

Pierre Meulière du Pinail



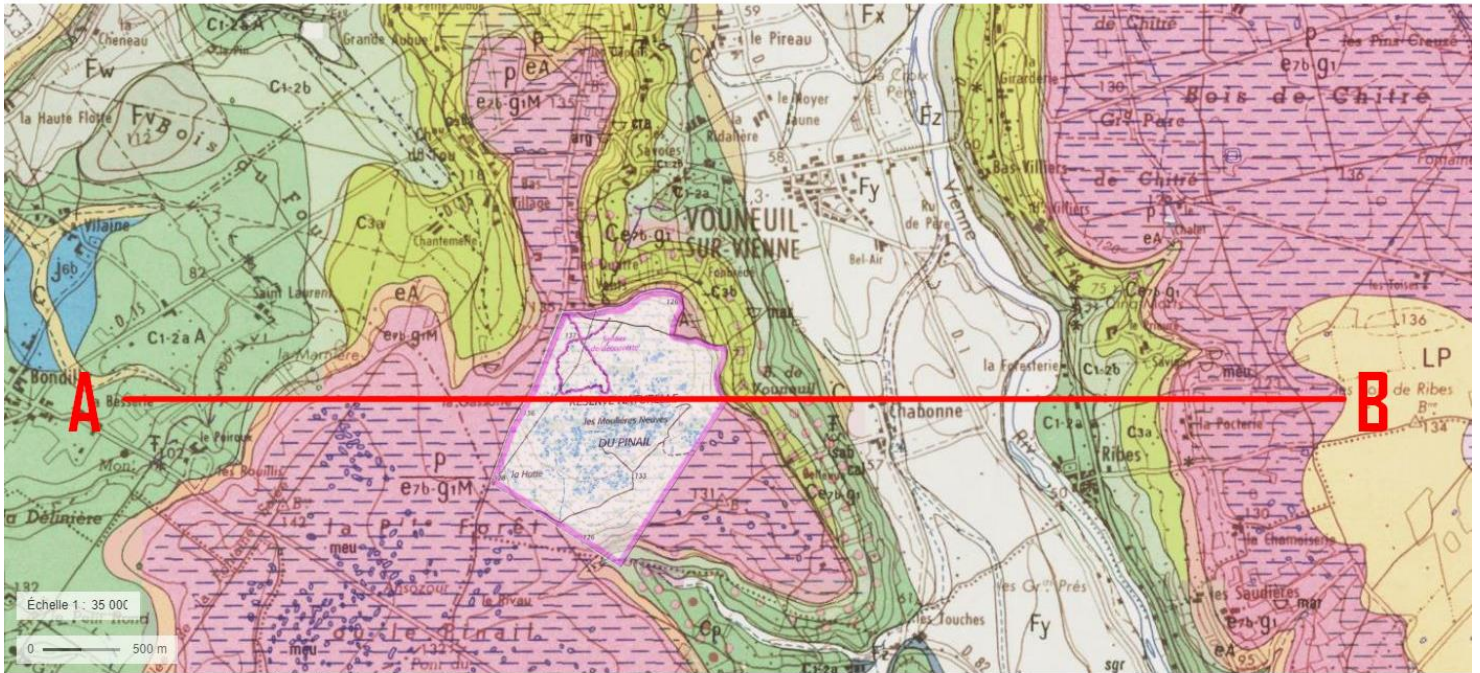
The Pinail is located north of the Threshold of Poitou which delimits the Aquitaine Basin of the Paris Basin. On the scale of hundreds of millions of years, the site has experienced periods of immersion (ocean and lake) and emersion (continent) during which the rocks of the subsoil have formed. The most recent ones include limestone, the peculiarity of which is that it has evolved into millstones trapped in clays.



Source : <https://www.youtube.com/watch?v=kE8KjwSR6E>

Pinail is located on the southwestern margin of the Paris Basin, a vast continental basin where sediments accumulated during the secondary era and then the tertiary era for nearly 250 million years. It is a low plateau (125 to 140 m NGF) between the Clain, to the west, and the Vienne, to the east.

CARTE GÉOLOGIQUE



Fy, C Alluvions anciennes	eA Colluvions	c1-2b Marnes à Ostracées
p Argiles et limons	J6b Alternance calcaire et calcaire micritique	c3a-b Craies blanches
e7b Marnes calcaires et meulrières	c1-2a Argiles, garviers, sables	 Périmètre de la Réserve du Pinail

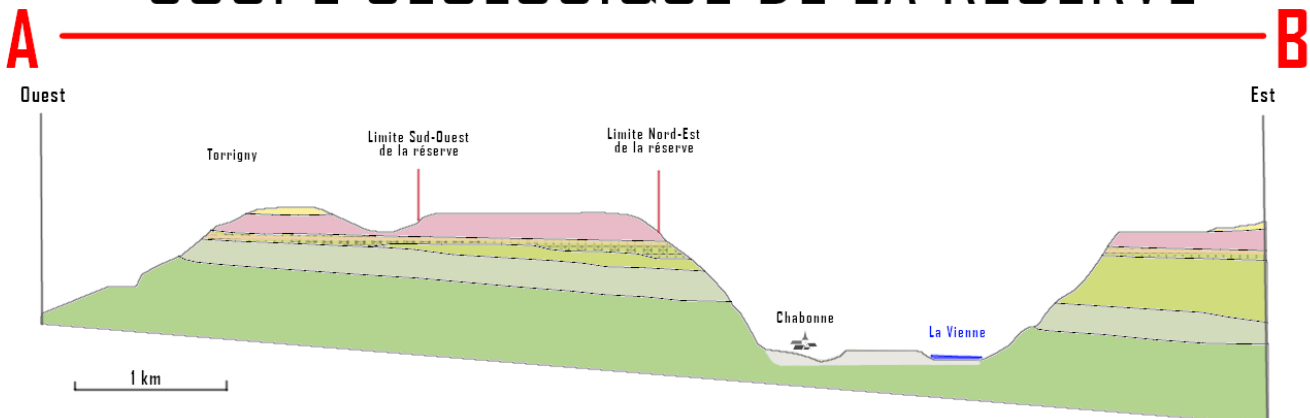
Carte BRGM - Source Infoterre

It consists of 2 large sets.

From the bottom up:

- Rocks of marine origin (50 to 70m thick, clays, sands, sandstone, marls...) dated from the Late Cretaceous.
- Rocks of continental origin (30m thick) from -56 to -23 million years old occupy the top of the plateau by covering the deposits of the Late Cretaceous.

COUPE GÉOLOGIQUE DE LA RÉSERVE

















 Alluvions, sables, graviers et galets	 Eocène continental	 Cénomannien supérieur
 Plio-Quaternaire	 Turonien Moyen	 Cénomannien inférieur
 Ludien Supérieur (Paléogène)	 Turonien inférieur	 Périmètre de la Réserve du Pinail

D'après les travaux de Romain Guiheneut

On the highest set, the oldest rocks are sand clays. They represent the products of the degradation of various types of rocks by water and come in particular from the Massif Central.

The most recent rocks include white marls and limestones. The particularity of these limestone banks is that they contain grinders, forming homogeneous or cavernous irregular masses. Their hardness allowed the production of millstones until the beginning of the 20th century.

ECHELLE DE MOHS simplifiée

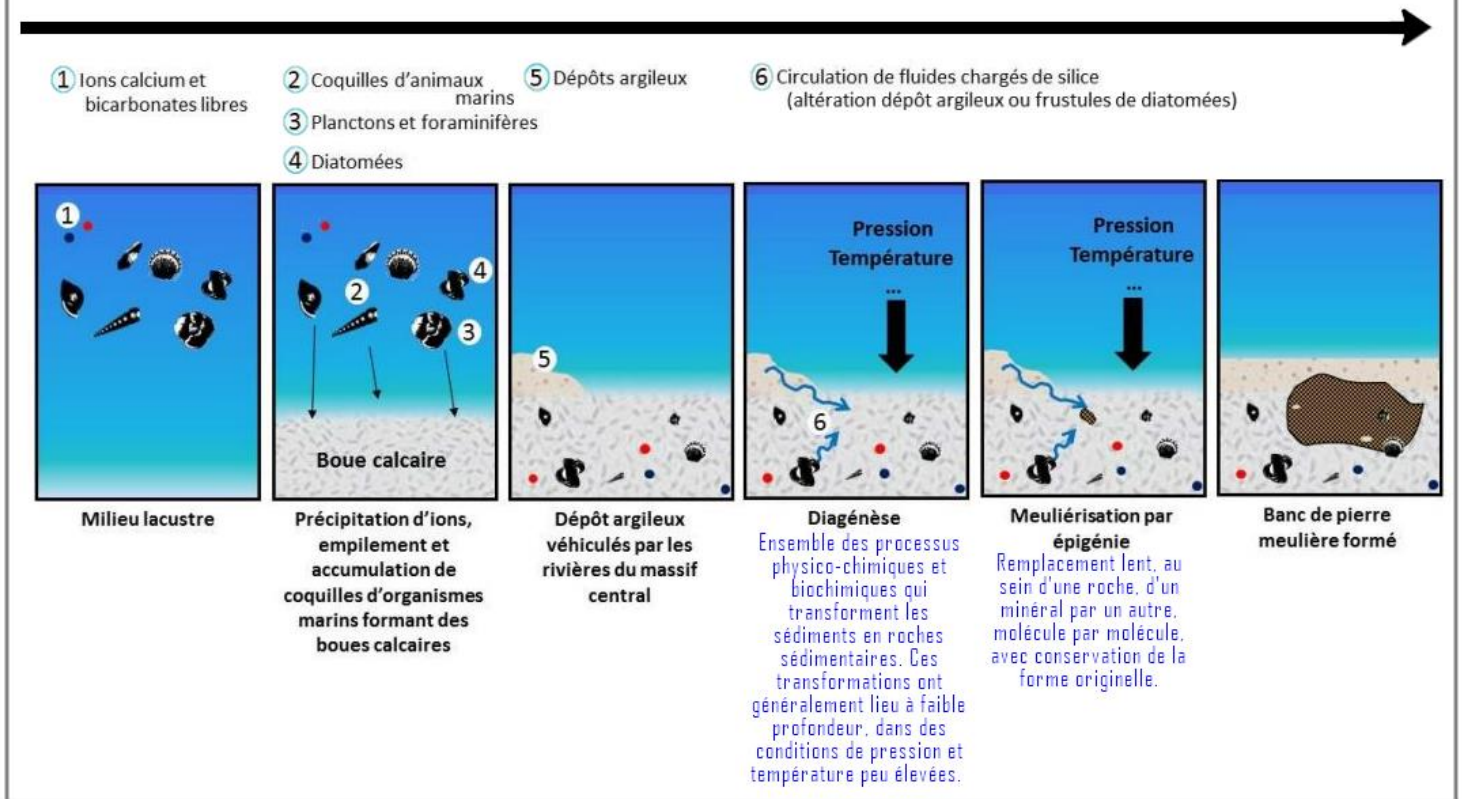
MINERAL DUR			
	10 Diamant		
	9 Corindon		
	8 Topaze	Raye la plupart des matières	
	7 Quartz	Rayent le verre	
	6 Orthose		
	5 Apatite	Rayable par le verre	
	4 Fluorite	Rayable avec un couteau	
	3 Calcite	Rayable avec une pièce en cuivre	
	2 Gypse	Rayable à l'ongle	
	1 Talc	Friable sous l'ongle	
MINERAL TENDRE			

The milling is usually the result of irregular silicification of limestone or lake marl, in irregular, rounded or angular masses, massive and homogeneous (compact grinder). Its density is 2200 kg/m³.

This complex geochemical evolution, called meulièrementisation, during a continentalization phase, would come from the desilicification of clays during periods of drying, associated with climatic silicification of limestone or marl.

Schéma synthétique du PROCESSUS de MEULIÈRISATION

Tristan BERRY



Sources :

- <https://www.youtube.com/watch?v=kE8KjwSR6E>
- [https://fr.wikipedia.org/wiki/Meulière_\(géologie\)](https://fr.wikipedia.org/wiki/Meulière_(géologie))
- https://www.pairform.fr/doc/17/138/441/web/co/4_2_4.html
- <https://www.larousse.fr/dictionnaires/francais/meulière/30404>



Question 1

Based on the geological time scale (below), and using the description, indicate at what time and at what series do the millstone benches formed here belong?



ECHELLE DES TEMPS GEOLOGIQUES



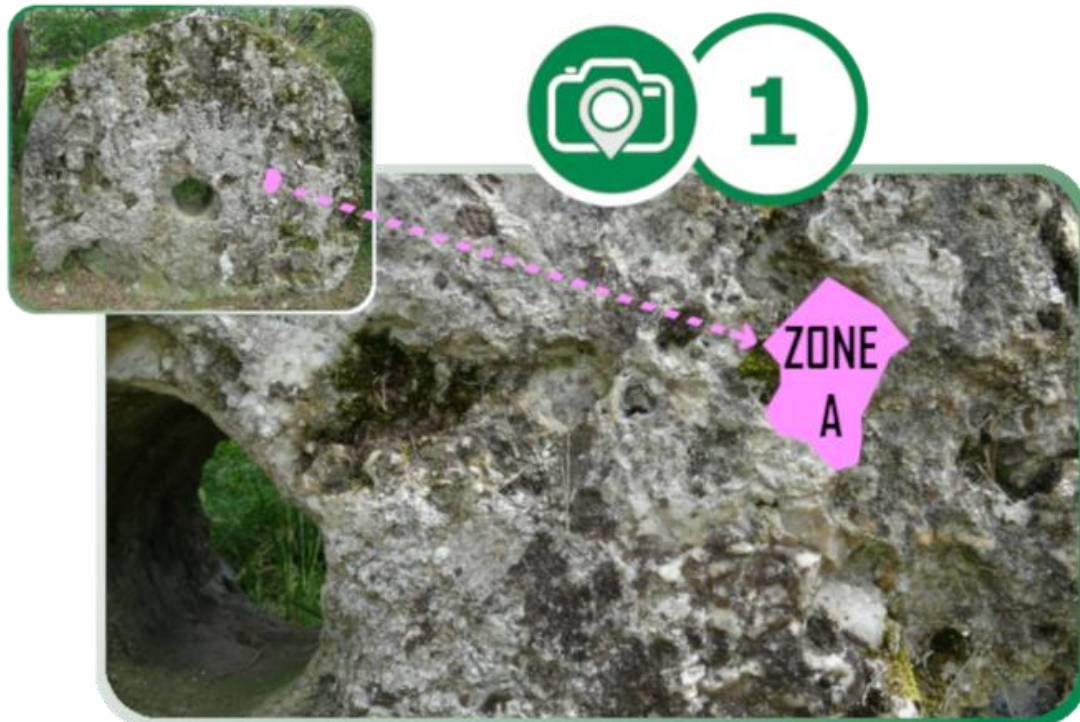
Eon	Ere	Système Période	Série Epoque	Etage	Repère carte	Age* en Ma	
Phanérozoïque	Cénozoïque	Quaternaire	Holocène		q4	0.0118	
			Pléistocène	Supérieur	q3	0.126	
				Moyen	q2	0.781	
				Inférieur	q1	1.806	
			Néogène	Pliocène	Gélasien	p3	2.588
					Plaisancien	p2	3.600
		Zancléen			p1	5.332	
		Miocène		Messinien	m6	7.246	
				Tortonien	m5	11.608	
				Serravallien	m4	13.65	
			Langhien	m3	15.97		
			Burdigalien	m2	20.43		
			Aquitanien	m1	23.03		
		Paléogène	Oligocène	Chattien	g2	28.4 ±0.1	
				Rupélien	g1	33.9 ±0.1	
			Eocène	Priabonien	e7	37.2 ±0.1	
				Bartonien	e6	40.4 ±0.2	
				Lutétien	e5	48.6 ±0.2	
	Yprésien			e4	55.8 ±0.2		
	Paléocène		Thanétien	e3	58.7 ±0.2		
			Sélandien	e2	61.7 ±0.2		
			Danien	e1	65.5 ±0.3		
			Mésozoïque	Crétacé	Supérieur	Maastrichtien	c6
	Campanien	c5				83.5 ±0.7	
	Santonien	c4				85.8 ±0.7	
	Coniacien	c3				89.3 ±1.0	
	Turonien	c2				93.5 ±0.8	
	Cénomanién	c1				99.6 ±0.9	

Question 2

What is the main constituent element of the millstone (or milling stone)?

Question 3

On the wheel that is close to you, what mineral is in zone A in photo 1?

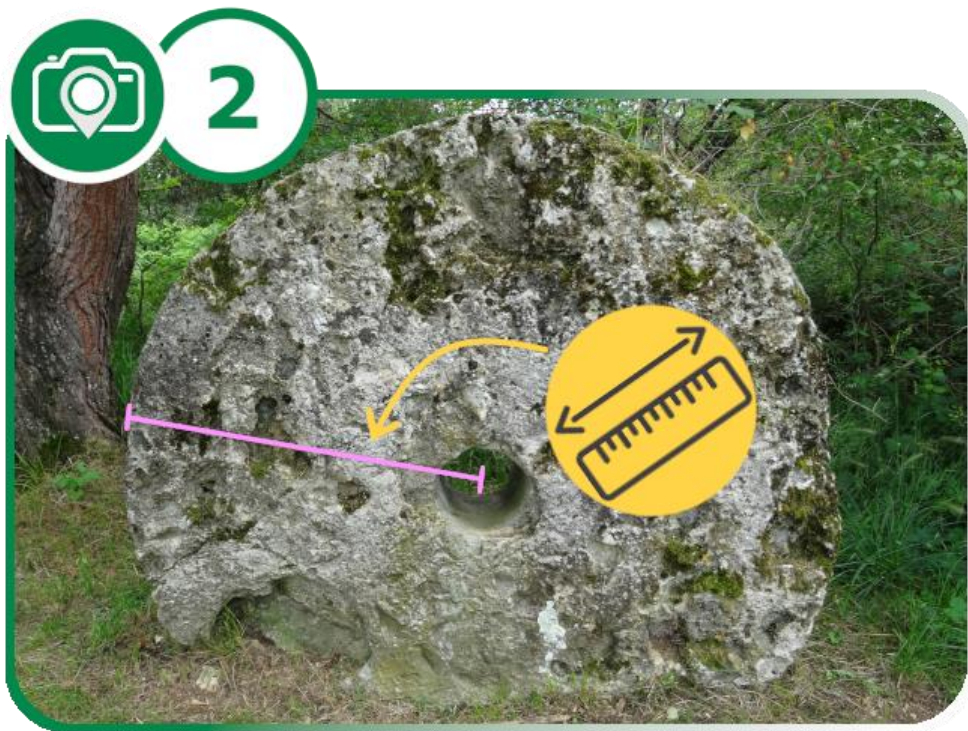


Question 4

How hard is it on the Mohs scale? What for?

Question 5

Mention two distinct processes that allow meulièrement?



Question 6 (optional but interesting 😊)

Assuming that this wheel is full (without the hole in the middle and smooth), and using the trace measurements of photo 2 (above), what would then be its mass?

To validate your visit, send me your answers by the message center or by e-mail (see top of page).



Earthcache

A cache by HUBair



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You can log in "Found it",
and I will contact you if there is a problem.