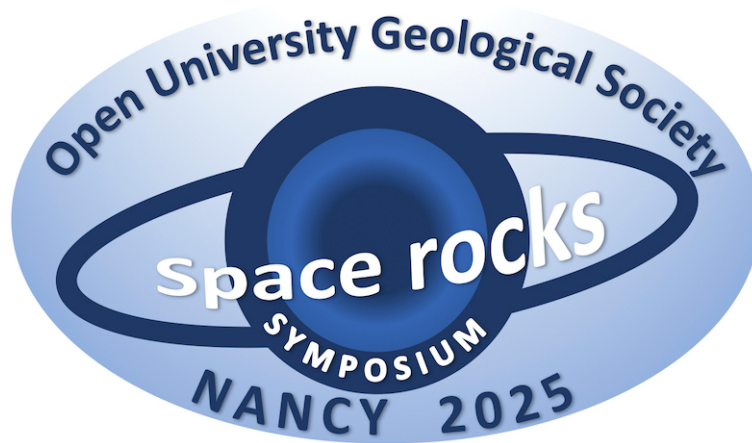




Mesozoic
sedimentary history
in the Lorraine plains

Field trip

Hettange-Grande and Malancourt-la-Montagne



Bernard LATHUILIERE

Author's address:

Bernard LATHUILIERE
Emeritus Professor
UMR7359 GeoRessources
Université de Lorraine
Faculté des Sciences et Technologies
BP 70239
54506 Vandoeuvre-lès-Nancy CEDEX - FRANCE

email address : bernard.lathuiliere@univ-lorraine.fr

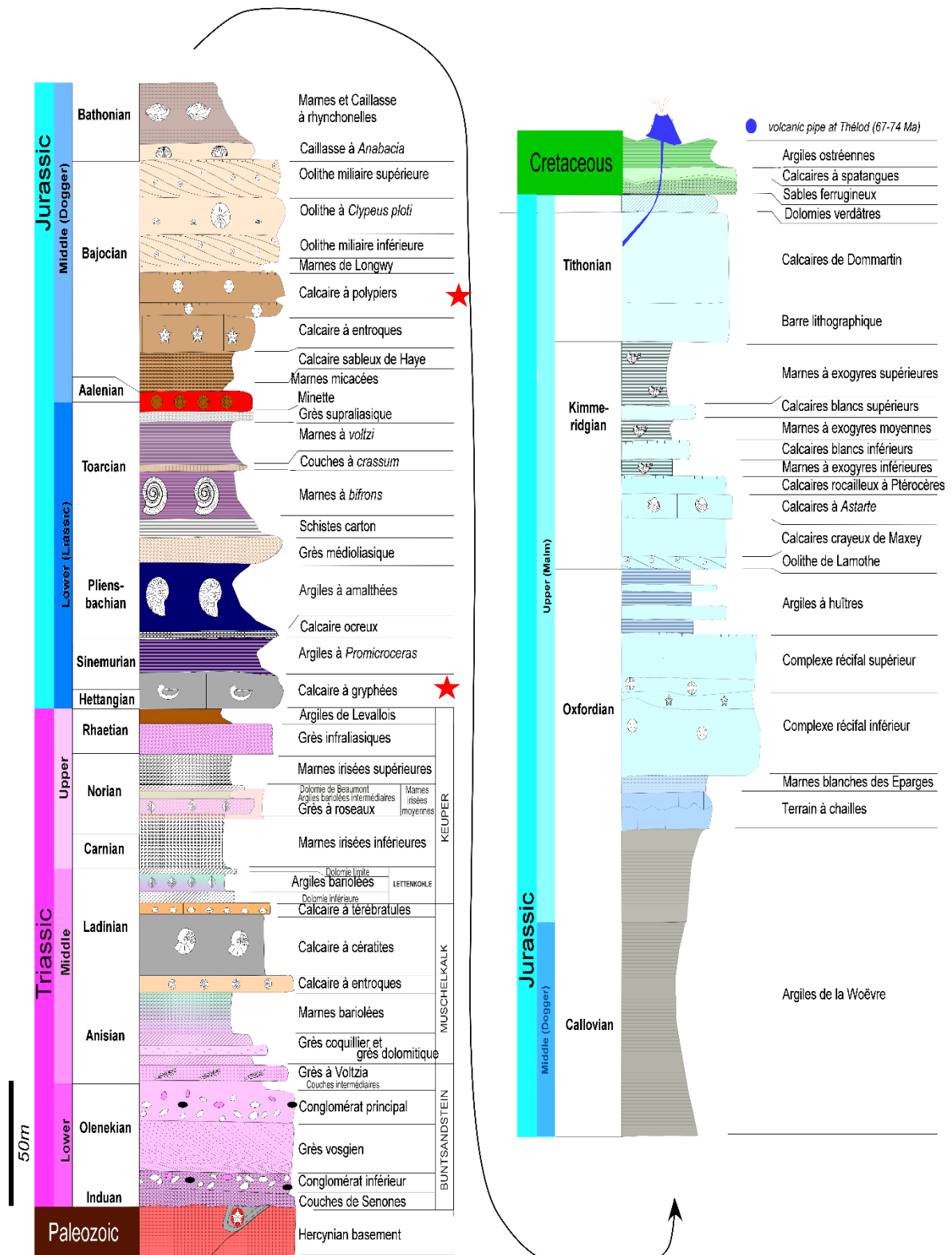


Fig. 1. Synthetic lithostratigraphic succession in Lorraine. The red stars correspond to the visited sites. The Grès d'Hettange Formation is very local and intercalated within the Calcaire à gryphées Formation; for this reason it is not represented.

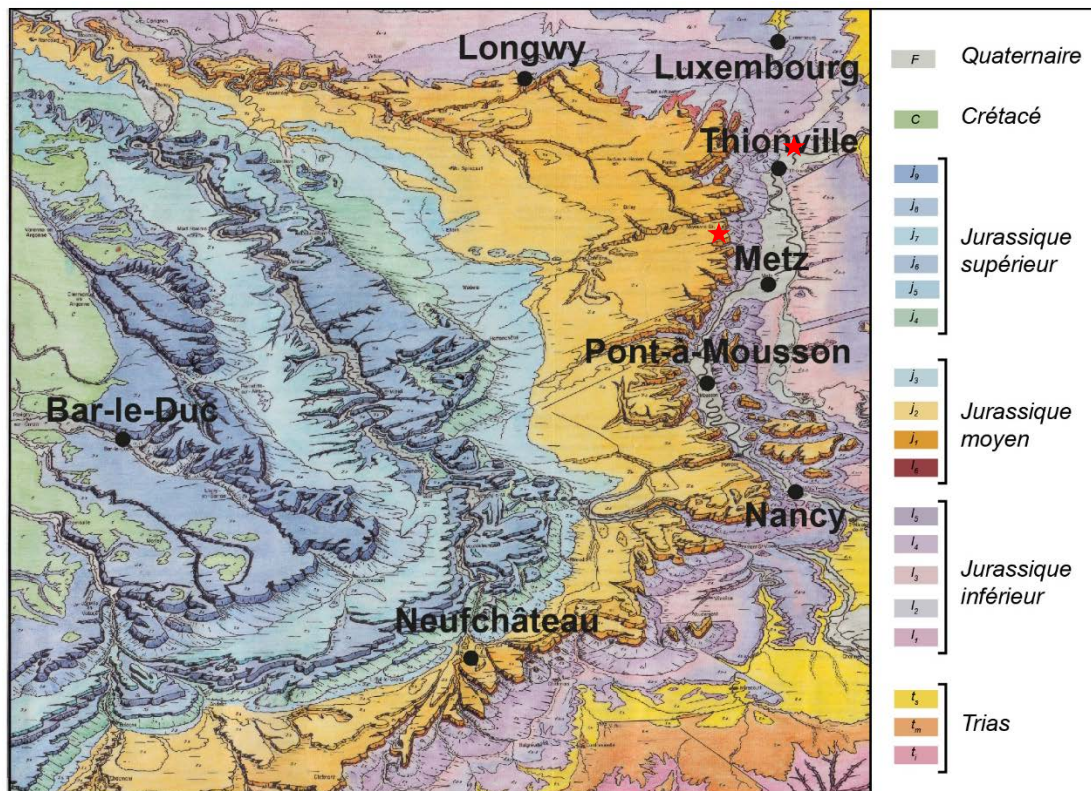


Fig. 2. Oblique topographic and geologic view of Eastern France and surrounding regions (from Hampé, 1983). From North to South red stars indicate the locations of Hettange-Grande and Malancourt-la-Montagne.

1. Hettange-Grande, historical stratotype of the Hettangian stage

The first stop corresponds to the historical place that was documented by Olry Terquem in 1860th years, and that was proposed by the swiss geologist Eugène Renevier (1864) to serve as a stratotype for the stage Hettangian, the first stage of the Jurassic system. Since 1985 the site is a national reserve due to the active work of Micheline Hanzo. Very recently « la Maison de la nature et du tourisme » has been erected to explain the interest of the site.

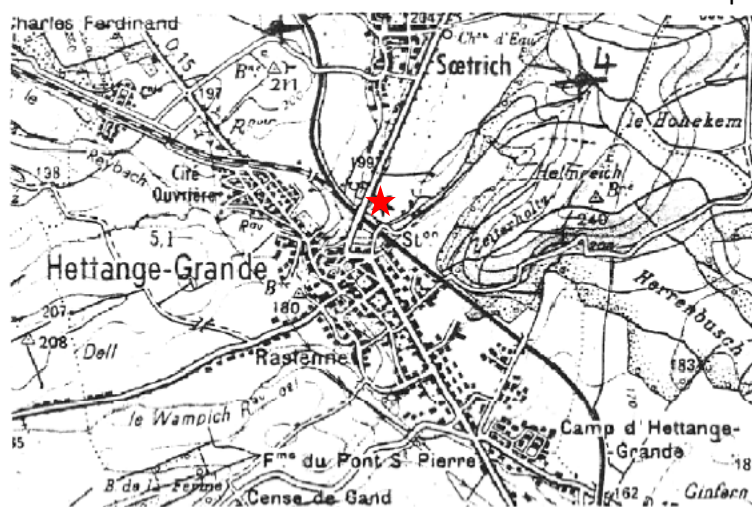


Fig. 3 Location of the Hettange quarry (red star)

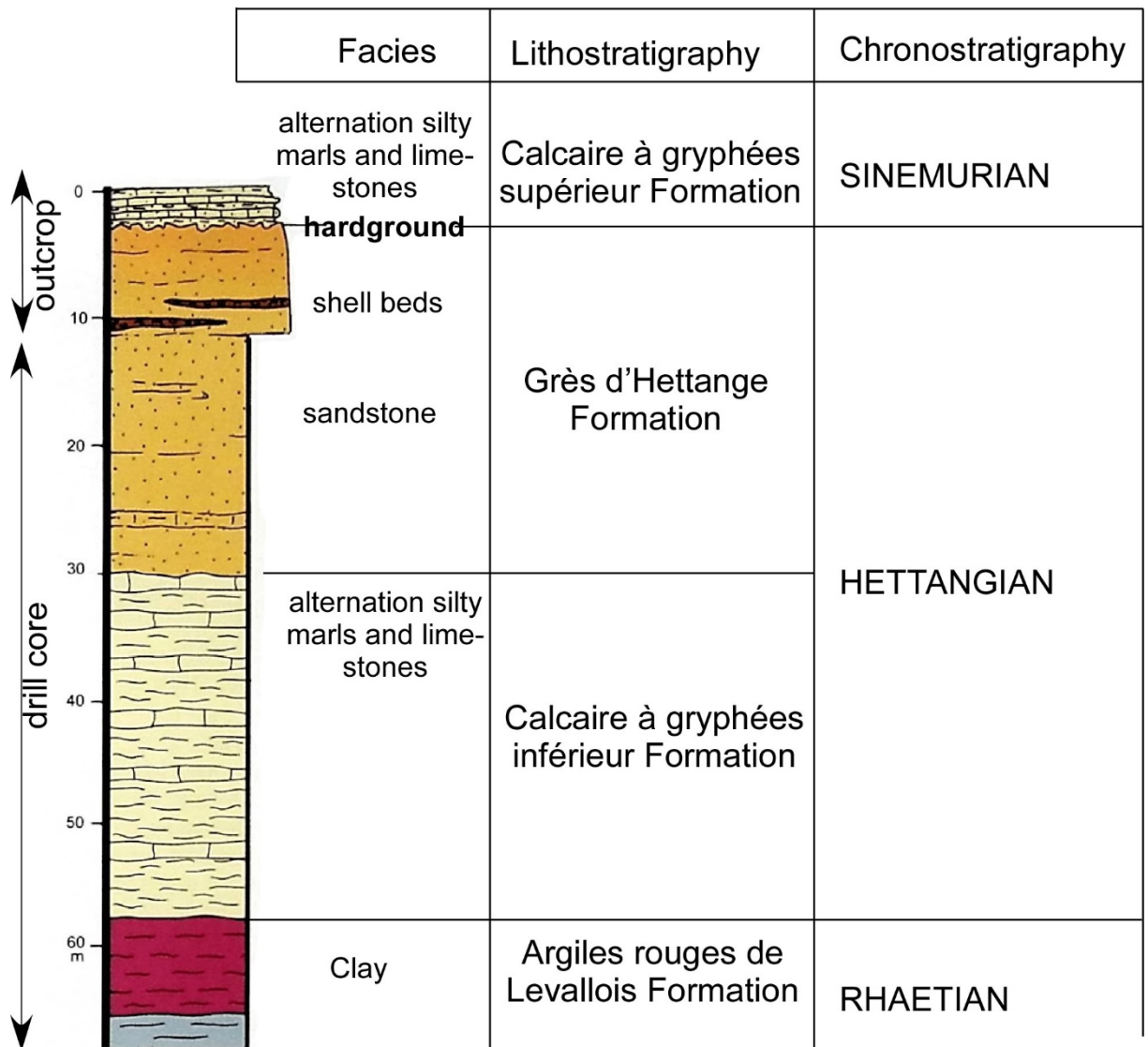


Fig. 4 General view of the succession in Hettange Grande (adapted from Hanzo 2012)

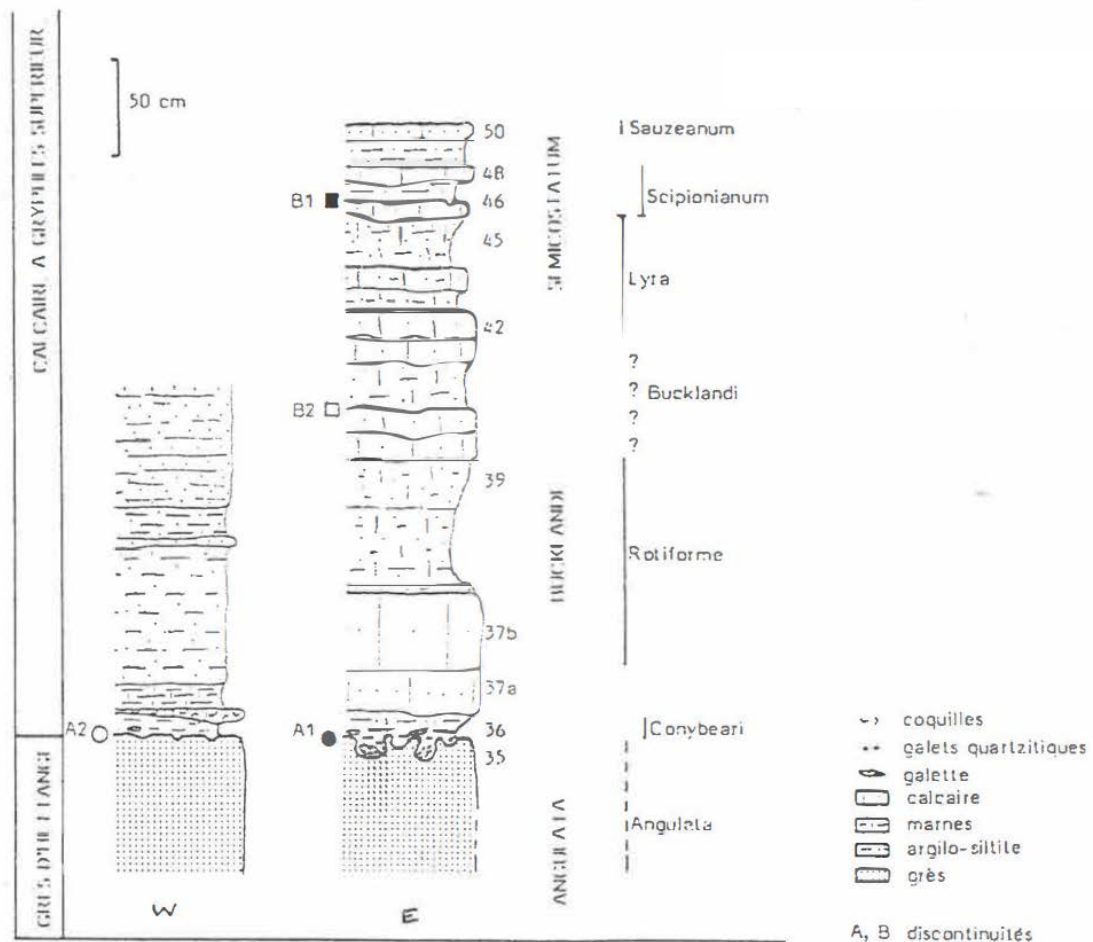


Fig. 5. The biostratigraphy of the outcropping succession in Hettange-Grande at the subzonal scale (from Hanzo et al. 1987)

More references on the visited outcrop of Hettange-Grande

A general view on the Hettangian stratotype

Hanzo M. (coord.) 2012. — Stratotype hettangien. Mèze, Publications scientifiques du Muséum & Biotopie éditions. 317 p. (Collection patrimoine géologique; 3).

A historical focus on the controversial debate at the origin of the Hettangian stage:

Chomard-Lexa A. 2003. — La controverse de l'Hettangien. Bulletin d'Information des Géologues du Bassin de Paris 40 (2): 8–18

A focus on the Sinemurian biochronology and the duration of the hardground :

Hanzo M., Hilly J., Guérin-Franiatte S., & Mangold, C. 1987. — Durée des discontinuités et des séquences : exemple du passage Hettangien - Sinémurien dans la région. *Bulletin de la Société Géologique de France* sér 8, t. 3: 1107–1112.

2. Malancourt-la-Montagne : Bajocian coral reefs

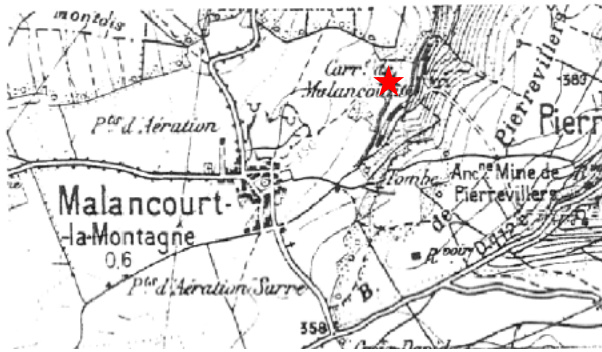


Fig. 6 Location of the Malancourt la Montagne quarry (red star)

The quarry was already known in Klüpfel 1917 under the name of Malandshofen and was used by the german researcher to document his pioneering view on sequence stratigraphy (klupfelian sequence).



Fig. 7 Panoramic general view of the Malancourt Quarry (From Durand et al 1989).

	Lithostratigraphy	Chronostratigraphy
	Marnes de Longwy Formation	Upper Bajocian
	Hardground	
	Calcaire à polypiers supérieur Member	Blagdeni Subzone
Calcaire à polypiers Formation	unformal member (cherty limestone)	Lower Bajocian Humphriesianum Zone
	Hardground	
Lucinenbank	Calcaire à polypiers inférieur Member	Humphriesianum Subzone

Fig. 8. Stratigraphic schematic frame of the Malancourt quarry

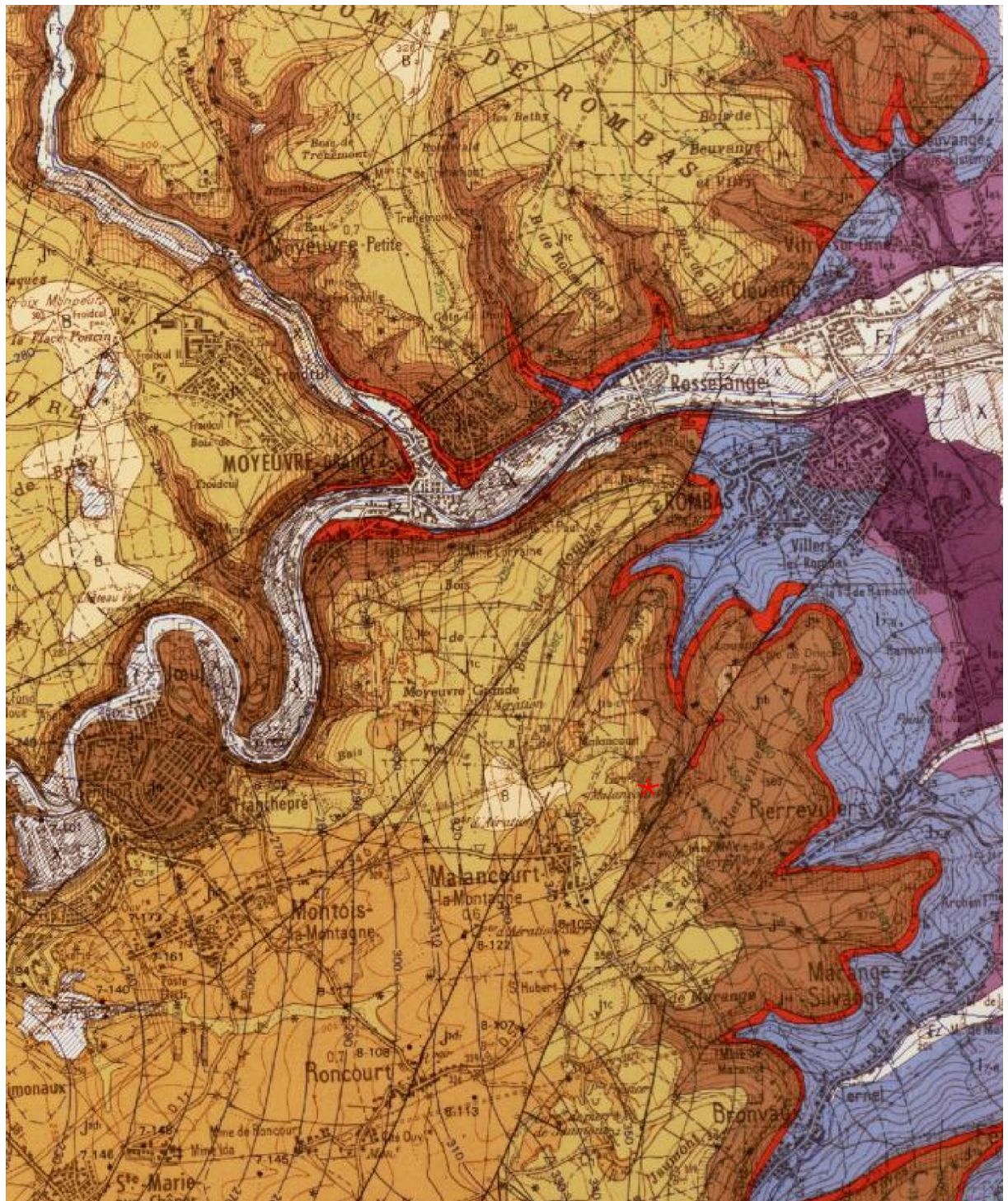


Fig. 9. Geological context from the geological map 1/50 000 BRGM Briey (Le Roux et al) . For location of the quarry see the red star. See also the Orne valley, flowing between two Hercynian faults between which the Upper coral limestone is replaced by the Calcaire siliceux de l'Orne Formation.

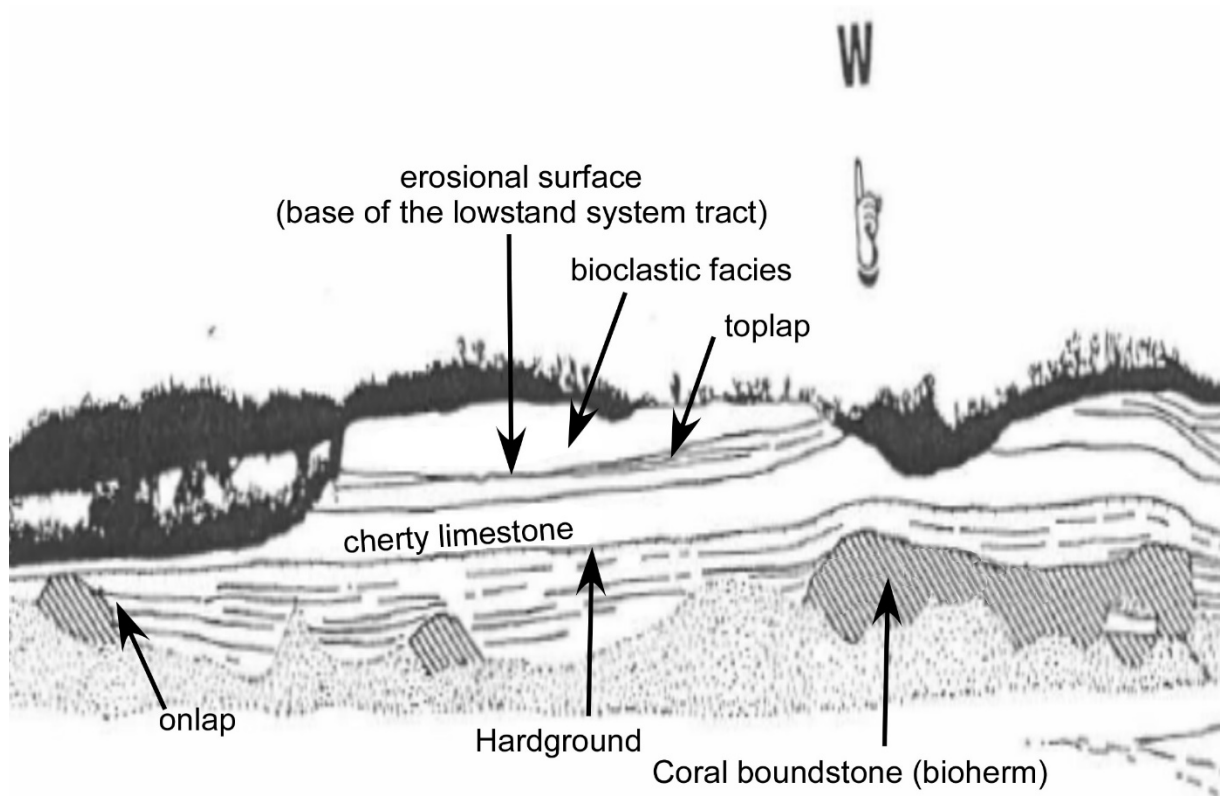


Fig. 10 Enlargement of the western part of the quarry (adapted from Durand et al 1989)

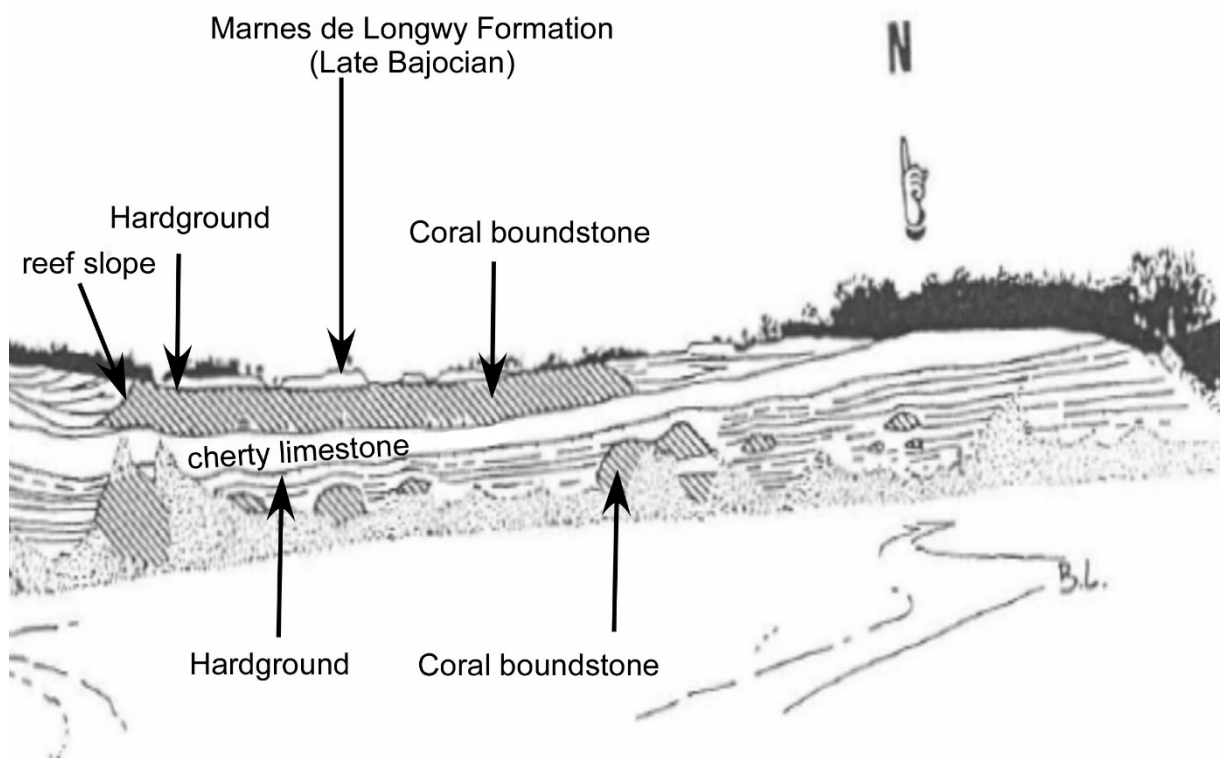


Fig. 11 Enlargement of the northern part of the quarry (adapted from Durand et al 1989)

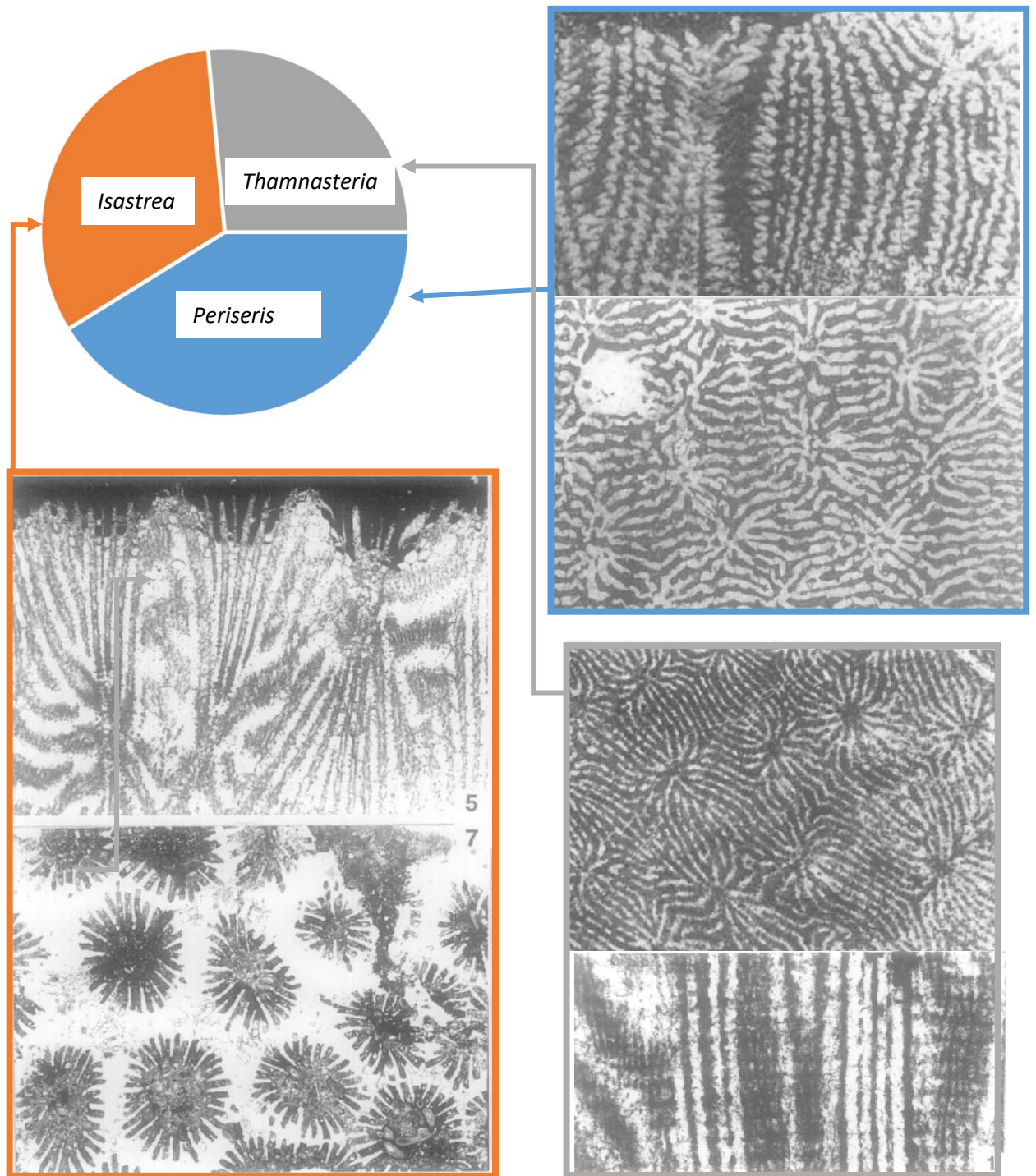


Fig. 12 Composition of the coral fauna of the lower coral bed: a typical mesophotic reef.

More references on the visited outcrop of Malancourt-la-Montagne

- Durand M., Hanzo M., Lathuilière B., Le Roux, J. & Mangold C. 1989. — DUGW Stratigraphische Kommission, Subkommission für Jura Stratigraphie. Excursion en Lorraine. Nancy, 3-5 mai 1989 Guide de terrain. Université Nancy 1, Laboratoire de Géologie des ensembles sédimentaires. p. 60. <https://orage.univ-lorraine.fr/s/orage/item/5868>
- Geister, J., 1984. *Récifs à coraux du Bajocien du Grand-Duché de Luxembourg et de Malancourt en Lorraine*. In : Geister, J. | Herb, R., *Géologie et paléoécologie des récifs*. Institut de Géologie de l'Université de Berne, Berne, Suisse. p. 12.1-12.16. 15 fig.
- Geister, J. and Lathuilière, B., 1991. *Jurassic Coral Reefs of the Northeastern Paris Basin (Luxembourg and Lorraine)*. Fossil VI. Cnidaria. International Symposium on Fossil Cnidaria including Archaeocyatha and Porifera. p. 112. 64 figs, 15 pls.
- Griette M. (2021) - Malancourt-la-Montagne : Carrière du Bois de Malancourt - *Contribution ORAGE originale à la Banque de données du sous-sol n°23* ; lien de consultation : <https://orage.univ-lorraine.fr/s/orage/item/1473>.
- Hallam, A., 1975. *Coral patch reefs in the Bajocian Middle Jurassic of Lorraine*. *Geological Magazine*. vol. 112 n° 4. p. 383-392.
- Hilly J. & Haguenauer, B. eds, 1979. *Lorraine-Champagne*. Editions Masson, Paris, France. Guides géologiques régionaux. 215 p. ISBN : 2-225-62876-9. 117 fig., 8 pl.
- Klüpfel W. 1919. — Über den lothringer Jura. *Jahrbuch der königlichen preussischen geologischen Landesanstalt und Bergakade zu Berlin* 38 (1) (for 1917): 252–346
- Lathuilière B. (1989) - *Isastrea*, polypier branchu ! *Isastrea* branching coral ! *C.R. Acad. Sci., Paris*, 308, p.887-892.
- Maubeuge, P.-L., 1972. *La carrière de Malancourt Moselle : une contribution à la sédimentation récifale et à la stratigraphie du Bajocien moyen lorrain*. *Bulletin des Académie et Société lorraines des sciences*. t. 11 n° 4. p. 238-258. ISSN : 0567-6576. 1 fig.

Two useful websites :

<https://sites.ac-nancy-metz.fr/base-geol/fiche.php?dossier=032&p=3descrip>

<https://orage.univ-lorraine.fr/s/orage/page/presentation>