Güney Anadolunun bazı Üst Devon Koray ve Stromatoporoidleri hakkında

C. ÜNSALANER [1])

Özet: *1943 senesi yazında Adana bölgesinin Üst Devon tabakalarından topladığım Koray, Stromatoporoid ve Bryozoaları muhtevi fosillerle, Dr. Blumenthal'in bu ve Torosların diğer bazı bölgelerinden getirdiği bazı Üst Devon fosilleri tarafımdan tetkik edilmiş ve ilerde neşredilecek olan bir katalog hazırlanmıştır. Değişik ve enteresan tipleri ihtiva eden Saimbeyli (Adana) faunası Krinoid, Trilobit ve pek çok Brachiopod fosillerini de ihtiva etmektedir. Bu yazıdan maksat, yeni bir cins ile bazı yeni nevileri tanıtmaya çalışmaktır.*

Tetkik edilen Üst Devon faunası NE Fransanın Boulonnais, Hindistanın Chitral ve NW Kanadanın Mackenzie nehri bölgesinin Üst Devon faunası ile yakın bir benzerlik göstermektedir.

Bu yazıda tasvir edilen numuneler M.T.A. Enstitüsü müzesinde mahfuzdur.

Some Upper Devonian Corals and Stromatoporoids from South Anatolia

C. ÜNSALANER [2])

1. Introduction:

The detailed results of my investigations on the Upper Devonian Corals, Stromatoporoids and Bryozoa from South Anatolia are to be published later. The object of the present paper is to deal with mainly new speeles to make them available. The specimens described and figured are preserved in the Museum of the M.T.A. Institute, Ankara.

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1) M.T.A. Enstitüsünde Paleontolog. Bu tebliğ 24 Şubat 1950 tarihinde yapılmış, makale 15 Aralık 1950 de alınmıştır.

2) Paleontologist, M.T.A. Institute. Presented before a session of the Geol. Soc. in 24 Feb. 1950. Manuseript received Dec. 15 1950.

II Acknowledgment:

The author desires to express her indebtedness to Mr. I. R. Berent for affording her the facilities for making this study in England, to Dr. M. Blumenthal for supplying additional specimens. She thanks Prof. W. F. Whittard and Mr. W. N. Edwards respectively for the privilege of carrying out her investigations in the Geological Department of Bristol University and at the British Museum (Nat.Hist.) London. The author is profoundly indepted to Dr. S. Smith particularly because he devoted much time and gave most generous help. She is also extremely grateful to Dr. H. Dighton Thomas for his guidance and great help. Finally she wishes to express her appreciation of the great care taken bv Mr. G. Bryant in preparing thin section of the corals, etc., and Mr. E. W. Seaville in taking excellent photographs, and also for the help in matters of literature given by Mr. H. B. Rowbotham, librarian of the Geological Library, British Museum (Nat. Hist.).

Aphraxonia gne. nov.

Genoholotype: Aphraxonia taurensis [3]) sp. n. Specimen No. 74, about 3 km SE of Kazıklı köy, Saimbeyli, Adana, author's collection.

Diagnosis: Siniple, subcylindrical, rugose corals with strongly dilated wedge-shaped septa. The cardinal and counter septa are in perfect continuity forming an axial septum bisecting the coral and dilating axially to form a very large columella. Most of the other major septa reach the columella and coalesce with it. The minor septa also wedge-shaped, are thinner and do not attain more than half the length of the major. The tabularium is occupied by sniall, strongly arched tabellae which form successive floors raised steeply towards the periphery and also towards the axis of the coral. Small, globose dissepiments constitute a very narrow dissepimentarium partly masked by sclerenchyme.

Remarks: The genus Aphraxonia and the type species, A. taurensis are founded on a single, small specimen. When more material is available some modifications of the generic diagnosis and description of the species may be found neeessary. The outstanding characters of the genus are the well separated wedge- shaped septa, the conspicuous columella, and the cystiphylloid character of the transverse tissue.

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3) Taurus, mountains in Southern Anatolia.

Aphraxonia taurensis sp. n.

Holotype: Specimen No. 74, about 3 km SE of Kazıklı köy, Saimbeyli, Adana, author′s collection.

Diagnosis: As for genus.

Description: The holotype is a small, slender, conical coral almost cylindrical in form and only slightly curved. It is complete except for the proximal point which is missing. The side of the coral exposed rounded edges of the septa but this is almost certainly due to the destruction of the epitheca. The very shallow, poorly preserved calice displays the slightly exert, somewhat nodose distal edges of the septa.

Transverse section: There are 22 wedge-shaped major septa. The cardinal and counter septa are conjoined and form an axial septum bisecting the section and swelling out at the axis to form a large columella elliptical in section measuring 2 mm in its larger and 1 mm in its shorter axis. Running through this columella the undilated part of the septum is visible as a thin, light coloured line with a dark border. Most of the other major septa reach the columella and coalesce with it; they attenuate towards the axis but dilate again to some extent at the axial edges. The minor septa are noticeably thinner than the major and seldom attain half the length of the latter, while unlike these they do not dilate at their axial edges. Both minor and major septa show a clear, light, median line bordered by fibrous tissue which appears to be formed of small featherlike laindles of trabeculae set at right angles to the sides of the septa and expanding outwards away from the median line. At the periphery of the coral the septa are united more or less by sclerenchyme to form a narrow stereozone. The peripheral edges of all the septa are rounded in a manner reminiscent of costae in hexaeorals. Between the septa intersections the transverse tissue are seen, these are more Crowded towards the periphery than elsewhere. Between the major and minor septa the intersections of the tabellae might well be taken for intersections of dissepiments.

Longitudinal section: The axial region is occupied by the columella. On both sides of this are seen numerous, small, strongly arched tabellae resembling dissepiments. Near the peripliery of the coral and again near the columella they are vertical or almost so, but between these positions they

are more or less horizontal. Thus they form concave floors on both sides of the columella (P1. 1, fig. lb). The dissepiments, wihch are very few and very small, form only a narrow dissepimentarium which is masked to a great extentby the sclerenchyme of the stereozone.

Dohmophyllum WEDEKIND 1923, pp. 29—33

Genoholotype (by monotypy): Dohmophyllum involutum WEDEKIND, p. 30, text-figure 7, Lower Middle Devonian Auburg, near Gerolstein, Eifel District, Germany. See also WEDEKIND 1924, p. 76, text-fig. 108 and HILL, 1942, p. 236.

Diagnosis: Rugose corals typically simple and typically of large size in which there are numerous long septa, a narrow tabulairum and wide dissepimentarium. The axial ends of the major septa usually rotate and intertwine at the axis and the minor are only a little shorter than the major but both vary in length. The septa are dilated and are usually carinate. The tabularium is occupied by very closely set, inconiplete, flattish tabellae arranged in irregular floors, and the dissepimentarium is built up of small, steeply inclined dissepiments.

Remarks: Dohmophyllum approaches in many characters those of Acanthophyllum DYBOWSKI (3, p. 339) and Eddastraea HILL (9, p. 147, a plocoid Acanthophyllum) but differs from these genera in having more crowded tabellae and in the absence of the deep funnel shaped axial through.

Dohmophyllum pamiri [4]) sp. n.

Holotype: Specimen No. 54, about 3 km. SE of Kazıklı Köy, Saimbeyli, Adana, author's collection.

Diagnosis: Feebly compound Dohmophyllum of plocoid habit.

Description: The holotype, up to the present the only specimen known, measures 6 cm x 5 cm x 3 cm and consists of 3 or 4 corallites, the largest of which is approximately 5 cm in cliameter. There are in all about 90 septa. The major and minor are equally dilated and carinate and both series vary

4) After prof. H. N. Pamir, İstanbul University.

in length; in fact it is not everywhere easy to distinguish between the members of the two orders. The septarun almost straight until the major enter the tabularium, where upon these twist in a complex vertical manner and, with the tabellae, form a compact axial structure. Some of the septa near the periphery appear to split vertically and thus give rise to the lateral dissepiments. The tabularium measures approximately 7,5 mm. The very closely packed tabellae are extreemly small, nearly flat or only slightly arched, and are indifferently inclined, some being horizontal and others steeply sloping. The longitudinal section also shows irregular intersections of the twisted axial ends of the septa. The dissepimentarium has a width of about 25 mm. The dissepiments are small, fairly uniform, and moderately well arched. They become progressively more steeply inclined as they approach the tabularium.

Phillipsastraea d'ORBIGNY 1849, p. 12

Genolectotype (see EDWARDS & HAIME 1850, p. LXXI): Astraea hennahi LONSDALE, 1840, p. 697, pl. lviii, figs. 3, 3b only; (probably non 3a) = Astraea hennahi LONSDALE, PHILLIPS, 1841, p. 12, pl. vi, figs. 16 û a, 16 û b, not, pl. vii, fig. 15 D. See SMITH 1917, p. 284, and LANG & SMITH, 1935, p. 556, for a discussion of the genus.

Diagnosis: Cerioid or typically plocoid rugose corals in which the corallites are separated by degenerated epitheca or are united by their dissepimental tissue. In the plocoid form the septa of contiguous corallites may be confluent or abutting or may be separated by dissepiments. The septa dilate at the border of the tabularium and here the minor septa end; the major extend to or near to the axis of the corallites. The dissepimental tissue is strongly developed and the dissepiments forming the wall of the tabularium are often of the horse-shoe type. The tabulae are horizontal and may or may not be divided into an axial and periaxial series. There is no columella.

Remarks: The corals of this important genus, wich had a wide distribution in the Devonian system, vary considerably both in size and in structure. The species have been described under different generic names by various authors. LANG & SMITH (lO, p. 557) include it under Phillipsastraea, Medusophyllum, Pachyphyllum, Smithia and Streptastraea. I consider, however, the genus Paehyphyllum may be usefully retained.

Phillipsastraea adanensis [5]) sp. n.

Holotype: Specimen No. 43, about 2 km SW of Hanyeri Village, Saimbeyli, Adana, author′s cellection.

Paratype: Specimen No. 62, Belenköy, Feke, Adana, Dr. Blumenthal′s cellection.

Diagnosis: Large phillipsastraea in which the corallites ure united by their confluent septa or are separated by the dissepimental tissue and in which the tabularium is bordered by horse-shoe dissepiments and occupied by incomplete, flat or con vex tabulae and the septa do not reach the axis.

Description: The corallum is markedly discoidal in form and circular in outline. The holotype is aproximately 10 cm in diameter and 3 cm high. The only paratype is about 27 cm in diameter and 4,5 cm in height. The tabularia, many of which are oval in outline, measure approximately 5 mm in diameter (the largest and most pronouncedly elliptical individuals have a longer axis of 8 mm and shorter one of only 3 to 5 mm).The number of septa varies from 30 to 48 but those with few septa are no doubt immature. It is noticeable that the talularia of oval section possess the highest number of septa. The major septa are distinctly dilated forabout 1 mm at the border of the tabularia but attenuate and become exceedingly thin on entering the tabularia and never reach the axis of the corallites. The minor septa also dilate but not to the same degree and not for the sime length of the major. They terminate at the border of the tabularia. Both major and minor are minutely carinate and in the dilated parts show a granular structure. Most of the tabulae are horizontal, flat or more usually, domed but a few however are strongly inclined. They are rarely, if ever, quite complete. The tabularia are bordered by fairely large, well-formed horse-shoe dissepiments (pl. I, fig. 4). Within this border in some places but not everywhere, small inclined dissepiments of the more usual type are developed. Between tabularia (which generally speaking are from 5 mm to 10 mm apart) the dissepimental tissue is coarse and consists of horizontally disposed, strongly arched vesicles.

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5) Adana, a town in Southern Turkey.

Remarks: Phillipsastraea adanensis differs from all other members of this important genus. I have examined in its structural details. In some respects, however, it approaches P, vesiculosa SMITH (1945, p. 42, pl. XXIII, figs. 1-3, Upper Devonian, NW Canada). Both forms cake-shaped, flattened colonies of moderate size and have tabularia of somewhat similar dimensions. The major septa in P. vesiculosa are more strongly dilated and more noticeably granular but, as in P. adanensis, the major septa are more strongly dilated than the minor. The dissepimental tissue between the tabularia is much the same in the two specles but the characters of the tabulae are different; in P. vesiculosa the lumen is occupied by numerous small strongly arched tabellae.

Spongophyllum EDWARDS and HAIME, 1851, p. 425.

Genotype (by monotypy): Spongophyllum sedgwicki ED- WARDS & HAIME, 1851, p. 425; 1853, p. 422, pl. 56, figs. 2,2a-e, Middle Devonian: Torquay, England.

Diagnosis: Cerioid or phaceloid rugose corals of which the major septa are well developed but the minor are poorly so. The septa are typically separated from the walls by large, elongated dissepiments which are usually uniserial and in some species not everywhere present.

Spongophyllum berenti [6]) sp. n.

Holotype: Specimen No. 41, Macakal Dere, Konya.

Paratype: Specimen No. 65, Kaynarca, Konya. The specimen measured originally 7 cm in diameter and 7 cm high.

Nos. 41 and 65 are both from Dr. Blumenthal′s collection.

Diagnosis: Cerioid Spongophyllum with the septal structure like Columnaria. The dissepiments are occasionally absent or developed in two or three rows in places. The tabulae are mostly complete and horizontal.

Description: The holotype is a part of a corallum originally measuring 4,5 cm in diameter and 3,5 cm high. The corallites, which vary from 4 mm to 6 mm in width, are polygonal in form and separated by thin walls. The

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6) After I. R. Berent previous General Director of the M. T. A. Instıtue, Ankara.

young corallites appear at the corners of the older ones. The septa (major and minor) vary in number from 30 to 36. The major septa are noticeably thin, straight on the whole, though insome corallites they may dilate a little in approaching the dissepimentarium. The major septa never reach the axis but leave a space of about 1 mm or 2 mm in diameter. The minor septa are very short, reaching only the inner boundary of the dissepimentarium if as far, and here and there they are apparently absent altogether. The dissepimentarium, not everywhere well developed, is usually abouy 1 mm wide and formed by somewhat globose, steeply inclined dissepiments of small size, as in typical forms of Spongophyllum. The tabulae which sometimes occupy the entire width of corallites are on the whole thin, complete and horizontal.

Remarks: Spongophyllum berenti shows characters interme- diate between those of Columnaria GOLDFUSS and Spongophyllum EDWARDS & HAIME, approaching the former rather than the larter in the character of its septa. The presence of a fairly well developed dissepimentarium, however prompts us to place Spongophyllum berenti in the genus of Spongophyllum.

We consider that Spongophyllum is derived from Columnaria. The genotype of Columnaria bears some resemblance to Spongophyllum berenti. In Columnaria sulcata however, the dissepimentarium is feebly and more impersistently developed, the minor septa are more rudimentary and the tabulae are more irregularly spaced, in some being overcrowded and also together and in others wide apart, moreover they show some crumpling.

Gephuropora ETHERIDGE 1920, p. 60

Genolectotype (by monotypy): Favosites (P Columnopora sic) duni ETHERIDGE, 1920, pp. 56-60 explanation of plates xiv, fig. 2-5; pl. xv, figs. 1-2. Silurian or Devonian, Sponge Limestone?: Cavan, Murrumbidgee River, New South Wales, Australia (Lower Middle Devonian see JONES, 1941, p. 55).

Diagnosis: Massive, tabulate corals differ only from Favosites by the presence of tubules within the walls. These tubes occur sporadically at the

cornersand less frequently on the sides of the corallites. The walls are thin or only slightly thickened. The acanthine septa are short, the tabulae are close together, mostly complete, and the mural pores few and wide apart.

Remarks: In all other respects Gephuropora duni closely agrees with Favosites goldfussi d'ORBIGNY, as also do those other forins of the genus mmore recently described by LECOMPTE (12) from the Ardennes, Belgium, mainly Gephuropora spinosa, G. gilsoni, G. maillieuxi.

It is true that similar tubes occur in Columnopora cribriformis NICHOLSON, genotype (by monotypy) of Columnopora NICHOLSON (16, p. 253) an Ordovician species from Ontario, Canada. Columnopora eribriformis, however, is characterized by the very large numerous mural pores which create a lattice like appearance on the walls. LINDSTROM (13, p. 8) and COX (2,p.l) consider Columnopora a synonym of Calapoecia BILLINGS (l,p 425. Ordovician: Anticosti Island, Canada) LANG, SMITH and THOMAS (11, p. 29) also concur with the above conclusion.

Gephuropora duni ETHERIDGE.

Gephuropora duni ETHERIDGE, 1920, pp. 56-60, pl. xiv, figs. 2-5; pl, xv, figs. 1-2.

Gephuropora duni ETHERIDGE, JONES, 1941, pp. 54-55, pl. 11, fig. 6; pl. 1, figs. 1-4

Columnopora maillieuxi SALÉE MS LECOMPTE, 1939, p. 99, pl. xv, figs. 3, 3 a-b. If not conspecific it is closely allied to Gephuropora duni.

Diagnosis: Gephuropora in which the corallite walls may be thin or thick, septal spines are poorly developed and very irregularly distributed, and the tabulae in the corallite walls occur at the corners and also in the sides. Mural pores are typically arranged in two series.

Remarks: Columnopora maillieuxi LECOMPTE very closely approaches Gephuropora duni in most of its characters, but the tubules in the former, so it, would seem, are entirely restricted to the corners of the corallites and never seen in their sides. Moreover, the corralites in

Colamnopora maillieuxi are larger, the tabulae are more widely apart and mural pores are less frequent than in Gephuropora duni.

Among the corals collected in the Saimbeyli district there was a specimen of Gephuropora No. l7. It, is a small corallum of irregular but somewhat triangular outline, with an almost flat, distal surface and conical base, is 2 cm high and measures 2 cm x 4 cm. The form occupies an intermedi-

ate position between Gephuropora duni and Columnopora maillieuxi, but ressembles the former more closely. The corallites are larger than in Gephuropora duni but smaller than in Columnopora maillieuxi. Although in most cases the tubes are at the corners of the corallites they also appear, though infrequently, in the sides. The tabulae are generally speaking close together, as they are in Gephnropora duni, but here and there they are separated by a space of 1 mm. The mural pores are in two series.

Locality: 3kmSE of Kazıklı Köy, Saimbeyli, Adana, author's collection.

Stromatoporoidea Actinostromidae

NICHOLSON

Actinostroma NICHOLSON 1886, p. 75

Genoholotype: (by author′s original dsignation): Actinostroma clathratum. Middle and Upper Devonian: Britain and Germany.

Diagnosis: Massive Stromatoporoidea in which the radial pillars pass continuously through several concentric laminae and interlaminar spaces. Astrorhizae may or may not be present.

Actinostroma blumenthali [7]) sp. n.

Holotype: Specimen No. 63, about 10 km NE of Doganbeyli, Adana, Dr. Bumenthal′s collection.

Diagnosis: Aetinostroma in which there are radial pillars of two sizes and both the large and small pillars are irregularly distributed. Latilaminae are well developed and astrorhizae are present.

Description: The holotype part of a large coenosteum which originally measured 14 cm in diameter and 3 cm in thickness, has been broken into several pieces. The weathered surface of the specimen displayed in places well marked concentric latilaminae. The concentric laminae are somewhat unevenly spaced and may vary in distance in different parts of the same section, but usually 5-7 occupy 1 mm. They are grouped into latilaminae varying from 1 to 3 mm in thickness. The large radial pillars, which have a diameter of about 0.1 mm, are irregularly distributed. They may be less

7) After Dr. BLUMENTHAL, one of the M.T.A. geologists.

than 1 mm apart or may be separated by an interval of several milimeters. They pass unin- terruptedly through a number of concentric laminae and even through several latilaminae. The pillars of the second order, which are only 0,07 mm in diameter and vary in distance apart from 0,25 to 1,5 mm traverse only a few concentric laminae at the most, and are often confined to a single interlaminar space, or even do not completely extend from one laminae to another. In transverse section the radial pillars are seen to be connected by some slender fibres. Astrorhizae are only poorly developed, but the Stromatoporoid enclose some roundedwalled cells of uncertain nature.

Remarks: The outstanding charaeter of Actinosiroma blu- menthali lies in the radial pillar of two distinct orders. In this and in its poor development of Astrorhizae it agrees with A. bifarium NICH. (17, 1886, p. 231, pl. vi, figs. 4, 5; 1889, p. 136, pl. xiii, figs. 3-7, Middle Devonian: England and Germany). It differs from NICHOLSON's species, however, in both the large and small pillars being much wider apart and more irregularly spaced, and in the marked development of latilaminae which are absent in the European form.

A. bifarium and A. blumenthali resemble each other closely and some might consider them to be varieties of a single species, but the differences between the two are sufficiently great to justify the separation into two distingt species.

Actinostroma ingens sp. n.

Holotype: Specimen No. 44, about 3 km SE of Kazıklı köy, Saimbeyli, Adana, author's collection.

Diagnosis: Actinostroma of usually coarse texture. The concentric laminae are very thick and widely spaced, and the radial pillars are very stout. Astrorhizae have not been observed.

Description: The holotype is a widely conical coenosteum terminating in a slightly domed but nearly flat distal surface. It. measures 10 cm in diameter and is 5,5 cm high. The upper surface exposes intersections of radial pillars and has therefore a granular appearance, especially when seen through a lens. The sides of the specimen display clearly the concentric laminae and the radial pillars. No basal epitheca is present. The radial pillars are about 0,15 mm in diameter, and the distance between them averages about 0,25 mm but varies considerably. The concentric laminae are approximately 0,15 mm in thickness and the interlaminer spaces are about

1 mm or less. Each laminae is divided horizontally into two dark layers, separated by a lighter layer and here an there by hollow spaces. There are occasional interruptions in the continuity of a lamina and very fine, sinuous thread-like strands are seen running obliquely between the concentric laminae (pl. 2, fig. 2c). The radial pillars show a fibrous structure and the whole skeleton is porous.

Remarks: Actinostroma ingens appears to be unique in its coarse texture. I know of no other Actinostroma in which the radial pillars are so stout or in which the concentric laminae are so thick and so widely separated as they are in this form.

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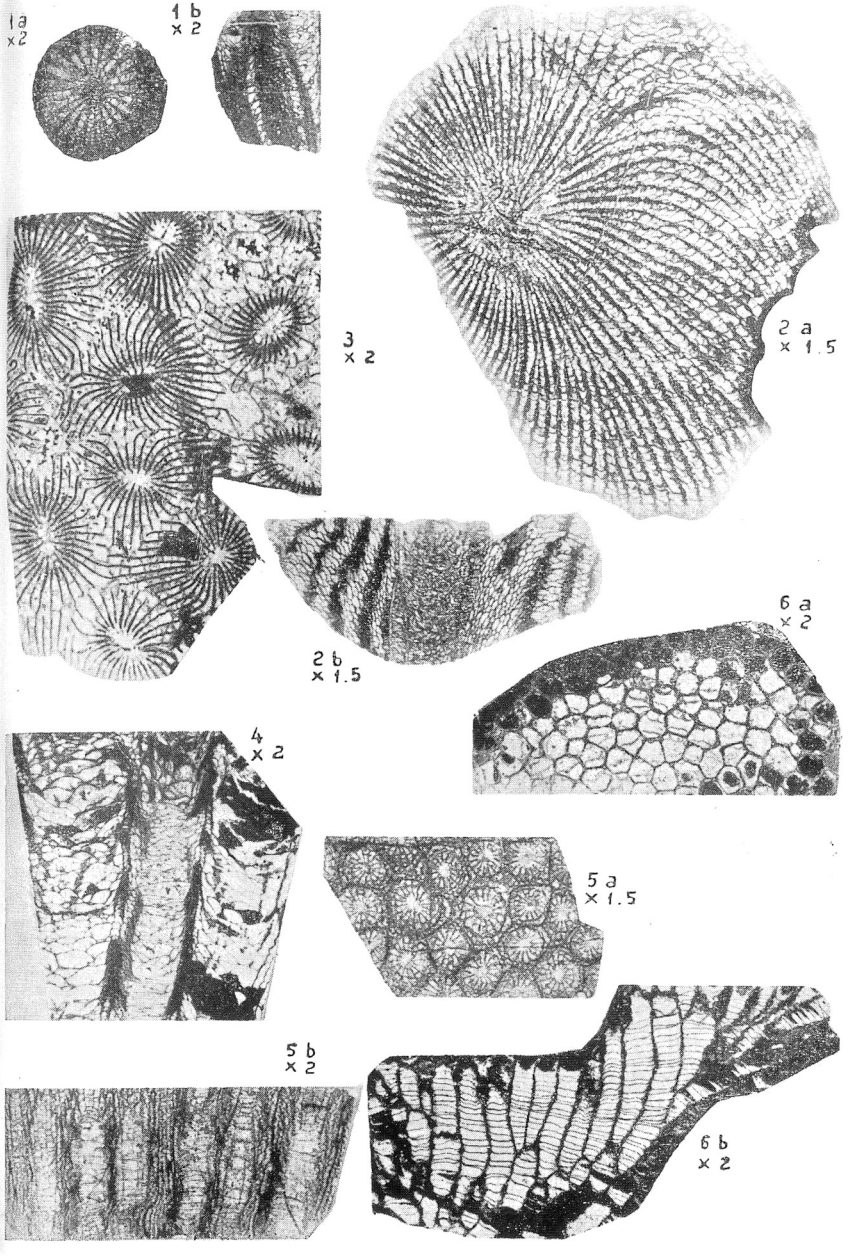
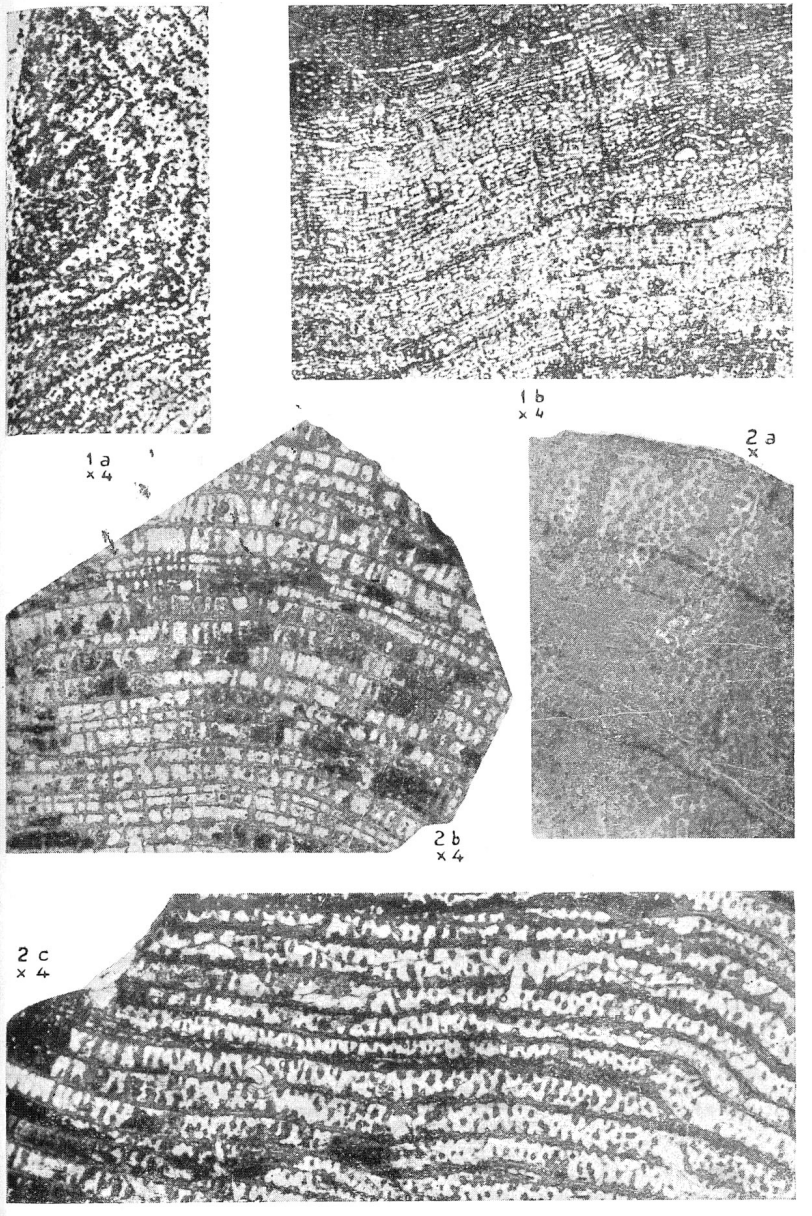
Levha I Plate



Levlvı Iï Plate



LEVHA — I — PLATE

Figs. 1a, b. — Aphraxonia taurensisgen et. sp. n. Kazıklı köyünün 3 km Güneydoğusu, Saimbeyli, Adana. la: Holotip'in enine ince kesiti, numune no. 74, x2: Ib: Aynı numunin boyuna ince kesiti, x 2 (S1 133) Locality: 3 km SE of Kazıklı köy, Saimbeyli, Adana. la: Transverse section ofthe holotype, specimen 74, x2: Ib Longitudinal section of the same, x 2,5 (p. 133).

Figs. 2a, b. — Dohmophyllum pamiri sp. n. Kazikli k6yünün 3 km Guneydo- gusu Saimbeyli, Adana. 2a: HoIotip'in bir kismimn enine ince kesiti, numune no. 54, x l,5; 2b: Aynı numunenin boyuna ince kesiti, x 1,5; (S. 134)

Locality, 3 km SE of Kazikli koy, Saimbeyli, Adana.

2a, Transverse section of a part of the holotype, specimen 54, x 1,5; 2b: Longitudinal section of the same, x 1,5; (p. 134)

Figs. 3, 4. — Phillipsastraea adanensis sp. n. 3, Holotip'in enine ince kesiti, numune no. 43, Hanyeri koyünün 2 km G'ineybatisi, Saimbeyli Adana. x2,4:Paratip"in boyvnaince kesiti, numune no. 62, BeIen- koy, Feke, Adana. x 2 (S. 136)

3: Transverse section of the holotype, specimen 43.

LacaÜty : 2 km km S-W of Hanyeri village, Saimbeyli, Adana, x 2,4: Longitudinal section of the par'*type. specimen 62, Belen- koy, Feke, Adana, x 2 (p, 136)

Figs. 5a, b. —Spongophi/llum berenti sp. n. Macakal Dere, Bozkir, Konya. 5a: Holotip'in enine kesinti, numune no. 41, x 1,5;

5b : Aynı numunenin bayuna ince kesiti. x 1,5; (S. 137) Locality: Macakal Dere, Bozkir, Konya.

5a; Transverse section of the holotype, sprcimen 41, x 1,5;

5b: Longitudinal section of the same, x 1,5; (p. 137)

Figs. 6a, b. —Gephüropora duni ETHERiDGE. Kazikli koyunün 3 km Güneydo#usu, Saimbeyli, Adana. 6a: 17 no. Iu numunenin enine ince kesiti, x2. 6b: Aym Dumunenin boyunaincekesiti, x2 (S, 139) Locality 3 km SE of Kazikh koy, Saimbeyli, Adana.

6a Transverse section of specimen 17, x 2.

6b, Longitudinal section of the same, x 2 (p. 139)

LEVHA — II — PLATE

,Figs. la, b. — Actinostroma bulamenthaÜ sp, n. Doganbeylinin 10 km Kuzey dogusu, Adana. la: Holotip'in enine ince kesiti, numune no. 63, x 4, Ib Aynı numunenin boyuna ince kesiti, x4 (S. 140) Locality: 10 km NE of Doganbeyli Adana. la: Transverse Section of the Holotyp, specimen 63, x 4, lb: Longitudinal section of the same, x 4 (p, 140)

Figs. 2a, b, c — Actinostroma ingens sp. n. Kazikli koyunun 3 km Güneydogusu Saimbeyli Adana. 2a: Hototip*in enine ince kesiti, numune no, 44 x 4; 2b. Aynı numunenin boyuna ince kesiti, x 4 (S. 141) Locality. 3 km SE of Kazikli kSy, Saimbeyli, Adana.

2a. Transverse section of the holotype, specimen 44, x 4.

2b, Longitudinal section of the same, x 4 (p. l4l)