Université de Liège
Faculté des Sciences
Département de Géologie
Laboratoire de Minéralogie

The Belgian calcites of the Cesàro collection

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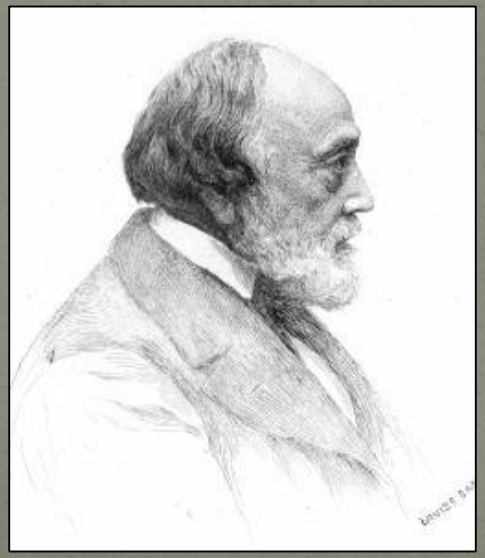
Contents

Giuseppe Raimondo de Cesàro (1849-1939)

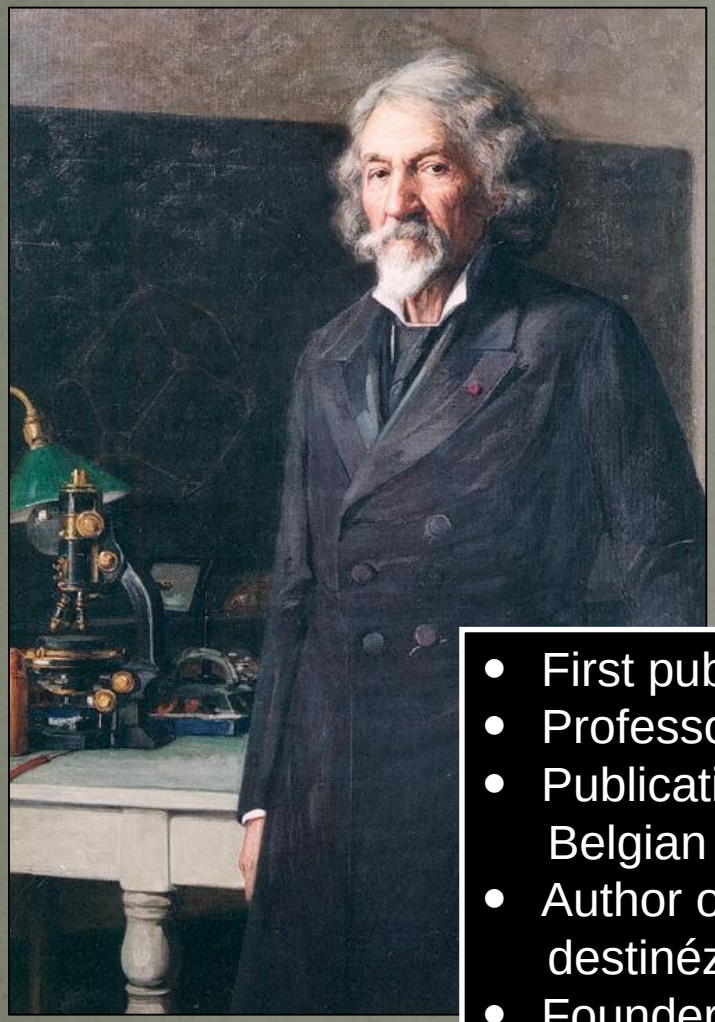
Giuseppe Cesàro

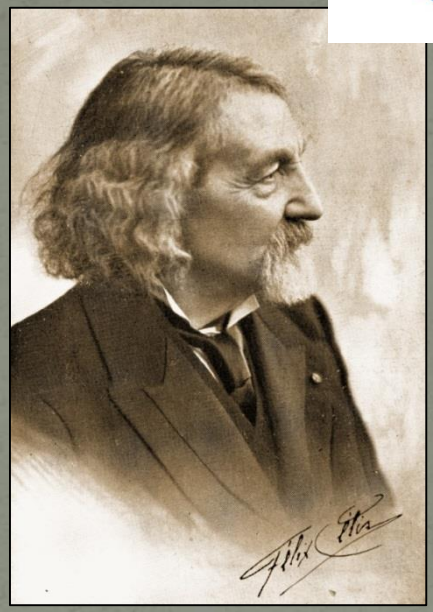
- Born in Naples (Italy) on September 7th, 1849
- Moves to Liège at the age of 17
- Enrolled in the Mining Engineer's School
- Student of Prof. Gustave Dewalque
- Brilliant mathematician
- Starts to scientifically study crystals



Gustave Dewalque

Giuseppe Cesàro (1849-1939)

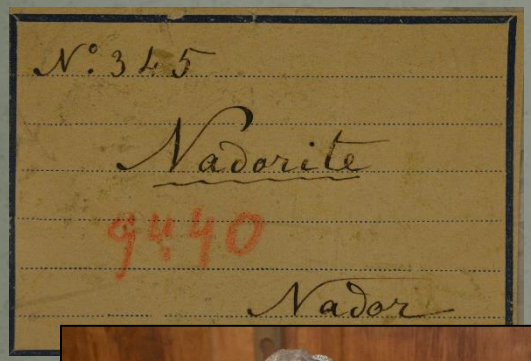


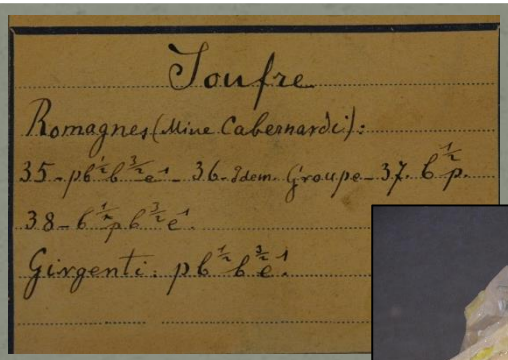


- First publications in 1883
- Professor of Mineralogy and Crystallography in 1891
- Publications on calcite morphology, Belgian minerals, Vesuvius minerals
- Author of 5 new mineral species: koninckite, richellite, destinézite, cornétite, fraipontite
- Founder of the crystallography school in Liège
- Died on January 20th, 1939.

The Cesàro collection

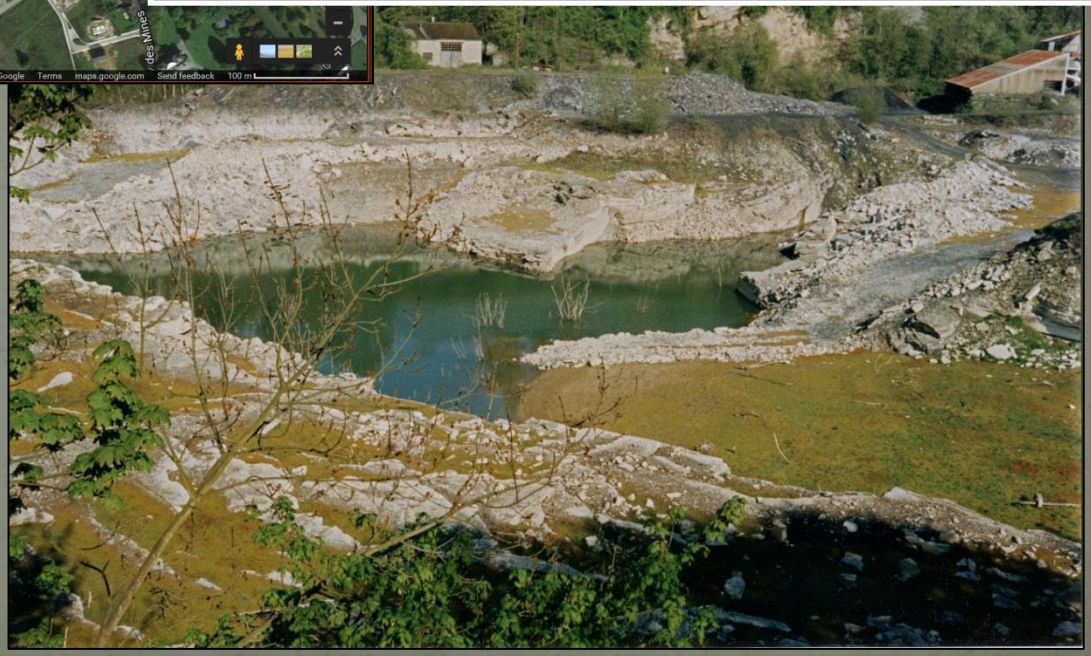
- Located in the Mineralogy Laboratory, University of Liège
- Minerals from Vesuvius volcano
- Pb minerals: nadorite, cerussite, anglesite, phosgenite
- Hundreds of calcite crystals, with annotated faces, mainly from the Rhisnes quarry
- Beautiful hand-written labels





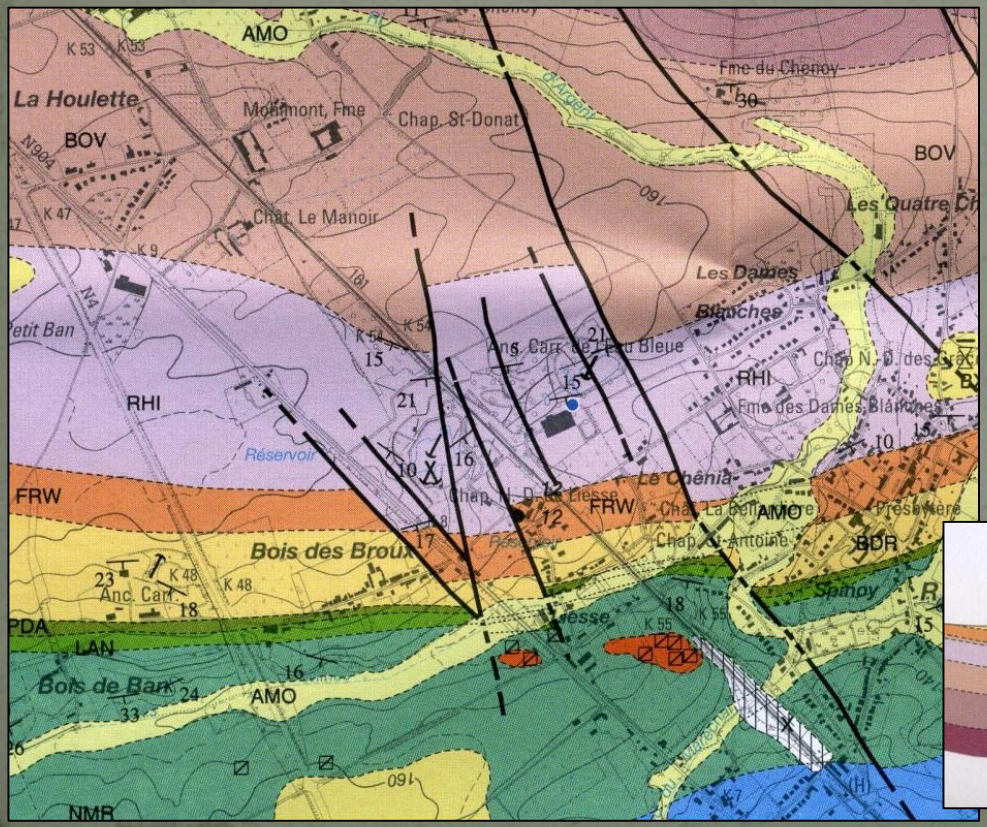
The Rhisnes quarries

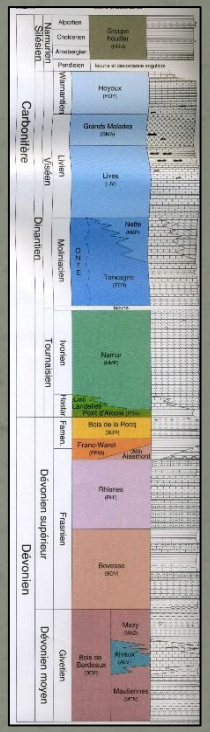
- Located 800 m to the W of Rhisnes
- 10 km NW of Namur
- Two quarries occur, no more accessible

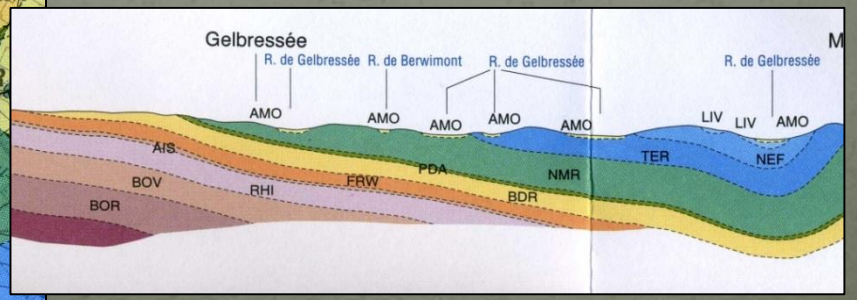


Geology of Rhisnes

- Rocks oriented E-W
- North: Middle Devonian limestones
- South: Lower Carboniferous limestones
- Synclinal axis a few kms to the South







Calcite forms and face notations

Lévy notation system

- Developed by Armand Lévy (1795-1841)
- Letters correspond to crystal faces
- *P* , *M*, *T* correspond to faces of the PriMiTive form
- Sometimes subscripts or superscripts

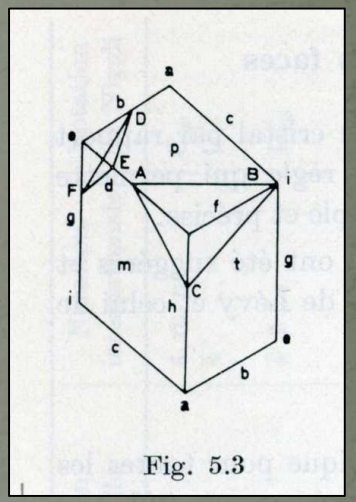
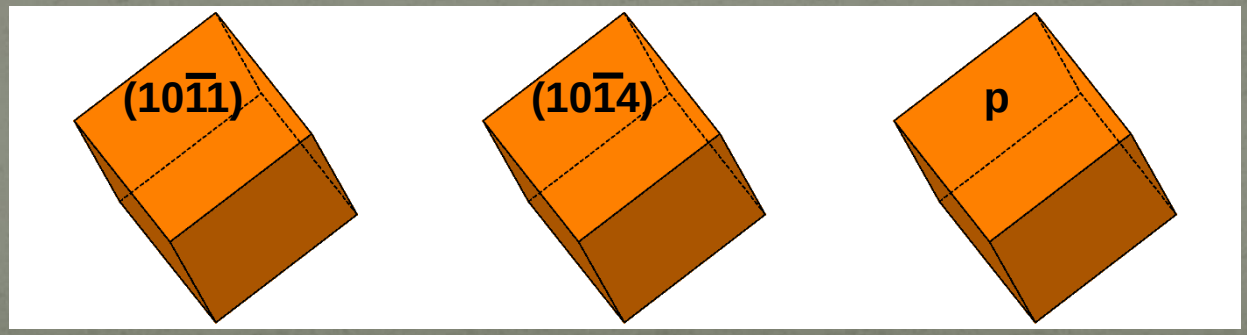


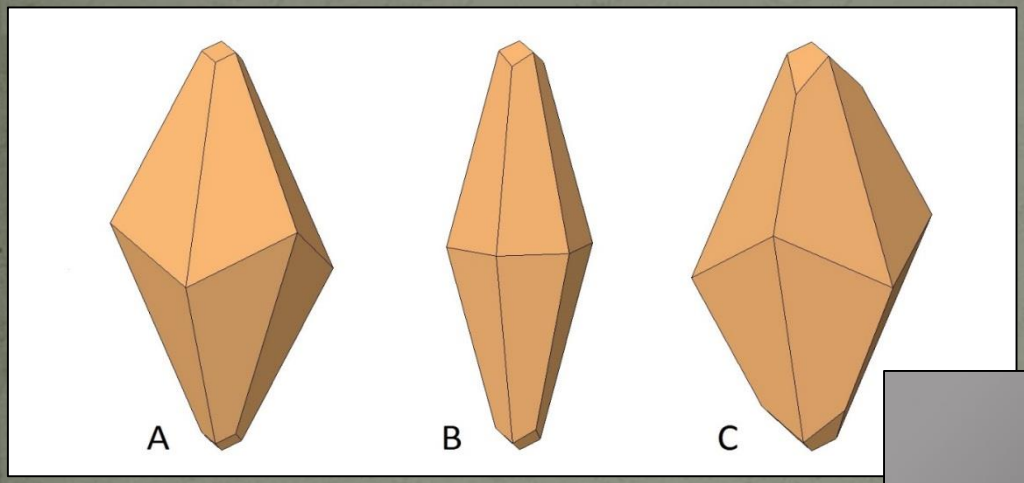
Fig. 5.3

Calcite unit-cells

- X-ray unit-cell : *a* = 4.99 Å, *c* = 17.06 Å (*c*/*a* = 3.4188)
- Not directly determined by goniometric measurements
- Morphological unit-cell : *a* = 4.99 Å, *c* = 4.27 Å (*c*/*a* = 0.8547)



A new calcite form: the isosceloheDron



Rhisnes = « Type locality » for this calcite form

A: Direct scalenohedron {21$\bar{3}$1}

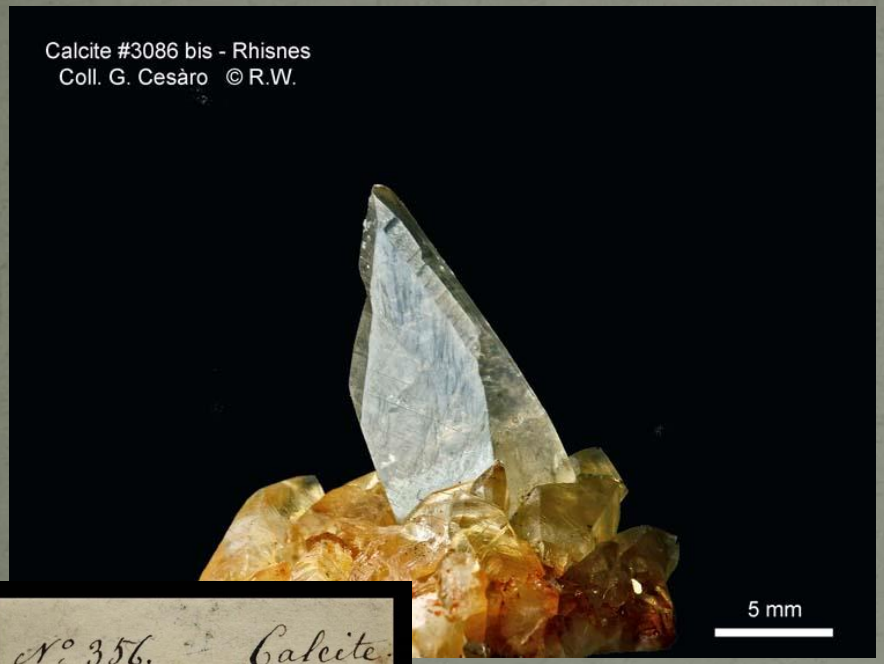
B: IsosceloheDron {8.8.1$\bar{6}$.3}

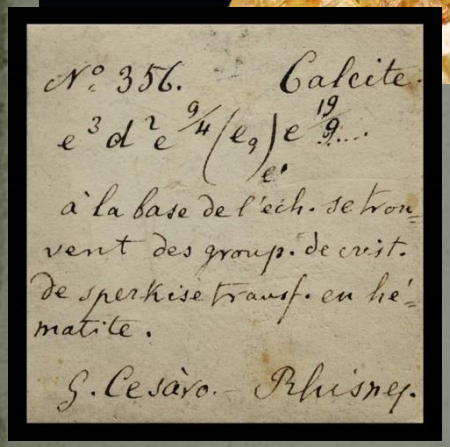
C: Inverse scalenohedron {12$\bar{3}$1}

Combination of simple forms

- *L* = Isoscelohedron {8.8.$\overline{16}$.3}
- d^2 = Direct scalenohedron {21$\overline{3}$1}
- e^2 = Hexagonal prism {10$\overline{1}$0}

Combination of complex forms





- $e^{9/4}$ = Direct rhombohedron {13.0.$\overline{13}$.1}
- e^{3} = Direct rhombohedron {40$\overline{4}$1}

Parallel growths

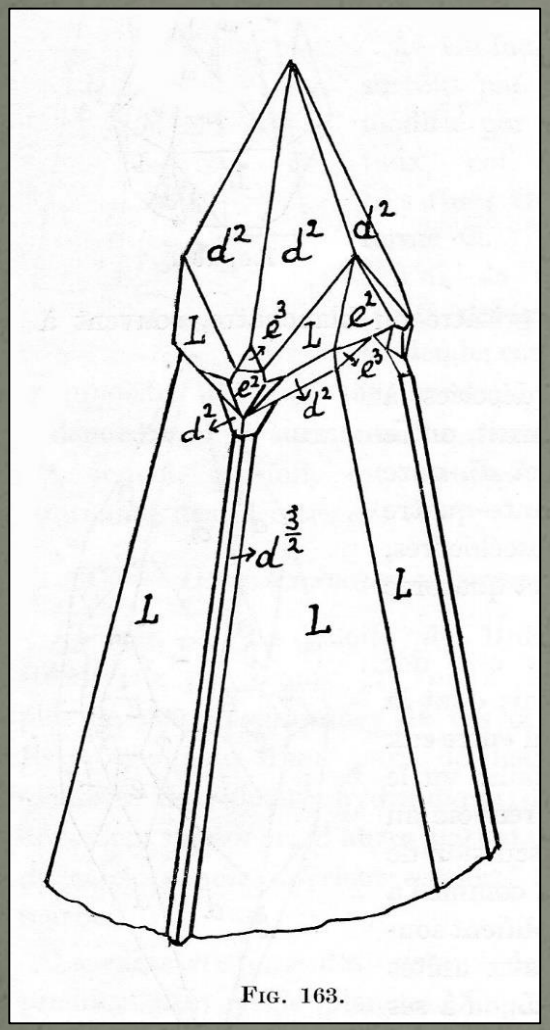


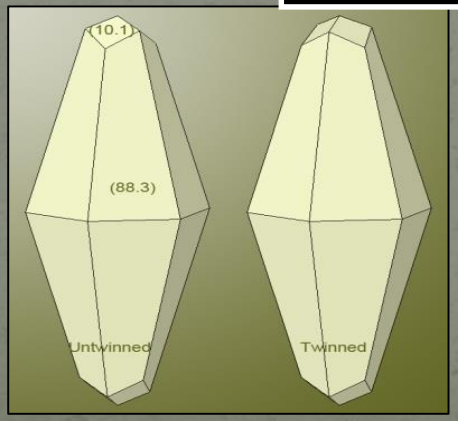
FIG. 163.

Combination $L\ d^2\ e^2$ = {8.8.$\overline{16}$.3}{21$\overline{3}$1}{10$\overline{1}$0}

Parallel growths

Twins

Twin on {0001} = a^1



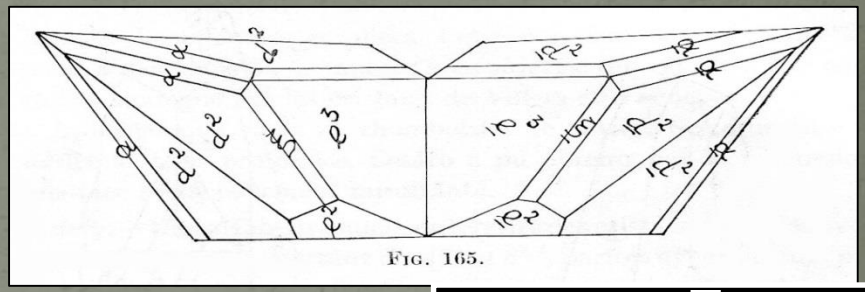


Fig. 165.

Twin on {01$\bar{1}$2} = b^1

Multiple twins

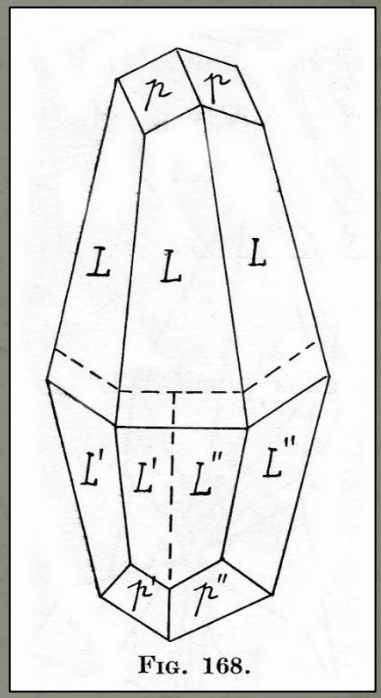


FIG. 168.

Double twin:

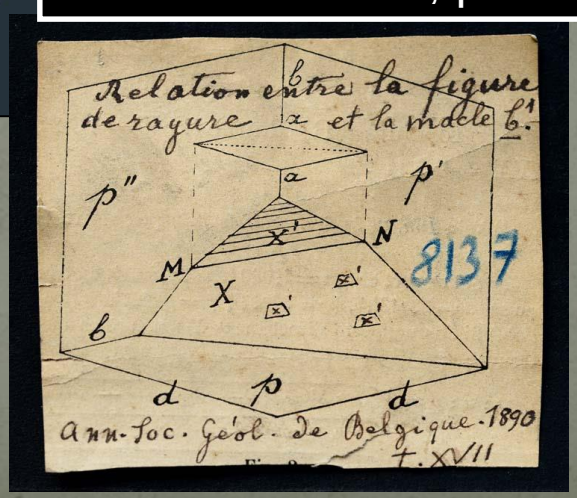
on {0001} = a^1 and {$10\bar{1}0$} = e^2

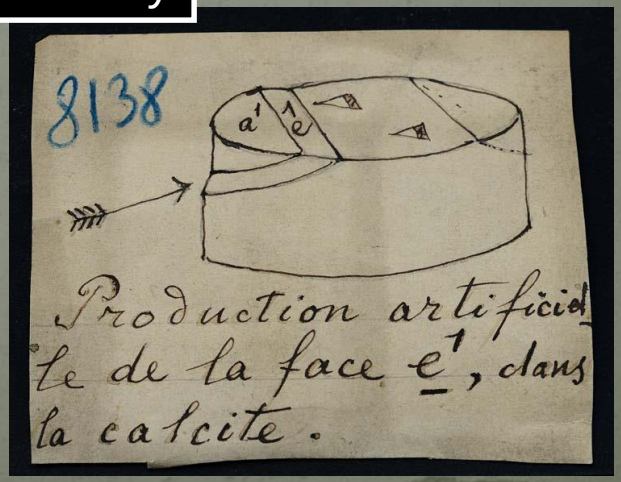
Mechanical twins

Calcite - relation entre
la fig. de rayure x et la macle b[1]
Coll. Cesàro 1890 © R.W.

Calcite # 8138 - St Andreasberg
Coll. Cesàro © R.W.

Mechanical twins, produced artificially





The « Cesàro » exhibition room

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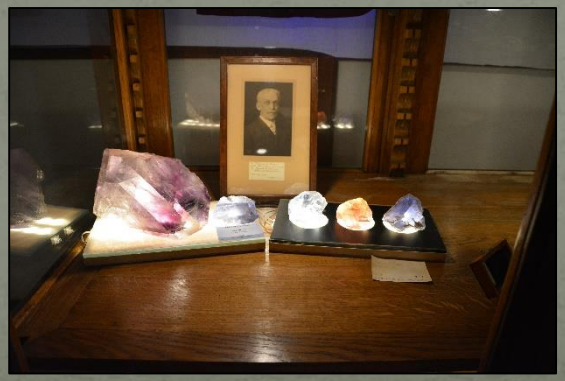

Conclusions

- Giuseppe Cesàro was a brilliant morphological crystallographer, considered as the founder of the Liège Mineralogy school.
- Scientific contacts with Friedel, Lacroix, Dana.
- Described numerous forms of calcite from Rhisnes, among which the famous « isoscelohedron ».
- Important role of Mineralogy collections, to preserve historical samples and labels.

Thank you for your attention!