was exhausted with ethanol, and the extract on concentration left a brown syrupy mass. It was extracted successively with petroleum ether, ether, and acetone to remove substances soluble in these solvents. The acetone extract on concentration gave a dark brown product which on chromatography on Whatman filter-paper No. 1 and on T.L.C. showed the presence of three ferric positive spots and one ferric negative spot and it was then chromatographed on a column of silica gel and eluted successively with ethyl acetate-petroleum ether (25 : 75 and 50 : 50) and ethyl acetate. The first gave only oily matter; the second eluate gave successively compound A, mixture of A & B, compound C and C + D mixture. The mixtures were further separated by T.L.C.

Compound A.—It crystallised from a mixture of methanol : ethyl acetate (50 : 50) as yellow needles, m.p. 262–65°. It gave a brown ferric reaction and flavonoid test with Mg/HCl and Molisch test for glycoside; λ_{max}^{MeOH}, 270 and 335 nm and the shifts with reagents showed the presence of 5-, 7- and 4'-hydroxyl groups. The infra-red spectrum showed the characteristic multiple absorption of the aromatic double bonds and C=O group in the 1500–1650 cm^{-1} region, a strong absorption band near 3400 cm^{-1} for hydroxyl groups and a band around 840 cm^{-1} typical of flavones containing a *p*-substituted side phenyl group.

It did not undergo hydrolysis with dilute mineral acids, but with boiling HI it gave apigenin and by the action of $FeCl_3$ formed glucose. It was therefore apigenin C-glucoside and its NMR spectrum was identical with that of vitexin. The identity was confirmed by the preparation of the acetate, m.p. 255–56° and direct comparison with an authentic sample.

The compound B has been identified as ethyl β-D-galactopyranoside and the report is under publication. Compounds C and D constituted apigenin 6, 8-di-C-monoglucoside mono-acetate and di-C-monoglucoside respectively that have been described in an earlier paper[1].

Trigonella foenum-graecum seeds.—The well defatted seeds were exhausted with methanol and the extract on concentration left a dark brown syrupy mass. This was extracted successively with petroleum ether, ether and acetone.

The ether as well as acetone extract left a dark brown residue which had the same T.L.C. and therefore they were combined and chromatographed on a column of silica gel using methanol : chloroform mixtures (5 : 95 and 8 : 92) as eluents. The first yielded only oily matter; by rechromatography of the second eluate three pure components marked E, F and G were separated, the first two being present in major quantities and the last in traces.

The compound E on crystallisation from methanol gave yellow needles, m.p. 261–63°. Its reactions and spectral data were identical with those of vitexin already mentioned and a direct comparison established identity. The compound F on recrystallisation from ethyl acetate-methanol mixture gave yellow prismatic crystals, m.p. 230–32°. Its reactions and spectra were similar to those of vitexin, especially its stability to hydrolysis with dilute acids and the formation of apigenin with HI and glucose with $FeCl_3$; in the NMR the single A ring proton was at a lower field (δ 7·3) whereas in vitexin it was at δ 6·8. The m.p. of the compound and of its acetate agreed with those of isovitexin and identity was confirmed by direct comparison with an authentic sample.

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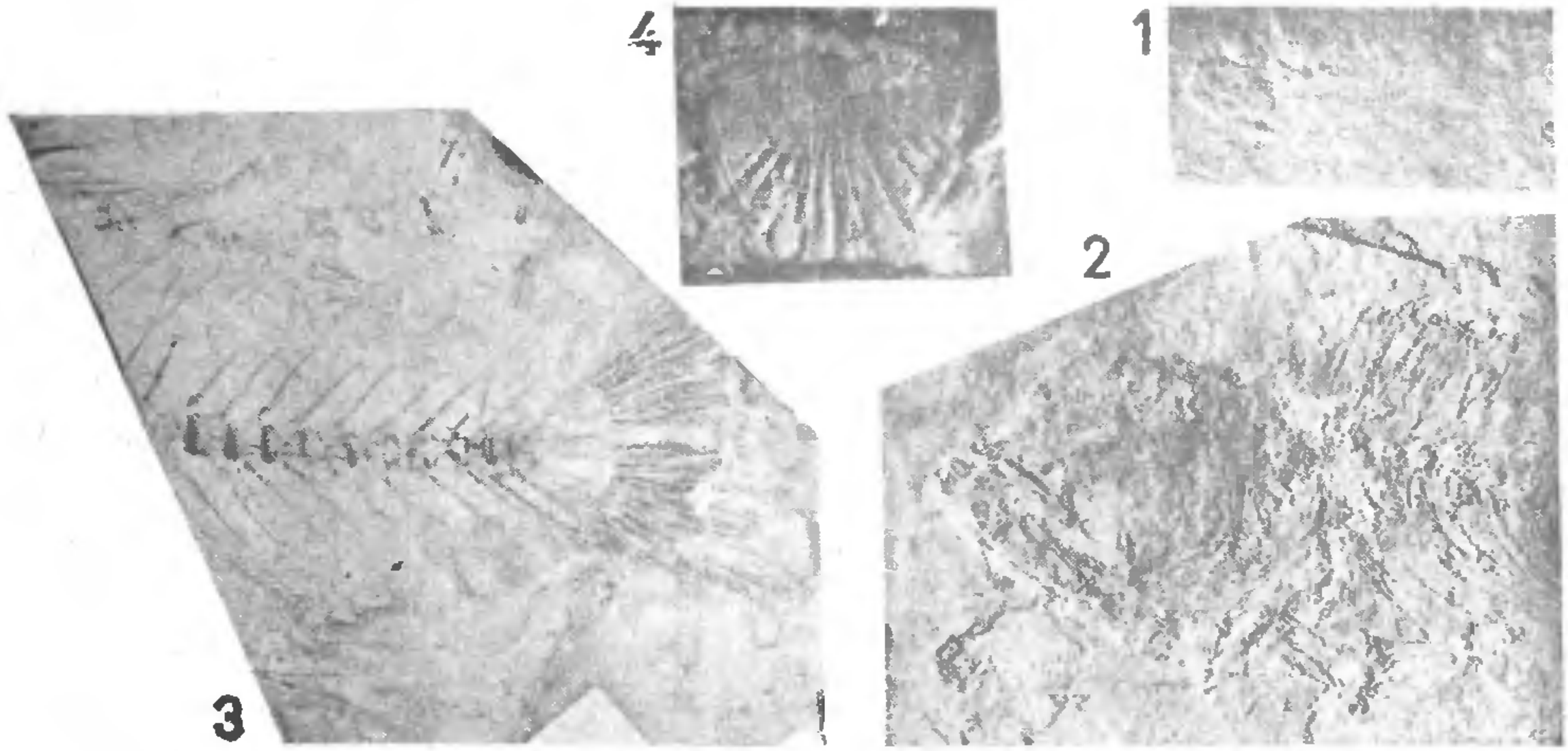
NEW FOSSIL FISHES FROM THE INTER-TRAPPEAN BEDS IN SURENDRANAGAR DISTRICT, GUJARAT STATE

FEDDEN (1884) had reported occurrence of the Inter-trappean beds at Ninama (22° 18′ : 71° 20′) and Bamanbor (22° 26′ : 71° 1′). Fish fossils collected by him from the cherty shales at Bamanbor, however, were too fragmentary to be identified. The present author, during his work in the Surendranagar District, has collected fossil fishes preserved well enough to be identified. The collection reported upon here, though not abundant, makes valuable addition to the fossil fish fauna of the Inter-trappean series and has important bearing on the palaeo-ecology and palaeo-geography of the Inter-trappean series.

1. *Horaclupea intertrappea* Gen. *et* Sp. Nov.

Small clupeoid fishes with less than 35 vertebrae.

The present form is closely similar to the clupeoid genus *Diplomystus* Cope (1877) recorded from the Upper Cretaceous of Mount Lebanon, Istria, Italy and Brazil; Eocene of Wyoming and Brazil; early Tertiary of Spanish Guinea; Oligocene of Isle of Wight, and Miocene of Sarkeui. Forms very closely allied to it are found in the



FIGS. 1–4. Fig. 1, *Horaclupea interrtappea* gen. *et* sp. nov. : Holotype, specimen, No. BM 8/70, × 1. Fig. 2. *Palaeopristolepis feddeni* gen. *et* sp. nov. : Syntype, Specimen, No. BM 33/72, × 1. Fig. 3. Same ; Syntype, No. BM 1/71, + 1. Fig. 4. Scale of same, × 10.

rivers of New South Wales and Chili (Zittel, 1932, p. 155).

Clupea geei Hora (1937, p. 189, Text-Figs. 1–3, Pl. XV, Figs. 4–6) from Eocene of the Saline Series of Salt Range (Pakistan) has to be transferred to this new genus, and is very closely like the present species.

Occurrence : Cherty shales in the Inter-trappean bed at Ninama and Bamanbor.

2. *Palaeopristolepis feddeni* Gen. *et* Sp. Nov.

Flat percoid fish with distinctly pristolepid scales.

The nearest ally to this form is the living genus *Pristolepis* Jerdon met with in the freshwaters of the plains and hills of Malabar, Burma, Siam and Malay Archipelago (Day, 1889, p. 84).

Occurrence : Cherty shales in the Inter-trappean bed at Bamanbor.

3. Pristolepid Fish (Genus Indet.)

Material representing this form consists of vertebrae, ribs and spines in intimate association with scales which are more or less like the pristolepid scales described by Hora (1938, p. 281, Text-Fig. 12 *b*. Pl. XVII, Fig. 1) from the Inter-trappean beds at Deothan (22° 20′ : 77° 34′) and Kheri (22° 22′ : 77° 29′).

Occurrence : Cherty shales in Inter-trappean bed at Bamanbor.

4. *Perca* sp. cf. *P. angusta* Agassiz

A fragmentary specimen, consisting of a percoid skull, form nearest comparable to it being *Perca angusta* Agassiz (1833–44, Vol. IV, p. 7, Pl. XI, Figs. 1–3) from the Eocene of Monte Bolca.

Occurrence : Cherty shales in the Inter-trappean bed at Bamanbor.

Maharashtra Association for the Cultivation of Science,
Poona-4, *March* 2, 1973.

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FOOD INTAKE AND ENERGY EXPENDITURE PATTERNS IN TWO INSECT PRIMARY CONSUMERS

THIS report is based on earlier publications dealing with the intake and utilization of food in the grasshoppers *Oxya velox* and *Poecilocerus picus*[1,2]. It presents a comparative account on food intake and energy expediture patterns in *O. velox* and *Bombyx mori*[3] ; it also clearly indicates that, based upon dry weight analysis, the feeding rate of *B. mori* is 2 times greater during the first 4 instars and 3 times