

Irish Cave Pearls

BY J. C. COLEMAN

Very few Irish caves have yielded specimens of cave pearls (oolites), and though it is generally conceded that this type of depositional formation is comparatively rare² more intensive search of our caverns shows that oolites are of wider distribution than is shown by published work.*

Oolite formation results from the rapid drip of water from a cave-roof into a hollow or depression in rock, stalagmite, or clay. Fragments of sand, pebbles, etc., form nuclei around which the calcite contained in the water is deposited. Rotation of the oolites tends to a spherical shape, the surface often highly polished by contact with neighbouring specimens or with the sides of the basin of formation. Generally, however, the number of oolites contained in a basin precludes the formation of spherical types and often tabular types or faceted subangular forms are produced.

Oolite formation ceases on the stoppage of the descending water-supply, or when the oolites are too large or too numerous to be rotated and coated. In the latter case, continuance of the drip will tend to deposit the calcite as a cement around the previously formed oolites, forming what I propose calling "Pearl Conglomerate". Such conglomerate is often found beneath the base of stalagmites, especially when they have grown on clay, sand, or gravel floors.

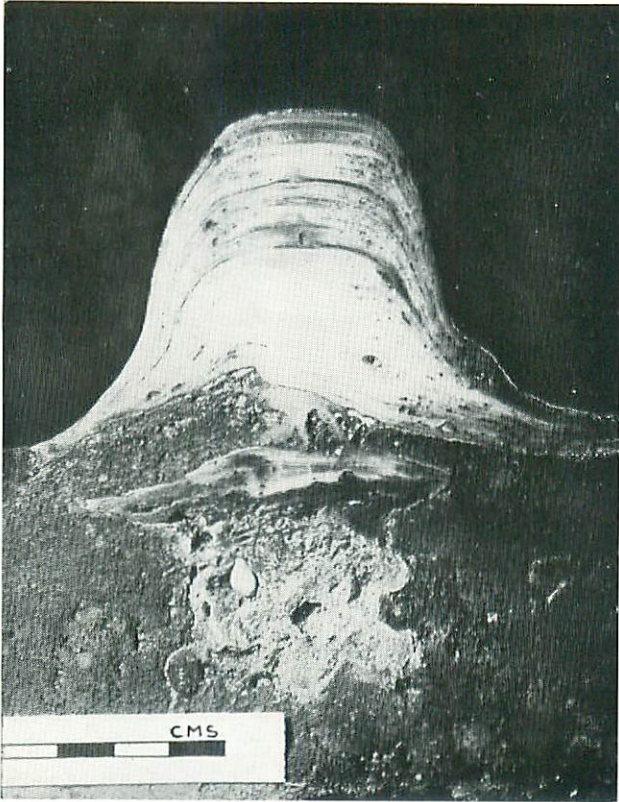
The following notes deal with specimens from Ovens and Gortmore caves, Co. Cork, Dunmore cave, Co. Kilkenny, and Pollnagollum cave, Co. Clare.

OVENS CAVE, CO. CORK

In a previous paper, describing this cave I have noted the presence of oolites in the northern portion of the cave.³ Numerous gravel-lined and calcited pockets occur in the floor-deposits formed by the drip from the cave-roof. The water washes away the finer material of the deposit and generally leaves an irregular gravel-lined hollow. In favoured cavities calcite is being deposited around sand-grains and pebbles. Oolites in all stages have been observed, from thinly coated pebbles to more mature specimens with depositional layers. A large number show a highly polished outer surface.

* Previous literature has described specimens from the Mitchelstown caves,⁶ and Brodrick has noted the presence of cave pearls in the Marble Arch cave, Co. Fermanagh.¹ This comprises all the references on Irish oolites known to the writer.

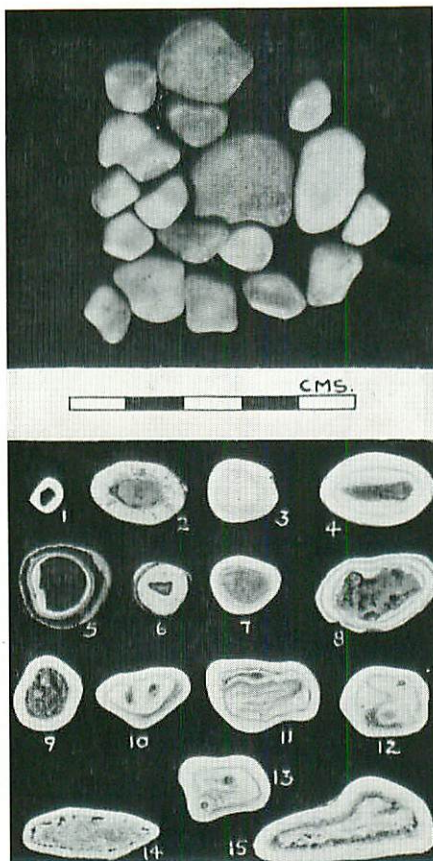
PLATE 9



Cross-section of a stalagmite boss from Ovens Cave, Co. Cork, showing buried "foot" of pearl conglomerate in sand and gravel. (Section prepared by J. C. C.)

(Photo. J. C. Coleman.)

PLATE 10



Above—Group of cave pearls from West Cave, Gortmore, Co. Cork.
Below—Cross-sections of cave pearls. Nos. 1, 5, 6, 7: Ovens Cave, Co. Cork; Nos. 2, 3, 4, 8: Dunmore Cave, Co. Kilkenny; Nos. 9, 10, 11, 12, 13, 14, 15: West Cave, Gortmore, Co. Cork.
(Photo. J. C. Coleman.)

NOTES ON SPECIMENS IN *Plate 10*

1. Pure white in colour throughout with polished subangular facets. Limestone fragment as nucleus.
5. Pebble of green sandstone thinly coated with muddy-brown calcite.
6. Roughly spherical type with indistinct depositional layers around a nucleus of clay.
7. A highly polished disk of pure white calcite. The nucleus is fine light-brown clay.

In Ovens cave the gradual uniting of pearls into masses of pearl conglomerate is seen in all stages. In some cases the hollow is filled with an irregular mass of calcite; others are covered over by a disk of stalagmite and in advanced stages a boss or pillar of stalagmite has grown above the now buried conglomerate 'foot' (*Plate 9*.)

GORTMORE CAVES, CO. CORK

An interesting series of caverns is located in the limestone escarpment near Roskeen Bridge on the river Blackwater, 10 miles west of Mallow.*

Oolites were found in the west cave in the part called the Pearl Gallery. They were located in pockets in the compact clay floor. On an average twenty to thirty pearls were found in each pocket and also masses of pearl conglomerate. The oolites from this site were most irregular in shape and none approached the spherical. The colour was generally a dull white and in only very few specimens was the outer surface polished.

Interesting multinuclear types occurred, which accounted for many of the irregularities in shape. These in most cases resulted from the cementing together of small oolites at an early stage of their formation by the continued deposition of calcite.

In *Plate 10* Nos. 10, 11, 12, 13 are typical examples of multinuclear oolites. These also show brown clay mixed with the calcite. Nos. 14 and 15 have, as nuclei, irregular masses of tufaceous stalagmite and clay.

DUNMORE CAVE, CO. KILKENNY

At three places in this cave oolites were found. In the Haddon Hall, gour pools near the east wall furnished specimens, and they were found in a similar location at the bottom of the Main Chamber, near the Fairies' Floor. A fine nest of specimens was found in a hollow on the top of a big stalagmite boss on the east wall of the Main Chamber.†

* For a general description of the caves and previous literature see (4). Unpublished plans of the three main caves have been made by the author.

† This well-known cave, seven miles north of Kilkenny, has been often described. The most accessible paper, with a full review of previous literature, is that by R. Lloyd Praeger.⁷ Mr. N. J. Dunnington, of Portlaoighise, has published a survey of the cave, with numerous cross-sections, in *Cave Science*, No. 7, Jan., 1949.

In general the oolites from Dunmore are well-formed ovoid and nearly spherical types with single nuclei. Close depositional layers are seen in sectioned specimens and there is very little clay mixed with the calcite. Polish on the outer surface is rare, the general appearance being a dull white slightly rough surface.

NOTE ON SPECIMENS IN *Plate 10*

2. Nucleus of dark-grey limestone, depositional layers indistinct and calcite soft, almost tufaceous in character.
3. Almost spherical in shape, sand-grain nucleus with finely marked layers of deposit.
4. Ovoid type with slightly polished outer surface. Sand/clay nodule as nucleus.
8. Irregular ovoid with a rough gritty outer surface. The nucleus is a mass of sand and clay and similar material is mixed with the depositional layers.

POLLNAGOLLUM CAVE, CO. CLARE

During the survey of this active cave-system in 1943 some large oolites were found in a shallow gour pool in the Upper System above the Pollnagollum pothole.⁵ They are not illustrated here, but one specimen which I sectioned has as a nucleus a flat angular fragment of black shale. The surrounding calcite was an almost sponge-like tufa. Portions of the outer surface were polished and the shape was nearly spherical, measuring 4 cm. in diameter.

CONCLUSION

The oolites described in these notes are all similar as to mode of formation and were found in hollows of stalagmite, clay, and gravel and in gour pools. Well-formed spherical types are not common and polished outer surfaces are not seen in many specimens. The materials of the nucleus show compact clay-nodules, sand-grains, pebbles, rock-fragments, and stalagmite clay masses. In Gortmore caves multinuclear types were common but in the other caves single nuclear types only were found.

In the Mitchelstown caves, Co. Tipperary, specimens previously described⁶ do not differ to any great extent from those examined in the present paper. Ovoid and faceted specimens occurred and in the majority of cases the nucleus was of limestone, but three were sandstone. Also an oolite 3 cm. in length showed a nucleus of stalagmite breccia.

In general it appears that the fewer oolites under formation in a particular hollow the better opportunity they have for attaining a nearly spherical shape. Crowding of oolites tends towards irregularity in shape, as the descending water has no opportunity for turning them around and depositing calcite. The Gortmore multinuclear types are a result of this overcrowding. The fact that oolites eventually form a Pearl Conglomerate has not been

previously noticed, and in sand and gravel floors this stage precedes the formation of stalagmite bosses and pillars at favoured points.

I may be criticized for the inconsistent manner in which I have used the terms "cave pearl" and "oolite" in this paper. I have done so because the two names are almost equally distributed through spelæological literature. Along with many other terms used in spelæology a decision is overdue as to which one should be favoured. Possibly in view of the fact that oolite in geology is used to describe a particular rock structure, cave pearl might be better used to describe the cave forms under discussion.

REFERENCES

- ¹ Brodrick, H., "Note on the Occurrence of (so-called) Cave Pearls", *Report Brit. Assoc.*, 1908, p. 704; *Irish Nat.*, 1908, Vol. XVII, p. 235.
 - ² Casteret, N., *Ten Years under the Earth*, 1939, p. 173. London.
 - ³ Coleman, J. C., "The Ovens Cave, Co. Cork", *Jour. Cork Hist. and Arch. Soc.*, 1940, Vol. XLV, pp. 47-52.
 - ⁴ Coleman, J. C., "Notes on a Survey of Gortmore Caves, Co. Cork", *British Caver*, 1944, Vol. XII, pp. 76-81.
 - ⁵ Coleman, J. C., and Dunnington, N. J., "The Pollnagollum Cave, Co. Clare", *P.R.I.A.*, 1944, Vol. LB, p. 111.
 - ⁶ Hill, C. A., Brodrick, H., and Rule, A., "The Mitchelstown Caves, Co. Tipperary", *P.R.I.A.*, 1909, Vol. XXVII B, pp. 235-68.
 - ⁷ Praeger, R. Lloyd, "The Cave of Dunmore", *Irish Nat.*, 1918, Vol. XXVII, pp. 148-56.
-