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# The impact location of Renazzo meteorite



## Object

Determination of the impact point of the Renazzo meteorite at 200 years after its fall

## Abstract

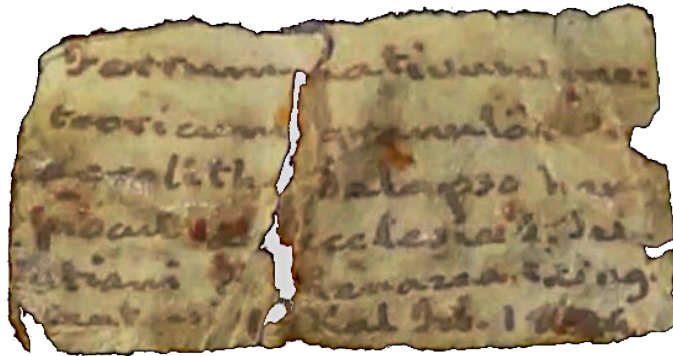
In January 1824 a meteorite fell in the municipality of Cento in the Renazzo hamlet. At that time the extraterrestrial material has been collected and taken to the University of Bologna by professor Ranzani and shared with the scientific community. After 200 years, the memory about what happened that night has been almost completely lost. The generations have followed one another and gradually the knowledge of the event has vanished, transforming it into the mythology of the event. The memories and the impact point have vanished from the collective memory and there is no longer a trace in scientific documents. Driven by curiosity, I wanted to put together the information scattered in the archives, to investigate and to identify the impact point.

## The research of impact point

The first step was to collect all the available information that was scattered in the various historical archives, looking for the chronicles, the stories or the indications written by people present at the time of the events. It was not an easy job, the research of documents was heavy and very slow investigation activity. The documents were handwritten with a quill pen and the convoluted calligraphy combined with obsolete lexicon did not allow a simple reading; in addition some of these documents were written in the Latin language. Once the documents had collected, I proceeded with the transcription and translation of the same in order to facilitate the investigation activity.

### The label on meteorite (1)

On the meteorite exposed at the mineralogical collection Bombicci Museum, there is an attached label. It is a very old paper label with some Latin sentences. The time has made the reading difficult, but with a computer color manipulation algorithm it was possible to read it more easily.



The sentences in Latin:

*Ferrum nativum meteoricum granularis. Aerolitho delapso non procul ab ecclesiam s. sebastiani di Renazzo xxxxxx 18 kal Feb 1824*

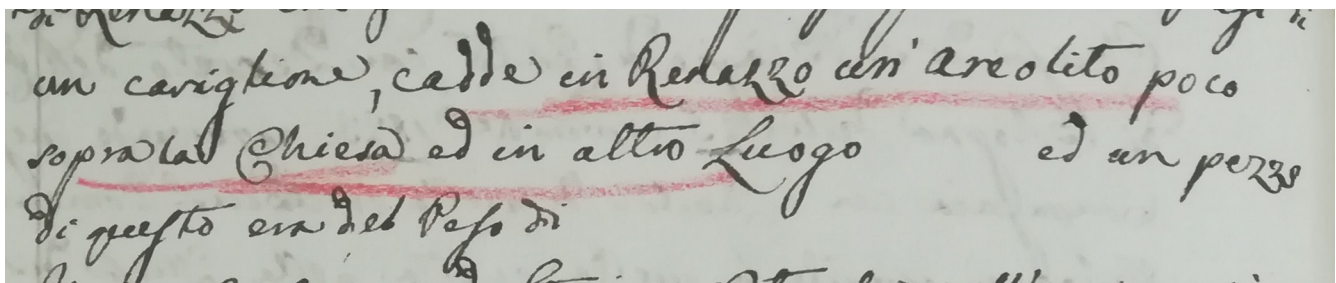
Translation:

Native granular meteoric iron. Meteorite fallen not far from the church of S. Sebastiani di Renazzo xxxxxx 18 kal Feb 1824

It describes that the meteorite has fallen not far from the church of Renazzo. At that time the people moved by foot or by horse, “not far” expression could be considerate a distance around a kilometer or a little bit more.

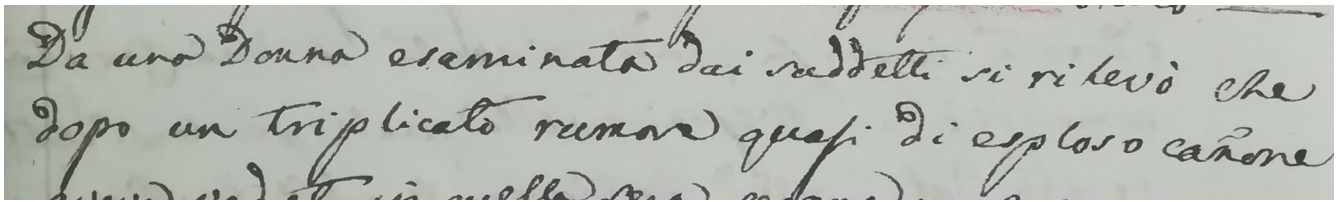
### The Lenzi's chronicle of 16 Jan 1824 (2)

Lenzi was present at that time. He was the secretary and chronicler of Don Bergamaschi, the archpriest of Cento. In his chronicle, he gives us important clues.

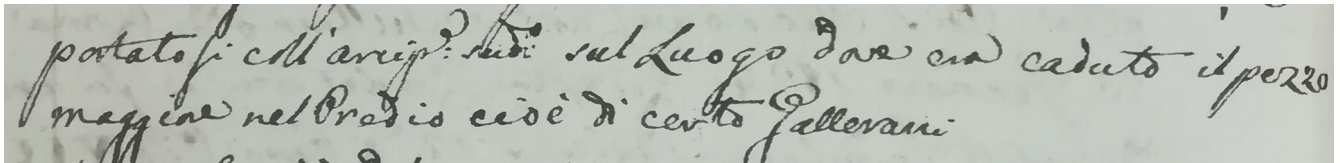


Translation: Fallen in Renazzo an aerolite “above” the church and in other places.

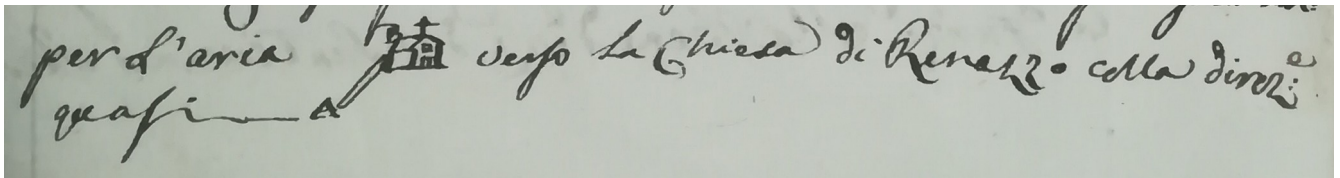
In Italian it is meant like: in Renazzo a meteorite has fallen “above” in the north area of the church and in other places. From this sentence it possible to understand that place is situated in the north area of the church and the meteorite has scattered in many places (fragmentation).

A snippet of handwritten text in cursive script, likely from a historical document. The text is written in dark ink on a light-colored background. It describes an interview with a woman who reported hearing three cannon-like blasts.

Here he is describing the interview of a woman. She said to hear something like 3 cannon blasts. It is meaning that she heard 3 supersonic bangs and the meteorite has split into 3 main parts.

A snippet of handwritten text in cursive script. The text describes the location where the largest piece of the meteorite was found, in the field of Mr. Gallerani.

In this part, Lenzi describes that the main piece (the heaviest one) was found in the field of Mr. Gallerani.

A snippet of handwritten text in cursive script. The text describes the trajectory of the meteorite, mentioning a church and a line labeled A-B. A small drawing of a church is included in the text.

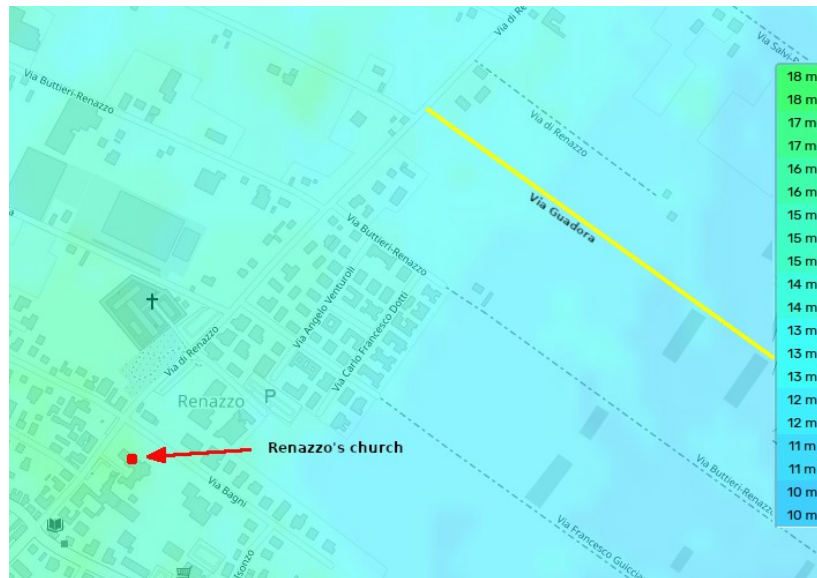
At the end of document Lenzi describe the trajectory of aerolite drawing the church and the A-B fallen line (see drawing of a church).

### Prof. Orioli report (3)

In 1824, Ranzani was an important professor of Bologna University. He went in Renazzo to collect the meteorite samples, and the professor Orioli wrote a report on Ranzani's inspection in Renazzo. In the Orioli's report we can read interesting clues.

glia lungi dalla città di Cento nella parte inferiore della Parrocchia di Renazzo (Provincia di Ferrara) tra le ore nove e dieci della notte sono caduti alcuni sassi meteorici; e narrano il fatto nel seguente modo = Com-

Here, the professor Orioli describes that some meteoric rocks have fallen in the lower part of the parish of Renazzo. At that time, the “lower part” term was used to identify the lower lands following the water flux. In case of parish of Renazzo the lower lands are in the north area and it matches with Lenzi's chronicle.



Elevation map of Renazzo parish

In the elevation map it is possible to note the yellow line, an ancient road called at the time "via Guadora", now closed to transit. The name Guadora indicates an area of difficult crossing, swampy that must be forded. In fact it is located in the lower part of Renazzo, an area where water accumulates more easily.

meteorici; e narrano il fatto nel seguente modo = Comparve da prima un vivo splendore, che si dissipò mandando alcuni lampi. Appresso si sentirono sopra un'area del diametro di parecchie miglia tre grandi scoppi a foggia di colpi di cannone. Subito dopo s'aggiunse una successione come di scariche di moschetteria, chiaramente udite fin dentro Cento. Tale romore si cambiò

In this second parts the professor Orioli describe a sound like 3 loud cannon blasts followed by many little explosions. Also, in this case the report matches with other chronicles.

circa 20. minuti. Tra il luogo dove fu trovato il primo de' sassi e quello dove si trovò l'ultimo corre la distanza di circa un miglio. Alcuni parlano d'una nu-

In this part of the report, the professor Orioli gives us an important information about the debris area: the maximum distance between the 3 largest stones is 1.5km

#### **Prof. Santagata report (4)**

In this paper, the Professor Santagata of the University of Bologna describes precisely what was reported from Ranzani's experience in Renazzo. His writing is entirely in Latin and contains some very interesting details. He reports also what Gallerani's wife saw and heard: 3 cannon blasts, a fireball in the sky that extinguishes and a stone falling in the field near her house.

It is not possible to say with certainty but Mrs Gallerani could be the woman interviewed mentioned in the chronicle of Lenzi.



...que ad rem pertinebant, diligentissime conquisivit. Praeter ea, de quibus facta est mentio superius, non unum solum novit cecidisse corpus, quod nempe Gallarani uxor in altiore coeli parte viderat, et in terram illabi senserat, sed aliud etiam, et fortasse plura, quamvis de istis nihil est, quod certi affirmari possit. Horum utrumque in saxorum numero reponendum est, etsi peculiaris sit formae, et speciei. Primum inventum fuit prope arborem terrae infixum, e qua avulsum profunda reliquerat vestigia. Atri nigrique coloris erat, ejusque superficies ubique levis nulla asperitate rigebat. Ea definiebatur figura, et ambitu, ut placentam vix compactam effingeret. Hic non praeteream, quod summa unicuique videbitur animadversione dignum, scilicet saxo festucas aliquas, et paleas adeo conglutinatas fuisse, ut ipsi firmiter adhaerent: quod dum notum reddo, quis saxum illud mollitudine praeditum, et caloris vi fusum neget, cum terram tetigit, ibique paleas sibi adscivisse, et frigesceus postea obduruisse? Alterum haud longe a primo distabat, cum in ejusdem praedii sulcis aquariis gelu inde astrictum repererint. Nihil de ejus forma, magnitudine, et pondere addi potest, cum vi confractum in tot frusta divisum fuerit. Horum unum ad me detulit humanum, in tot frusta divisum fuerit. Horum unum ad me detulit huma-

In this part of the document, the Prof. Santagata describes the discovery of the two major pieces of the meteorite in the Gallerani's field.

The first falls near a tree, looks like a loaf of bread and leaves a footprint in the ground. A few blades of grass are found in the fusion crust, this means that the meteorite was still soft upon arrival. The second falls not far away into an icy ditch breaking into many fragments.

### Clues summary

After long research we can collect these important clues:

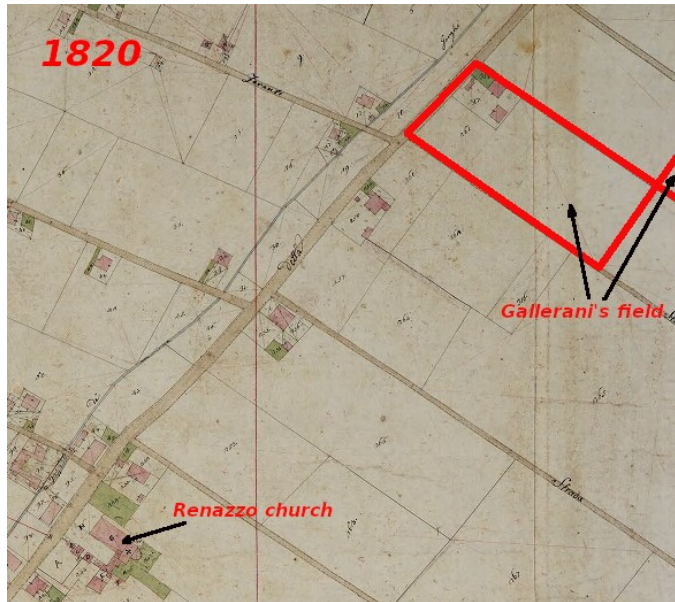
- The meteorite is broken into 3 parts and other small pieces.
- The 3 largest stones fell in an area of 1.5 km
- Two of the main pieces fell near the church of Renazzo, in the north area close to Guadora, in the field of Mr. Gallerani: the first near a tree and the second in an icy ditch.
- The Gallerani's wife was present as an eyewitness

### Looking for the Gallerani's field

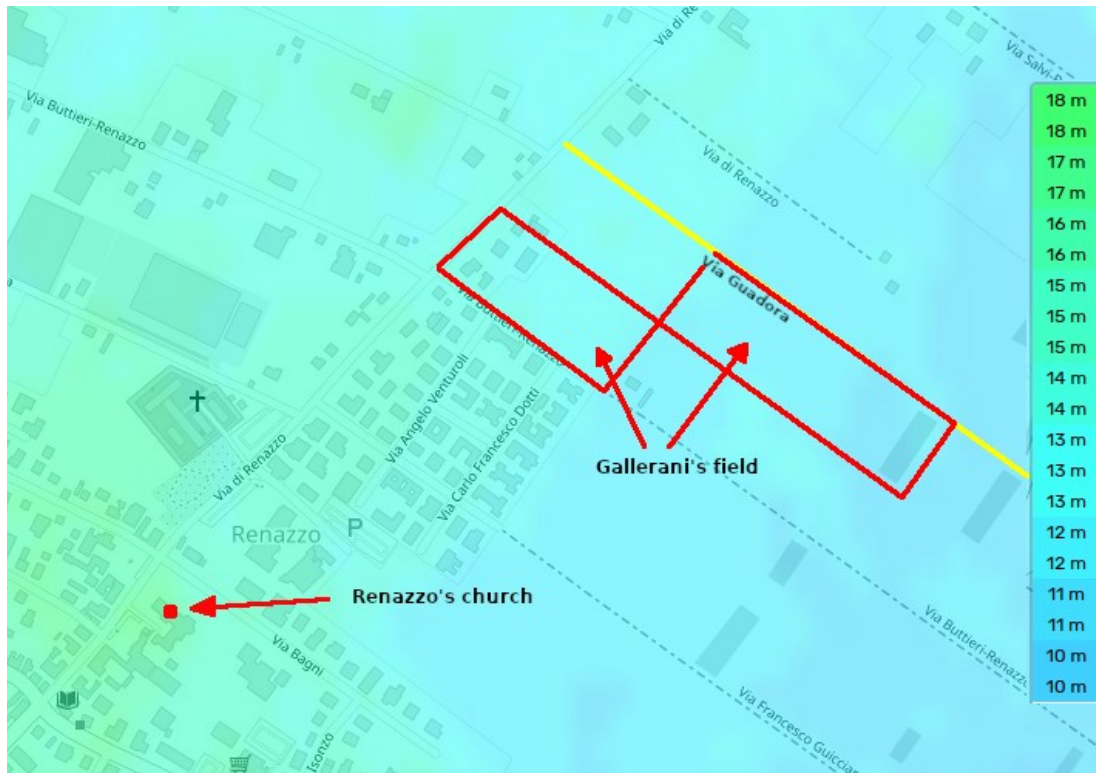
To find the Gallerani field we have to consider the clues above. We must search not so far (around 1km) in the north of the church area for a field that is the property of Mr. Gallerani. The difficulty of this research consists in finding the documents attesting to Gallerani's ownership at that time. It must be considered that 200 years ago the area had just been devastated by the Napoleonic invasions, that the Cento area belonged to the Papal State and that Italy was not yet united there. To find these documents was a strong challenge. After a long research, the documents were found in the archives of the State of Ferrara and of Rome.

The land registry documents, that identify the ownership of the fields, were available for Renazzo in 1820. Around 1 km far from Renazzo church, only a Gallerani family was found, exactly at 500m north of the church. They were the owner of some fields and of a retting ground pond.

Below the historical documents and maps from land register. In red area, the Gallerani fields where the meteorite main pieces had been found in 1824.



267	Gallerani Luigi <sup>gr. Giuseppe</sup>	Detto	Aratorio vitato da canepa
317	Gallerani Luigi, <sup>ed Antonio fratelli</sup> gr. Giuseppe	Di sotto della Torre	Casa d'affitto
318	Sudetti	Detto	Osto
319	Sudetti	Detto	Rajcolo
320	Sudetti	Detto	Aratorio vitato
321	Sudetti	Detto	Aratorio
322	Sudetti	Detto	Macero da canepa
323	Sudetti	Detto	Erato



The Gallerani's field is in the lower part of Renazzo parish as described in the map above, close to via Guadora.

### Conclusion

The impact point research is done. The Gallerani field has been found. The information fits perfectly like pieces of a puzzle and leaves no doubts about the area. In addition, the stories of the elderly who in turn had heard from their grandparents or great-grandparents coincide with the area found. Today the field is ownership of Malaguti family. It passed from Gallerani to Malaguti in 1920.

The next steps will be:

- Retrace the hypothetical trajectory of meteorite fall
- Search in the field eventually presence of remaining meteorite parts

### ***This endeavor would not have been possible without***

- Prof. S. Zannarini and PhD student University Bologna N. Borghi to have helped me in the research of historical documents in the archives
- Prof. L. Cassani to her precious help in translating from Latin
- Historical archive of Cento and MSc M. Alberti, for having patiently supported the search among the papers of the archive
- Prof. P. Malaguti to the report of her grandfather's stories and to have helped me track down old notarial documents of her ancestors.

- The Malaguti family of Renazzo in particular Marco, Roberto, Silvia and Michele to have granted me the permission to perform researches on their land

- The association AMICI DEL MUSEO of the Renazzo, with particular regard to Mrs. P. Balboni and Mrs. C. Cristofori, for the information on the village history and rumors

### **Bibliography**

(1) Label attached on the Renazzo meteorite in mineralogical collection Bombicci Museum

(2) [S. F. Lenzi] Jan 1824, chronicle from historical archive of Cento

(3) [F. Orioli] 1824, CADUTA DI PIETRE METEORICHE

(4) [A. Santagata] 1824, De Aerolitis ad renatium delapsis