968, *Salah*, 1969). Presumably, however, the remaining three are described below as new to science. These species are collected from Abu Qir Bay on the eastern side of Alexandria, and namely: *Trachyneis minutis; Navicula simplicis; Surirella delicatis.*

Briefly, the Bay receives, besides freshwater from the Nile, an additional brackish supply from Lake Edku (map.) which is connected with the Mediterranean by a certain natural opening. So, the fluctuations of the salinity are found around the lake-sea connection. The general characteristics of the area resembles more or less of the warm temperate region.

Around Abu Qir Bay, the shore yields all sorts of bottom organisms, in addition to the drifted sea-weeds in such immense quantities. On the average, the standing crop is comparatively rich and more productive on account of its eutrophication, with the *BACILLARIOPHYCEAE* as the dominant (*Salah*, 1963; *Léger*, 1972). Hendey also predicted in 1958, that a further thourough investigation of the African coast for diatoms, could certainly yield much richer and rather interesting diatomaceous forms.

As in the former series, the material was treated and mounted in a medium of high refractive index, according to *Salah* 1963 A. Strewn mounts were usually made, as single specimens were too difficult to prepare for microscopic examination. Photographs were produced for diatoms which gave sufficient contrast and a Zeiss photomicrographic apparatus being used. However, the magnification orders are in the range of (x 800-1000).

In general, these new diatoms are fairly well represented throughout Abu Qir Bay where tolerate a wide range of habitats. So, however, it appears probably to be classed altogether as euryhaline (c.f. *Petersên,* 1943) in their ecological requirements within the Halobion System proposed by *Kolbe* 1927.

## DESCRIPTION OF THE NEW SPECIES

**Trachyneis minutis, nov. spec.**

Frustulise facie connectivali visis rectangularis, marginibus rotundatis; valvae anguste lineari-ellipticae, epicibus late rotundatae, paene symmetricae; 55-70 µ longae, 13-15 µ latae; raphe rami undata rectis, filiformis subattingentibus, fissuris terminalibus flexis, poris contralibus approximatis ad alterum latus versis, ab apicibus distante subremostris; nodulis terminalibus spectantibus; area axiali angustissima fere obsoleta, dilatata fasciam latam usque ad marginem percurrentem formate; superficie structura primosa subtiliter alveoli, modice radiantes, serie punctorum parrorum circiter 14-16 in 10 µ ; in media parte valvae crasse punctatis in ordinibus quincouncilaiter dispositis, irregulariter intercalatis longitudinalis formantibus, neque ad polos versus paulum densiores positae ..... Hab. in aquis marinis ad. ABU QIR BAY. (pl. I, Figs. 1-6 & Pl. IV, Fig. 4).

Frustule rectangular in girdle-view, with rounded angles; valves narrow, linear-elliptic with obtuse rounded apices, more or less symmetrical; 55-70 µ long, 13-15 µ broad; raphe filiform, with bent terminal fissures and approximate central pores turned to one side; axial area narrow, almost obsolete; central area transversely dilated into a broad fascia, widened outward as approaches the valve margins; valve surface with wavy alveoli, transversely radiate, wider apart in the middle, 14-16 in 10 µ , closer towards the valve apices, more or less reticulate, interrupted by irregular longitudinal blank lines, showing a tendency to a quincunxally arrangement.

The characteristic valve structure, renders this small finely sculptured diatoms, quitespecifically distinct from all the other members of the group *Trachyneis Cleve* (*Aspêrae*). It is remarkably

constant in dimensions and striations. As it is, it cannot be assigned to any hitherto described forms either symmetrical or asymmetrical, that commonly found amongst that genus (c.f. *Mill's,* 1933-1934; *Cholonky,* 1966-1970; *Schmidt/Fricke,* 1969). Subsequently, however, the nearest relative is *Trachyneis aspera* (*Ehr.*) *Cleve* (*Cleve* 1894-1895) and its various varieties as illustrated in *Peragallo* (1897-1908, p. 150, pl. 29, figs. 1-7), also in Schmidts' Atlas (1872-1972, pl. 48 figs. 12-22). This new diatoms separates principally on the account of its peculiar vavle surface, showing a tendency to a quincunxally arrangements, which sharply distinguish it. Besides, the present species differs in the shape and dimensions of the valve (c.f. *Ehrenberg,* 1854 ; *Donkin,* 1861; *Heurck,* 1880-85; *Boyer,* 1926-1927; *Hendey,* 1951, 1958; 1959 ;*Hustedt* 1964). In general appearance, *Trachyneis* minutis bears some resemblances to the unilateral *Trachyneis* (*Stauroneis*) tumidula discovered by *Grunow* from the Red Sea (*Grunow* 1860, p. 566, pl. 6, fig. 10); but is distinguished respectively by the form and by the unique delicate striations together with the well defined central field.

**Navicula simplicis nov. spec.**

Valvis brevibus, late lanceolatis, superficie simplici hyalinis; apicibus acutis leviterque productis; 50-60 μ longis, 15-17 μ latis; linea mediana (raphe) filio simili, non apices attengente, poris centralibus fere adiancent ibus; area axiali angustissima, circum nodulum centralem orbicularis; fissuris terminalibus eodem spectantibus aliquantum ab apicibus distante; striis transapicalibus delicatis, non resolutis, paene invisibilus (diificile est valvae structuram decernere).. Hab. in aquis marinis ad ABU QIR BAY (Pl. 11, figs. 1-6 & Pl. IVn, Fig. 5).

Cells solitary, valves lanceolate, simple, hyaline, with gently produced acute apices; 50-60 μ long, 15-17 μ broad; median line thread-like, straight, not reaching the apices, with moderately approximate central pores; terminal fissures somewhat distant from the ends; axial area very narrow; central area orbicular, terminal nodules clear; striae extremely fine and not resolved, so that it is rather difficult to determine the structure of the valve.

This *Navicula,* which belongs to the section *Orthostichae Cleve,* is distrnguished by the extremely membraneous structure of its vaive and its peculiar apices, and must, on the basis of these characters, be regarded as a distinct species. In the outline of the valve, it slightly resembles the brackish water form *Naviucla halophila* (*Grun.*) (*Cleve* 1894-1895 ; p. 109 ; *Hustedt,* 1930, p. 288, fig. 436), which is larger (30-170 u) and has more distinctly arranged striae (17-19 in 10 u). *Navicula simplicis* also approaches two *Naviuclae* recently described by *Hustedt,* namely *Navicula consentanea* (*Hustedt* 1939, p. 625, figs. 98-100) and *Navicula halophiloidest* (*Hustedt* 1964, p. 68, figs. 1213 a-d). The finer striae distinguish the new diatoms from the former whose striae are 20-24 in 10 u. It further differs from *Navicula haliphilioidest* in the shape of the central nodule and especially in the nearly indistinctly striations. In spite of these differences, *Hustedts* specimens possess obtuse species unlike thosé recorded, together with more linear valves.

**Surirella delicatis nov, spec,**

Frustulis e facie connectivali visis cuneiformibus, marginibus rotundatis ; cellulae solitariae, valvis late ovatis apice late rotundatis, basi aliquantum paulum brevior quenum apex, cuneatis rotundatis ; per oxem longitudinalem paene symmetricis ; 45-80 u longis, 24-45 u latis; alas (alis) robustas zonae connectivali approximatas ostendentibus ; rugae maginales evolutae et proiectionibus distinctis, 1-2 in 10 u ; superficis valvae costis robustis ornata cir. 1-3 in 10 u; costis prope marginem dilatantes et fascem 2 brevtium striarum ferentes, robustissimis, dein attenatis, remotis ; in valvae medio subradiantibus et ad apicalibus que liniter curvatis marginem versus bifidodilatatis ; stris intercostalibus delicatis et difficile conspteuis indistinctae ; area centralis late elliptico-dilatate et ambitu linea brevibus circumscripta, ciriter 6-8 in 10 u, in media parte valvarum pseudorhaphen indistinctam formantes (nulla) Hab. in aquis marinis ad ABU QIR BAY (pl. III. Figs: 1-4 &Pl: IV Figs: 1-3):

Frustule in zone view cuneate, rounded at the angles ; cells solitary, valves cuneately ovate, apex rounded, base gradually attenuated, slightly narrower than the apex, nearly symmetrical ; 45-80 u length, 24-45 u breadth ; border heavy with undulated prominent marginal (wings) alae (1-2 in 10 u) ; costae (ribs) about 1-3

short, robust, more or less radial in the middle and slightly curved as approach the ends, inflated at the margins and extended the ends, inflated at the margins and extended and slightly towards the centre, dilated to twin rows of fine transverse line (pear-shaped), striped at about one forurth the distance towards the middle where joint into swell ribs and then continue as moniliform lines till meet the central area outer ends of the costae superimposed on the border; wedge-shaped, with about three minute teeth on the marginal side; intercostate striae more or less indistinct; central field linear-elliptic in long axis, circumscribed with transversed coarsely crosslines 6-8 short striae in 10 μ ., bounded by hyaline space, its diameter proportionate to the size of the valve; polar areas evident.

The present specimens belongs to the group *Surirella fastuosae Ehrenberg,* but specifically distinct on account of its peculiar characteristic valve structure. It appears to stand nearest to *S. fastuosa (Ehr.) Kütz.* (Kützing 1844, p.62, pl.28, Fig. 19) and var. *cuneata A.S.,* as illustrated in *Schmidts'* Atlas (1872-1972, pl.4, figs. 1,2). Both of these marine forms are differentiated entirely from the described species, in the details of the valve margins, as well as in the shape and dimensions of the valve (c.f. *De-Toni* 1891-1894; *Peragallo* 1897-1908; *Hendey* 1959; 1964). In fact, *Surirella delicatis* bears also close connection to its relative *S. aegyptiaca,* recently detected (*Salah* & Tamas, 1969) from the same habitat and from the great Bitter lakes. However, the peculiarly marginal contour, the striated central area and the modified coastal alae, make its specific distinctness much more evidence.

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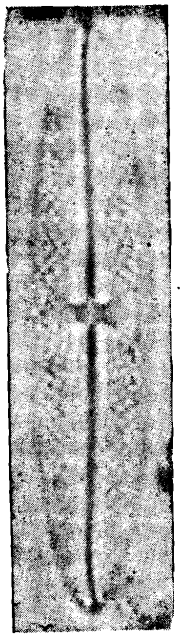
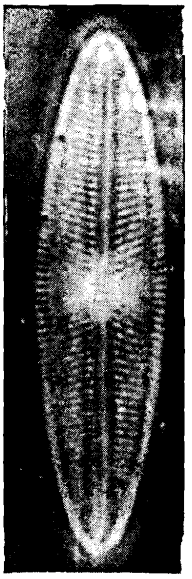
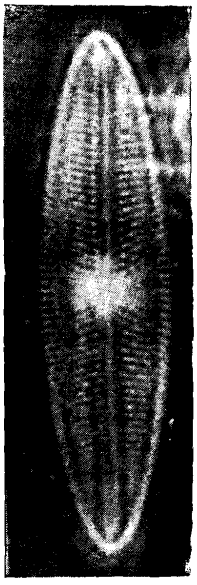
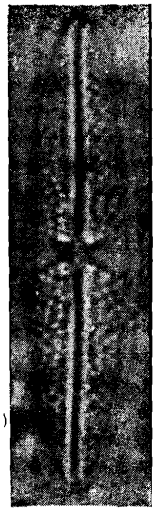
PLATE I.

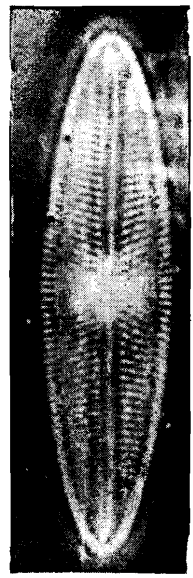


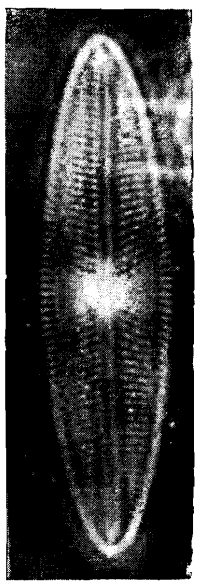






PI ATE I.





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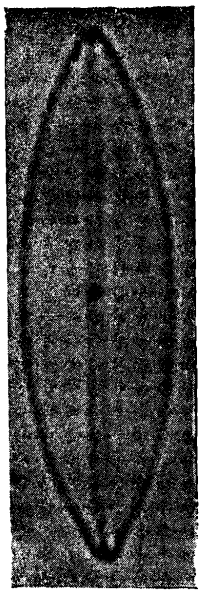
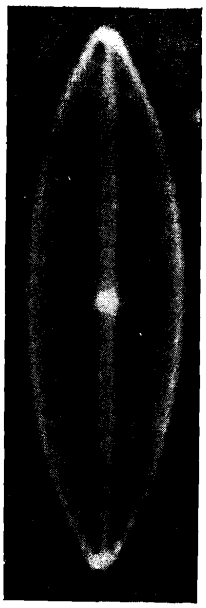




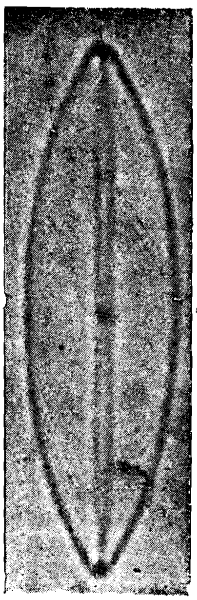
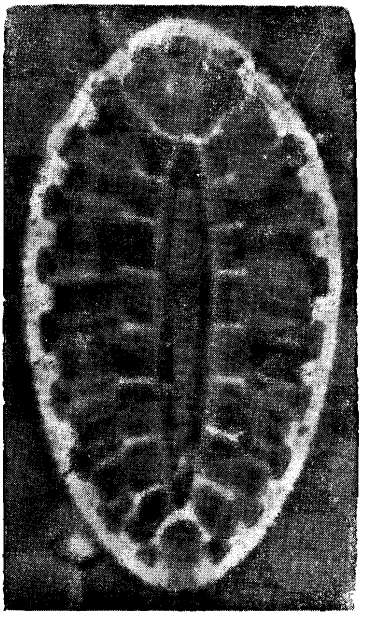
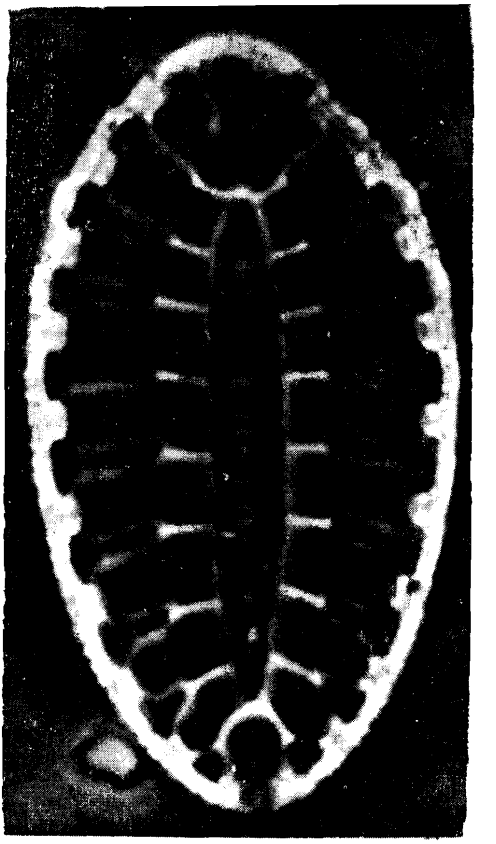


PLATE III.





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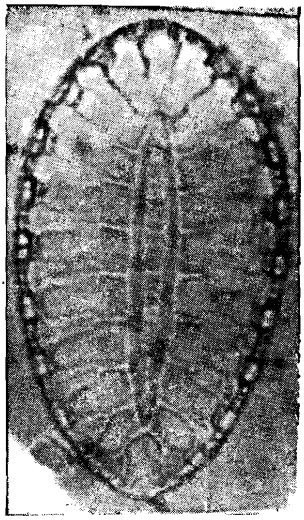

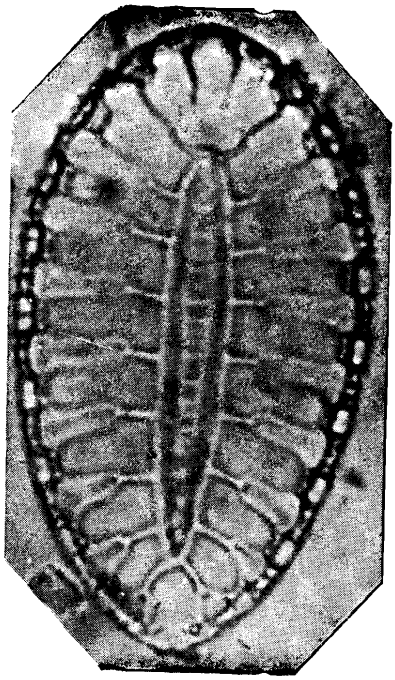

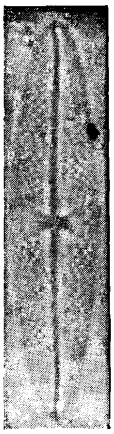

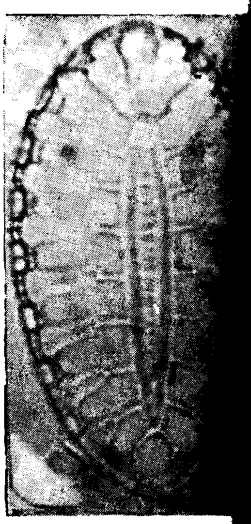

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