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"Nec araneorum sane textus ideo melior quia ex se fila gignunt, nec noster
vilior quia ex alienis libamus ut apes." JUST. LIPS. *Polit. lib. i. cap. 1. Not.*

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by clay-slate, igneous rocks, and at one spot on the south by cretaceous strata; and it is dotted by upwards of sixty extinct volcanos, often closely situated, and showing in nearly every instance a well-defined point of eruption, generally a cup-like crater, on a hill about 300 feet high. Interesting instances of successive volcanic eruption are numerous all over this district, 60 miles round Auckland; and there seems to have been four distinct epochs of eruption, thus classified by Mr. Heaphy:—1. The first was that which raised the trachytic mountains and the black boulder-like igneous rock. 2. Then came the eruptions in the Tertiary period, the ashes of which form beds in the Tertiary rock. 3. Then the eruptions on the upheaval of the Tertiary cliffs: these appear as cones above faults on the Tertiary beds and on the edges of cliffs. 4. Lastly the eruptions that have broken through the Tertiary beds, and the lava-streams of which follow the natural valleys of the country. The volcanic phenomena were illustrated by maps and numerous sketches by the author. Some Tertiary *Terebratula*, some few fossil plants, and some Cretaceous fossils (*Inoceramus* and *Belemnites*) accompanied this memoir.

3. "On the Geology of a part of South Australia." By T. Burr, Esq. From the Colonial Office. 1848.

The lowlands about Adelaide on the west, and along the River Murray on the east, consist of horizontal beds of limestone and calcareo-siliceous deposits, yellowish and reddish in colour, full of marine fossils, and of the Tertiary age. Sometimes gypsum and ferruginous sand replace the limestone. These plains are arid, except where granite protrudes from the surface, presenting cavities in which rain-water collects. The author observed a similar Tertiary formation on Yorke's Peninsula, at Port Lincoln, and to the S.E. to beyond Rivoli Bay; and it probably forms vast tracts in New South Wales and Western Australia. None of these tertiary districts appear to exceed an elevation of 300 feet above the sea.

In describing two volcanos in South Australia, Mount Gambier and Mount Schauck, Mr. Burr remarked that, coming from the west or north-west, at about 20 miles from these hills a white coral-limestone (Bryozoan limestone) containing flint or chert, takes the place of the limestones and calcareous sandstones, with recent sand-formation, previously passed over. This white limestone is remarkable for the numerous deep well-like water-holes in it, within about 12 miles of the volcanic mountains and about east or west of them.

Mount Gambier has a height of 900 feet above the sea (600 feet above the plain), and has three craters, lying nearly east and west, and occupied with lakes of fresh water. Mount Schauck, at a distance of about 9 miles, magnetic south, is circular, and has one large, and two small lateral craters.

The author next described the granite, gneiss, and slaty rocks along a section extending from the River Murray and Kangaroo Range, across Mount Barker and Mount Lofty, towards Adelaide; and noticed the mode of occurrence of the ores of copper, iron, lead, &c. in these rocks. Lastly he noticed and explained the occurrence

of calcified stems of trees, standing in the position of their growth, in the sand-dunes of the Gulf of St. Vincent, near Adelaide.

4. "On some Tertiary deposits in South Australia." By the Rev. Julian Edmund Woods. Communicated by the President.

The author, in the first place, described the geographical features of that part of the colony of South Australia to which his observations refer. It lies between the River Murray on the west, and the colony of Victoria on the east; and includes an area 156 miles long, N. and S., and 70 broad from E. to W. Some trap-dykes and four volcanic hills are almost the only interruptions to the horizontality of these plains, which rise gradually from the sea, and are occupied by the Tertiary beds to be noticed; they extend into Victoria for some seventy miles, as far as Port Fairy.

In some places on the plains a white compact unfossiliferous limestone lies under the surface-soil; and is sometimes 30 feet thick. Under this is a fossiliferous limestone. The passage between the two is gradual. This latter rock is made up of *Bryozoa*—perfect and in fragments—with some *Pectens*, *Terebratula*, *Echinoderms*, &c.

Sometimes this rock appears like friable chalk, without distinct fossils. A large natural pit, originating from the infalling of a cave, occurs near the extinct volcano Mount Gambier, and is 90 feet deep—showing a considerable thickness of this Bryozoan deposit in several beds of 14 ft., 10 ft., 12 ft. thickness. Similar pits show the deposit in the same way at the Mosquito Plains, 70 miles north.

Regular layers of flints, usually black, rarely white, occur in these beds, from 14 to 20 feet apart. These, with its colour, and with the superficial sand-pipes, perforating the rock to a great depth, give it a great resemblance to chalk.

The whole district is honeycombed with caves—always, however, in the higher grounds in the undulations of the plains.

One of the caves, in a ridge on the northern side of the Mosquito Plains, is 200 feet long, is divided into three great halls, and has extensive side-chambers. The caves have a north and south direction, like that of the ridge. The large cave has a great stalactite in it; and many bones of Marsupialia are heaped up against this on the side facing the entrance; possibly they may have been washed up against this barrier by an inflowing stream. The dried corpse of a native lies in this cave. It has been partially entangled in the stalactite; but this man was known to have crept into the cave when he had been wounded, some fourteen years ago. Many of the caves have great pits for their external apertures, and contain much water.

Some shallow caves contain bones of existing Marsupialia, which have evidently been the relics of animals that fell into the grass-hidden aperture at top.

The caves appear in many cases to be connected with a subterranean system of drainage; currents and periodical oscillations being occasionally observed in the waters contained in them. There is but little superficial drainage. One overflowing swamp was found by

the author to send its water into an underground channel in a ridge of limestone.

Patches of shelly sand occur here and there over the 10,980 square miles of country occupied by the white limestones; but near the coast this shelly sand thickens to 200 feet.

A coarse limestone forms a ridge along the coast-line, and it contains existing species of shells. This indicates an elevation of the coast of late date, and which probably is still taking place.

XI. Intelligence and Miscellaneous Articles.

ON A NEW MINERAL CONTAINING NIOBIUM.

BY DR. JULIUS POTYKA.

THE author was induced by H. Rose, to undertake the investigation of a mineral received by Dr. Krantz, of Bonn, from Norway under the name of tyrite, and sent by him to Rose. The analyses of this mineral showed that it is probably a new species. Its composition is different both from that of Fergusonite (Weber), and from that of tyrite (Forbes). From these two minerals it is distinguished especially by its great amount of potash, and from tyrite also by its containing zirconia, whilst alumina has been found in tyrite. As, however, the locality where it occurs is still unknown, and its crystalline form has not yet been observed, the author has not given it a name.

The mineral received by the author forms small specimens of irregular outline about 4 lines in diameter, included in red felspar. It is not cleavable, has an uneven fracture, a black colour, and an imperfect metallic lustre; the fragments exhibit a reddish brown translucence at their edges. Its streak is reddish brown. Its hardness is equal to that of apatite.

When heated before the blowpipe with borax, it furnishes a globule which is reddish yellow while hot, yellowish when cold; in phosphorus salt it dissolves readily, forming a clear globule, which is greenish yellow while hot, greenish on cooling. When fused with carbonate of soda and nitrate of potash, it gives no reaction of manganese. The specific gravity of the coarse powder is 5.124 at 63° 68 F. If hot water be poured over the mineral, it crackles; and on boiling it afterwards, air-bubbles escape—at the same time the colour becomes pale liver-brown, but on drying it again becomes black.

When heated in a retort, the mineral decrepitates and furnishes milky aqueous drops with an odour of sulphuretted hydrogen, together with traces of sublimed sulphur; it probably contains intermixed iron pyrites.

The calcined mineral is brownish yellow; when strongly ignited in the platinum crucible, it lost in all 3.71 per cent. Its specific gravity was then 5.319 at 64° 58 F. The mineral in very fine powder is of a dingy yellow colour.

In Analysis I. the calcined mineral was decomposed by bisulphate of potash, and in Analysis II. by sulphuric acid.

A. shows the average calculated for uncalcined mineral.

B. the amount of oxygen:—

	I.	II.	A.	B.
Hyponiobic acid.	45.10	45.24	43.49	8.58
Zirconia	0.83	..	0.80	0.21
Tungstic acid.	1.40	..	1.35	0.28
Oxide of tin.	0.10	..	0.09	0.02
Oxide of lead	0.43	..	0.41	0.03
Oxide of copper	0.36	..	0.35	0.07
Yttria	33.13	..	31.90	6.35
Protoxide of cerium	3.82	..	3.68	0.53
Protoxide of iron	1.17	..	1.12	0.24
Protoxide of uranium	4.28	..	4.12	0.49
Lime	2.03	..	1.95	0.55
Magnesia	trace	..	trace	
Potash.	7.51	7.23	1.22
Water.	3.71	3.29

The amount of oxygen in the acids to that in the bases is as 1:1.04, from which we may deduce the formula $3\text{RO} + \text{Nb}^2\text{O}^3$, in which the term RO includes the bases KO, YO, CeO, UO, and CaO.—Poggendorff's *Annalen*, cvii. p. 590.

THE PSEUDO-DIASCOPE. BY F. O. WARD.

By means of this instrument an aperture transmitting light is made to produce on one eye an isolated impression, while the other eye is directed to an opaque body, such as the hand held before it. The image of the aperture is then found to be transposed, and its perception ceases to be assigned to the eye by which it is really seen,—the effect being that a perforation appears in the opaque body, through which the light seems to shine upon the eye by which this is viewed. The principle illustrated by this instrument, according to the author's view, is the essentially goniometrical and deductive nature of the visual act, whenever the distances of bodies are perceived, and their relative positions in space assigned.—*Proc. Lit. and Phil. Soc. Manchester*, Nov. 29, 1859.

ON THE OCCURRENCE OF UREA IN THE ORGANS OF THE PLAGIOSTOMOUS FISHES. BY G. STÄDELER.

In an investigation made last year by Frerichs and Städeler, these observers found that the Plagiostomi are distinguished from all other fishes by their containing large quantities of urea in all their organs. The organs and the blood of *Scyllium canicula*, the kidneys and muscles of *Spinax acanthias*, and different organs of the Rays, con-