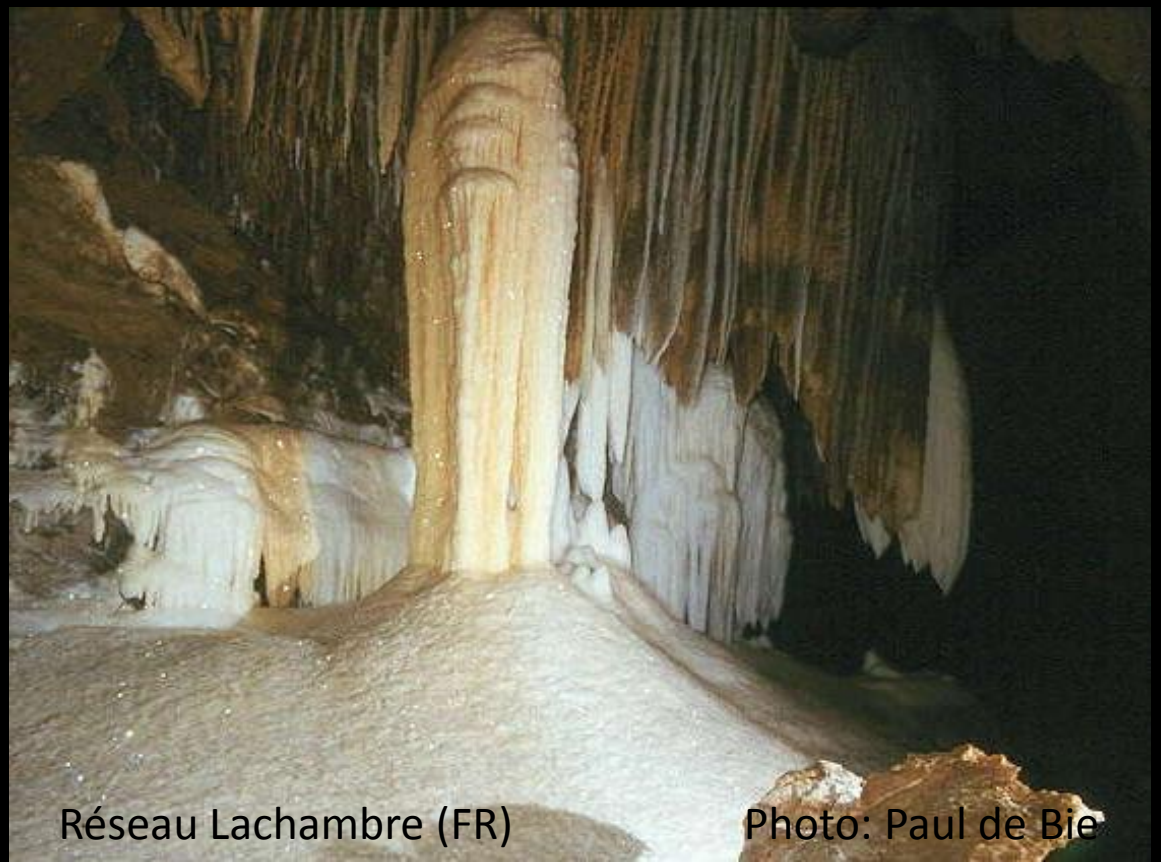
EXPLORATION, PROTECTION AND MANAGEMENT OF KARST CAVES GOOD AND BAD PRACTICES

Jean-Pierre **Bartholeyns**
UIS Department of Karst and Cave Protection
Commission Wallonne d'Etude et de Protection
des Sites Souterrains (BE)

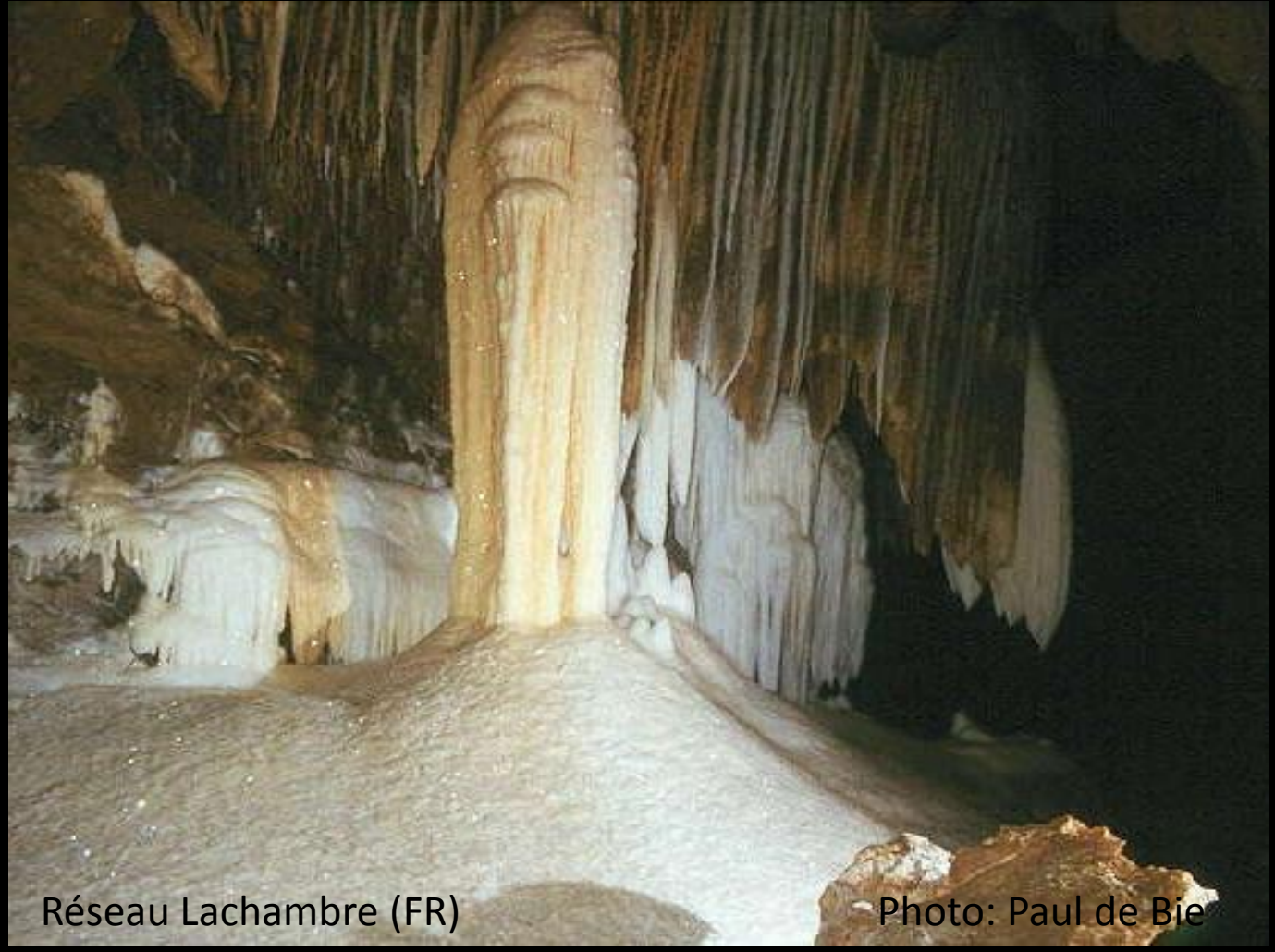
31th Congresso Brasileiro de Espeleologia – Ponta Grossa 2011

All natural areas deserve protection.
The karst ecosystem and the caves and in particular, because of their sensitivity and fragility, need more.

The karstic underground environment and particularly the caves, with their sparkling and thousand-year-old landscapes, can for various reasons be rapidly and irreparably devastated.



Réseau Lachambre (FR) Photo: Paul de Bie



The thoughtless exploration of recently discovered cavities or the wild but not managed visits of superbly sintered networks in a considered way can be one of the causes. It will form the gist of my talk today.
You will say this is astonishing because “discoverers” and “plunderers” are nevertheless all cavers!

Wow!

Do sparkling, immaculate concretions leave they to you indifferent?

Do you like virgin underground scenery, marvellously decorated?

Do you often see such pure sights?

Réseau Lachambre (FR) Photo: Paul De Bie

Why?

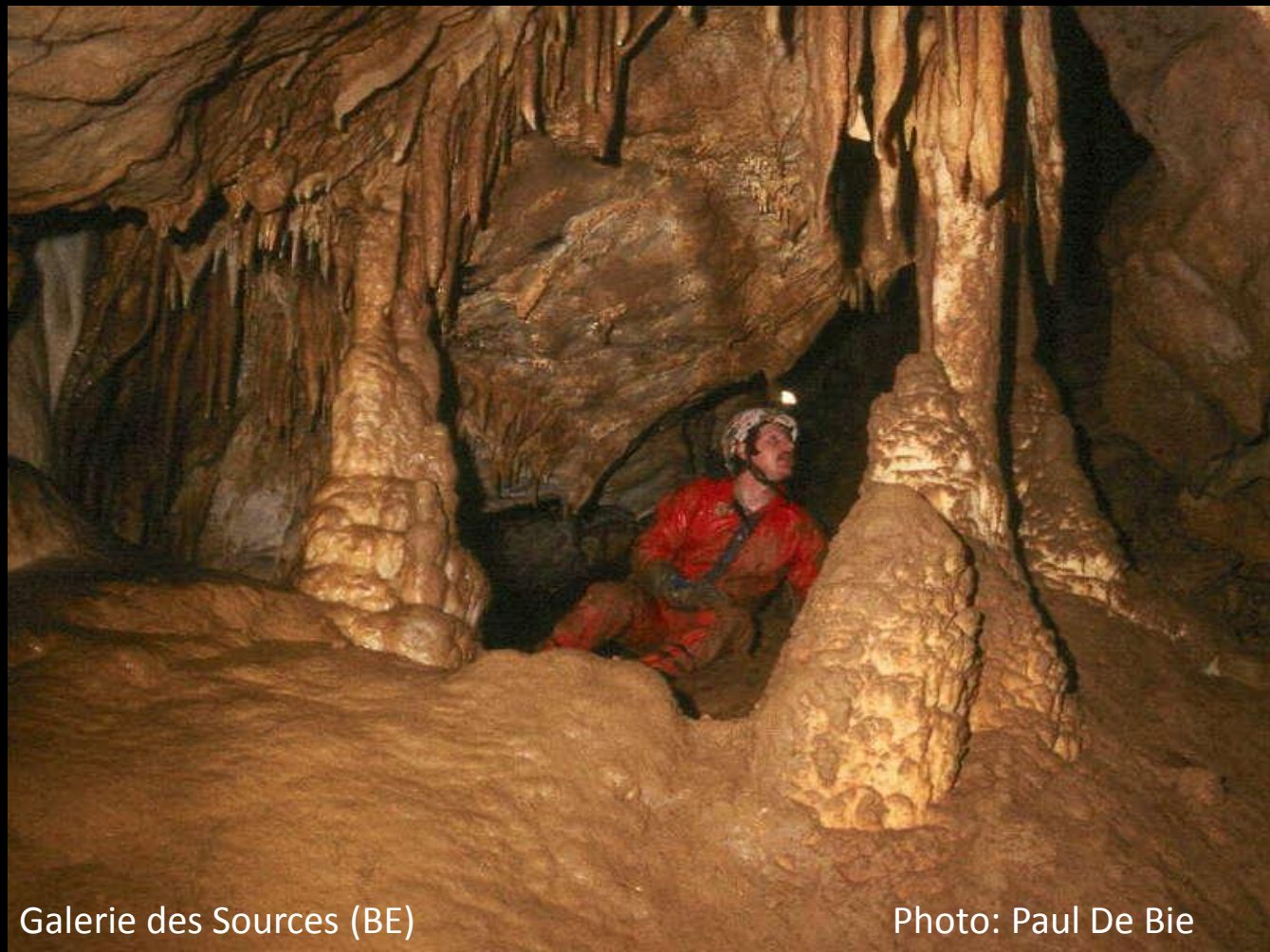
This beautiful concretion, white as snow, is soiled by cavers walking through.

Why?

Aven Rochas(FR) Photo: Paul De Bie

dirty, muddy concretions, trampled, broken by cavers passing through?
Imagine them the day they were discovered

An unfortunately all too frequent scenery…



Galerie des Sources (BE) Photo: Paul De Bie

Does this surprise you?

Have you

- crawled between concretions with a coverall full of clay?

- walked on calcite floors with very muddy boots?

- used stalagmites as handles or footboards?

Oh yes...!

Galerie des Sources (BE) Photo: Paul De Bie

The alternatives?

However, we have alternatives to explore caves without leaving traces.

It is not a secret: hands, feet and clothing must be as clean as the concretions..

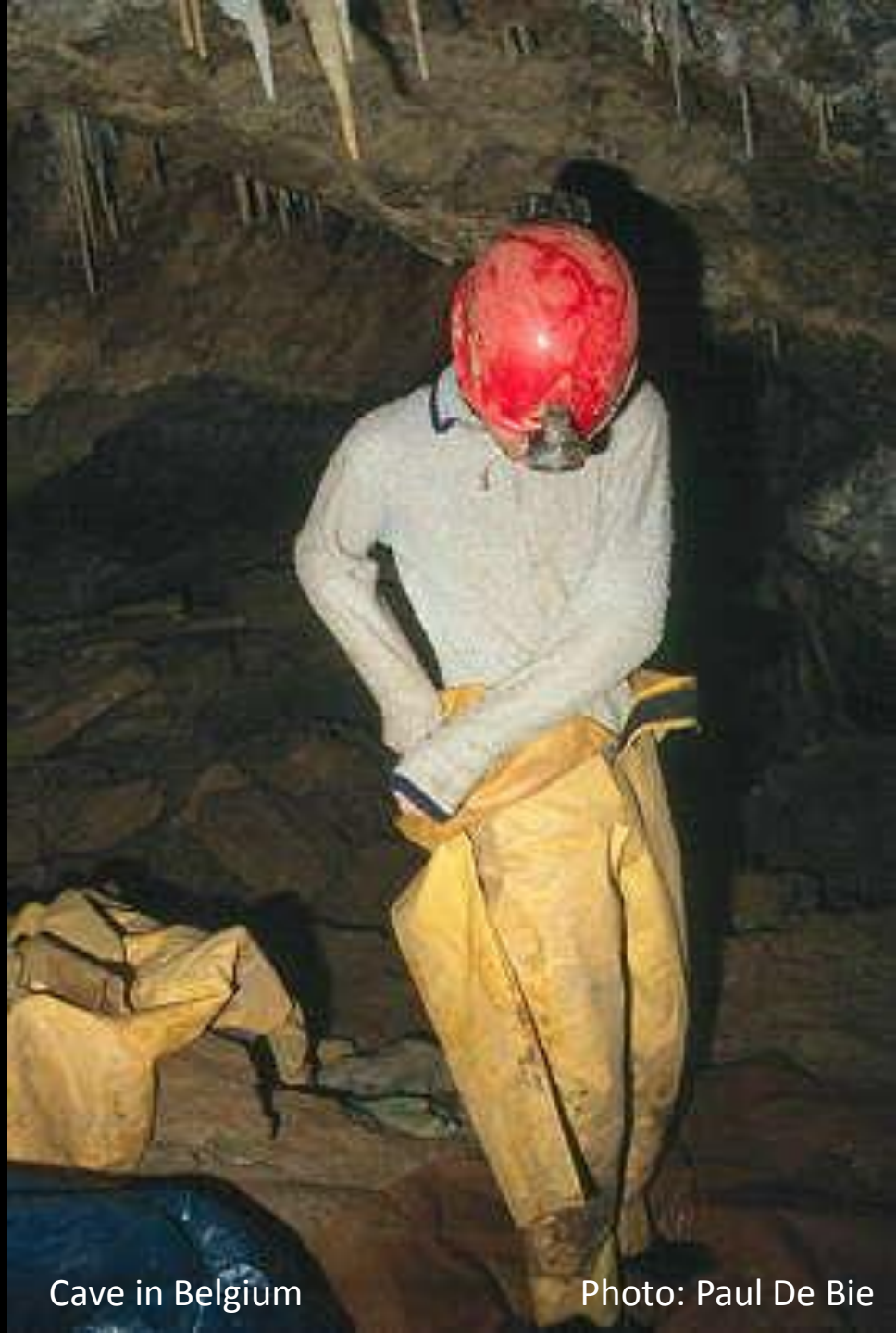
The motto of the 70s: “do not take anything except photographs, do not leave anything other than your footprints” is now obsolete.

Cave in Belgium Photo: Paul De Bie

The good reflex

If you come close to a sintered passage, think: can I pass without damaging it, without dirtying it?

If not, stop or have the reflex to remove boots and coveralls.



Cave in Belgium

Photo: Paul De Bie

Ridiculous? Certainly not!

As a caver, it is your responsibility.

Cave in Belgium Photo: Paul De Bie

Cave in Belgium Photo: Paul De Bie

The same day, the same caver, in the same cave

The types of passages validate your behaviour even if they follow one another…
Everything is possible, it is up to you to want it.

Cave in Belgium Photo: Paul De Bie

Cave in Belgium Poto: Paul De Bie

Is it exaggerated?

There are disposable coveralls you use only once.

Cave in Belgium

Photo: Paul De Bie

Cave in Belgium Photo: Paul De Bie

The respectful caver

After 10 visits, still no traces on this concretion.

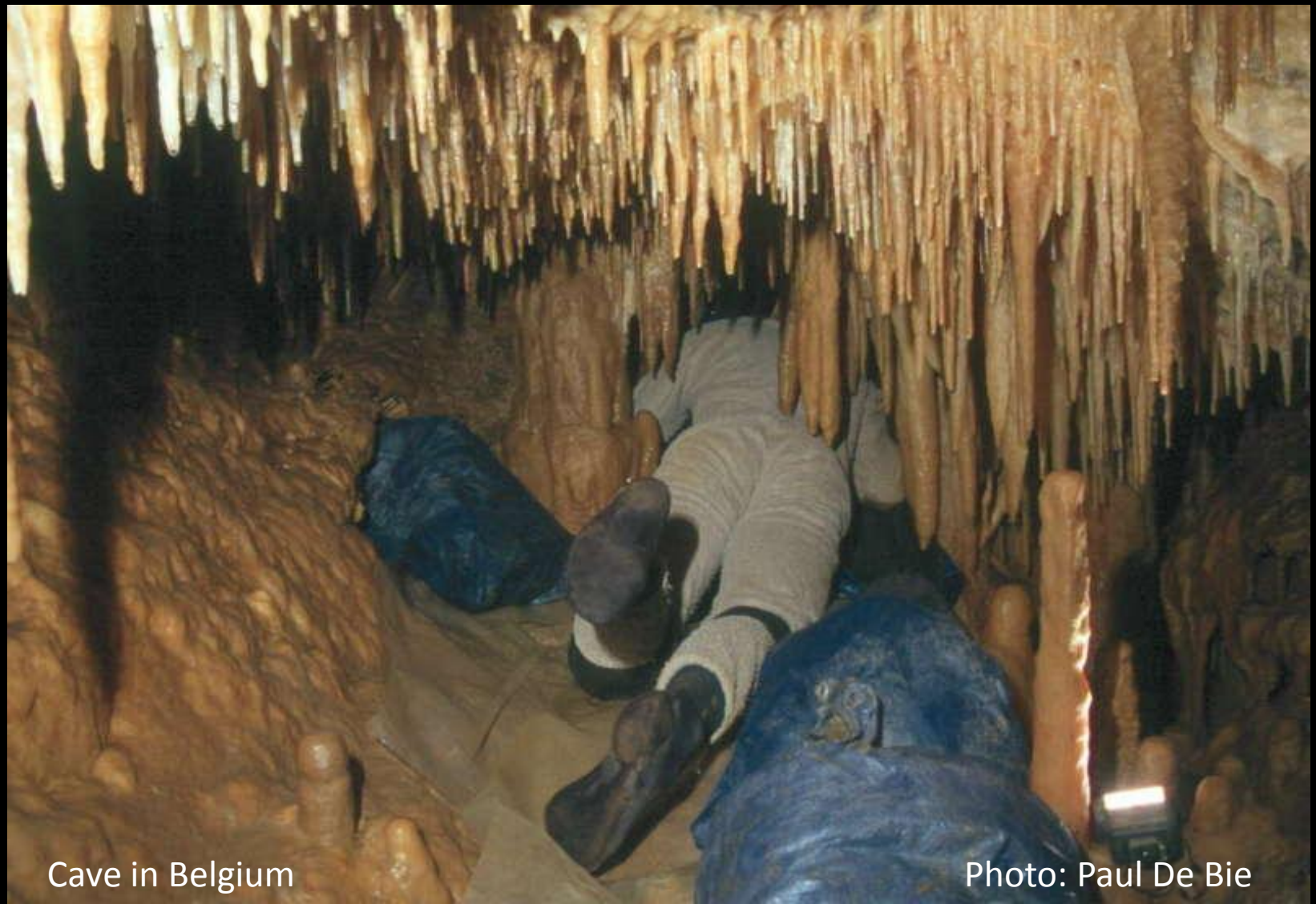
The explorers carried a second coverall and clean shoes just for this passage.

Our reward: after us, many others will be still able to admire this calcite casting.

Our new motto, your new motto: "*take nothing but photographs, do not leave any traces of your visit*".

If one wants...

one can crawl 200 times through a fragile zone in under-suits with all one's dirty stuff in a clean bag



Cave in Belgium

Photo: Paul De Bie

Mark out immediately

A signpost placed in the minutes following the discovery constitutes, most of the time, sufficient protection.

Cave in Belgium

Photo: Paul De Bie

Temporary protection: the “warning tape"

It will be replaced as soon as possible by something less obtrusive.

Cave in Belgium

Photo: Paul De Bie

Unlimited mark-outs

The plastic ribbon is ugly, not aesthetic and not very solid.

Gouffre des Ordons (FR) Photo: Paul De Bie

Long-term mark outs.

A nylon cord at the level of the knees and on independent supports is more effective, more aesthetic and more robust than the “warning ribbon”. Always respect it, never remove it even to take a photograph.

Vilaine Source (BE) Photo : Gérald Fanuel

It is discreet.

Cave in Belgium

Photo: Paul De Bie

Have you noticed it?

Cave in Belgium

Photo: Paul De Bie

Soils also deserves our respect

The scientific interest of the clay soils or the sedimentary deposits is as important as the cave itself. Virgin clay soil can be beautiful. Set the limits of the path to be followed, always respect them.

Cave in Belgium

Photo: Paul De Bie

Ignorance or vandalism? Pay attention...

On the left a century old guano deposit is to be trampled.

On the right: several hours of patient restoration were necessary to limit the damage.

Source : the Vandalism & Shame pages

Some tricks and alternatives

A plastic mat to protect the crystals on flat ground.

Grotte Vida Tripa (FR)

Photo: Paul De Bie

Some tricks and alternatives

Plastic mat

and marking out by photophores is easy but requires better discipline from the visitors

Yongcheondonggul Lava Tube (KR) Photo : J-P Bartholeyns

Some tricks and alternatives

The solution of the plastic mat on the muddy zones separating the fragile zones keeps clothing and socks clean to cross the next decorated zone.

Cave in Belgium Photo: Paul De Bie

Yongcheondonggul Lava Tube (KR) Photo : J-P Bartholeyns

Some tricks and alternatives

Do like me,
wash your feet.
Thank you.

Some tricks and alternatives

Pictograms inform the visitors and favour respect for fragile areas or even zones that are advised against.

Photo: Paul De Bie

To restore demands patience and lot of time

The efficiency of simple tools

Grotte de Jujurieux (FR)

Photo : Nathalie Duverlie

Hi-tech cleaning…

This concretion was covered in mud that was man-high!

With a high pressure cleaner, the result is surprising but requires important logistics (electricity, water).

It is impossible in the majority of caves I

Grotte du Père Noël (BE) Photo: Paul De Bie

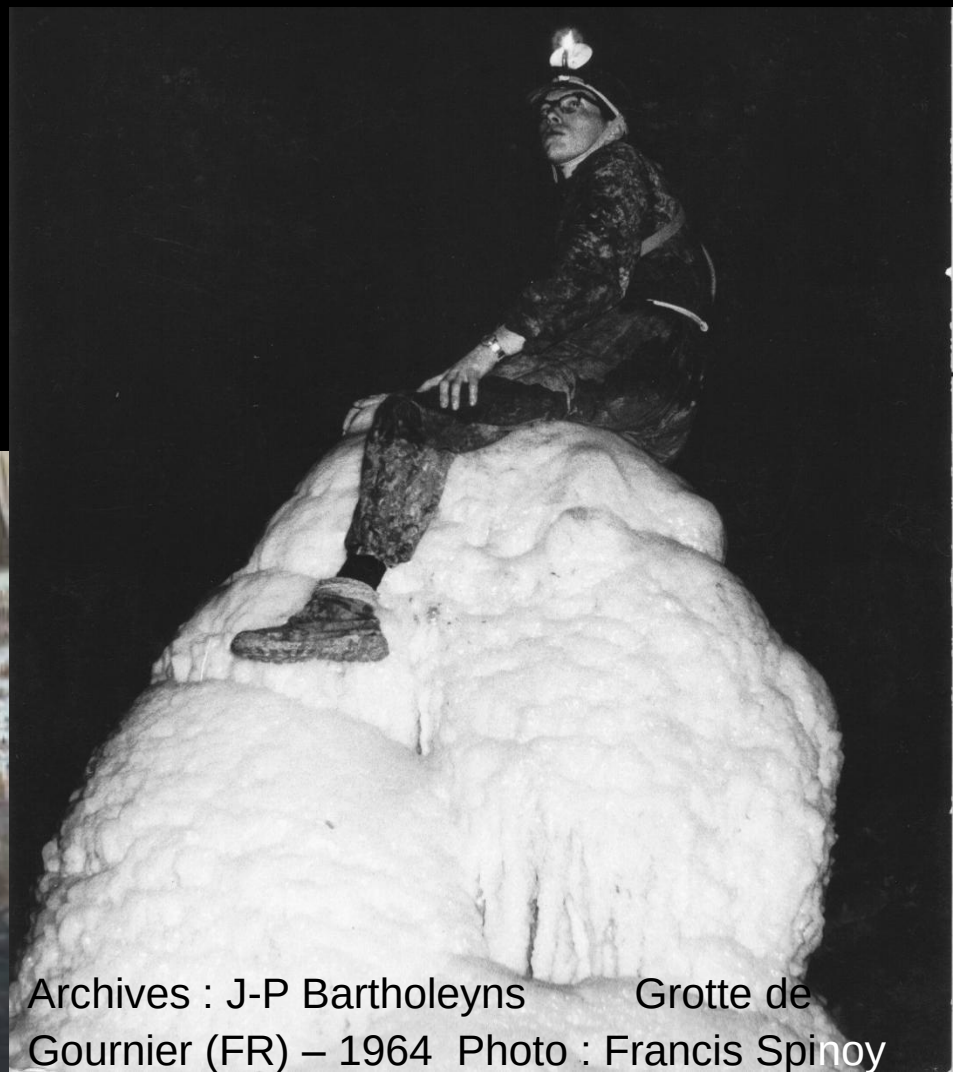
- do not dirty concretions, admire them from a prudent distance,

- your passage does not have any significance on a geological scale but a stupid error can be visible for eternity,

- your descendants also have the right to admire the splendours of the cave after your visit.

To forewarn is better than to repair

Postojnska Jama (SLO) Photo: J-P Bartholeyns



Archives : J-P Bartholeyns Grotte de Gournier (FR) – 1964 Photo : Francis Spinoy

To forewarn is better than to repair


Postojnska Jama (SLO) Photo: J-P Bartholeyns

- it is never too late
  . to modify your behaviour and to use the easy tricks available
  . to clean the places that you may have soiled

- it is within reach of all cavers, including you!

- discoverers, “inventors” of caves, you are the guarantors, the first having to manage their protection .

Stupid, unthinkable

One sometimes wonders about the reason for some of the senseless destruction

Aven de Goussoune (FR) Photo: Paul De Bie

Small-scale vandalism

Concretions broken and blackened by the carbide lamps in a much frequented cave.

This has fortunately become an exception now.

Trou de l’Eglise (BE) Photo: Paul De Bie

Commercial vandalism

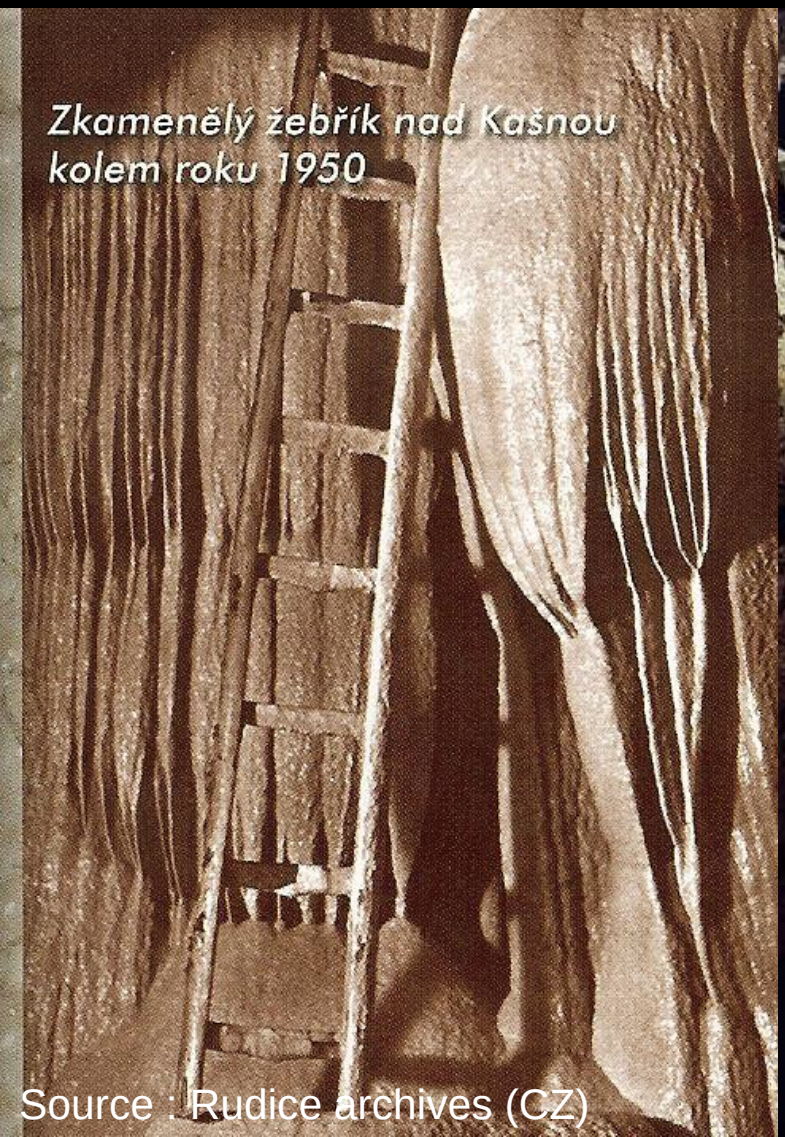
These concretions stored and ready to be stolen were to be used as raw material to manufacture works of art.

Cave in France

Photo: Paul De Bie

Supporting proof: in the past and at present

The ladder left by the 1922 explorers in Rudické Propadàni is now completely covered in calcite.



Source : Rudice archives (CZ)

Supporting proof: in the past and at present

A single room with its fistulas and its eccentrics

A few years later.

Benchmark between the two photographs: the large stalagmite on the left.

Source : The Vandalisme & Shame pages

Is it everywhere the same? Unfortunately, it is!

Trou de l'Eglise (BE) in 1950 and 1985.

Photo : Bernard Magos

Photo : Paul De Bie

Before and after

In less than two decades, many - often small jewels - have been destroyed.
They did not survive heavy exploration.
Trou de l'Egise (BE)


Photo Bernard Magos 1950


Photo : Paul De Bie

Free vandalism

The Galerie des Sources (BE), the dream for Belgian cavers,….
Destroyed and soiled by them in less than 10 years.
Painting by vandals were their death-blow.

Cave in Belgium

Photo: Paul De Bie

Premeditated vandalism

The rusty blade of a saw: silent witness to the plundering of almost all the stalagmites of this cave (BE).

Witnesses of vandalism in a cave: collect a maximum of information (name, number plates) and warn your federation as well as the authorities.

Discover the caves: go on, remove the obstructions!

A small blow hole is enlarged.

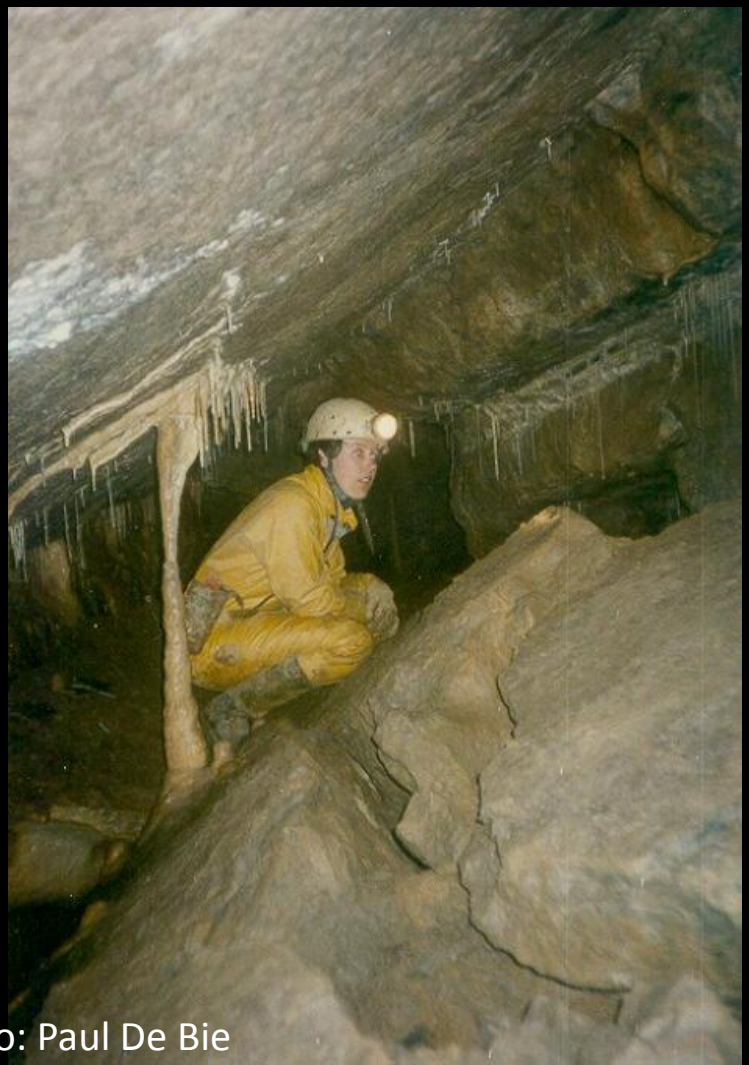
Four weeks later: Bingo!

Grotte aux Contrastes (BE) Photo: Paul De Bie

Discover the caves: go on, remove the obstructions!

Widening of a narrow passage with a drill.

Barely a few minutes later, 180 m of a striking gallery are discovered!



Grotte des Emotions (BE) Photo: Paul De Bie

Discover the caves: be careful!


Postojnska Jama (SLO) Photo: J-P Bartholeyns

* Today new caves are for the most part discovered after removal of obstructions or with the assistance of explosives. Direct damage is fortunately negligible.
* Avoid changing the air flow or disturbing the balance of $C0_2$ by creating new entries or new passages.
* Do not smoke.
* Do not disturb the bats.
* Take care of the archaeological sites.
* No “heavy” work close to fragile sites.
* The discovery of a cave is always the beginning of its damaging.
* The inventor has a great responsibility: he must immediately take all necessary protective measures (fencing, installation of doors, access controls…)
* The discoverers of cave are often its best guardians.
* To discover a sintered cave means: “to manage the cave” for ever.

How can we protect?

- by leaving unlocked: experience proves that in two or three years there will be nothing left… (examples: Rochas swallow-hole, Spetaclan cave,…)

- by blocking the entrance after exploration: a drastic solution that does not allow sharing the discovery and rejects the problem… There will be always another inventor!!!

- by placing a door and avoid the key possession monopoly and the misuse resulting from this...

Trou qui Fume (BE) Photo: J-P Bartholeyns

The reasons for doors

They are often necessary and are not placed to annoy you.

Réseau Lachambre (FR)

Photo: Paul De Bie

The reasons for doors

- They all have their raison d'être: owner's wishes and responsibility, pretty concretions, lodging/pregnancy of bats, archaeological interest…

- Never force a door because after your visit it could remain open for a long time. Your gesture could create the entire destruction of the cave for ever.

- The best preserved caves are all closed. The majority can be visited by respecting some waiting periods and simple rules.

- The persons in charge of closing, often the inventors, will be happy to guide you. Perhaps they will trust you they after they have given you some instructions. Patience is thus an important quality for a caver.

- Your prime concern should be the conservation of the cave and not your ego or your caver's record of achievements.

They are sometimes insufficient

Under pressure from tour operators

Grotte de Bohon (BE) 2010

Photo : Jean-Claude Vittoz

Graffiti has existed for all time...

« Hérode Jules, Instituteur, 1862 » : in the past, it was considered “normal” to write one's name on the known exit of the cave.

Let us acknowledge that people did it carefully and neatly.

Lamprechtsofen (AU)

Photo: J-P Bartholeyns

It was almost penmanship..

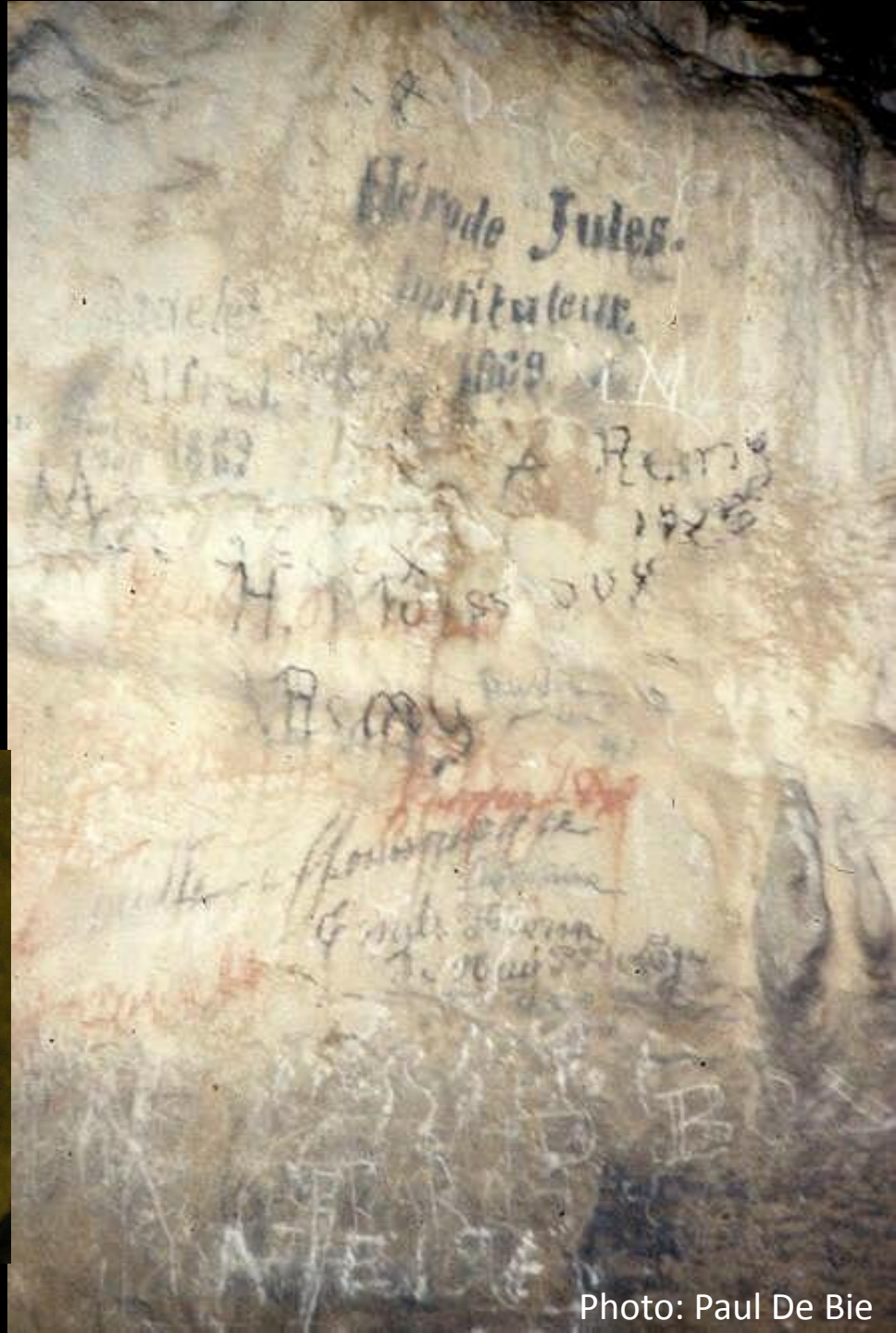
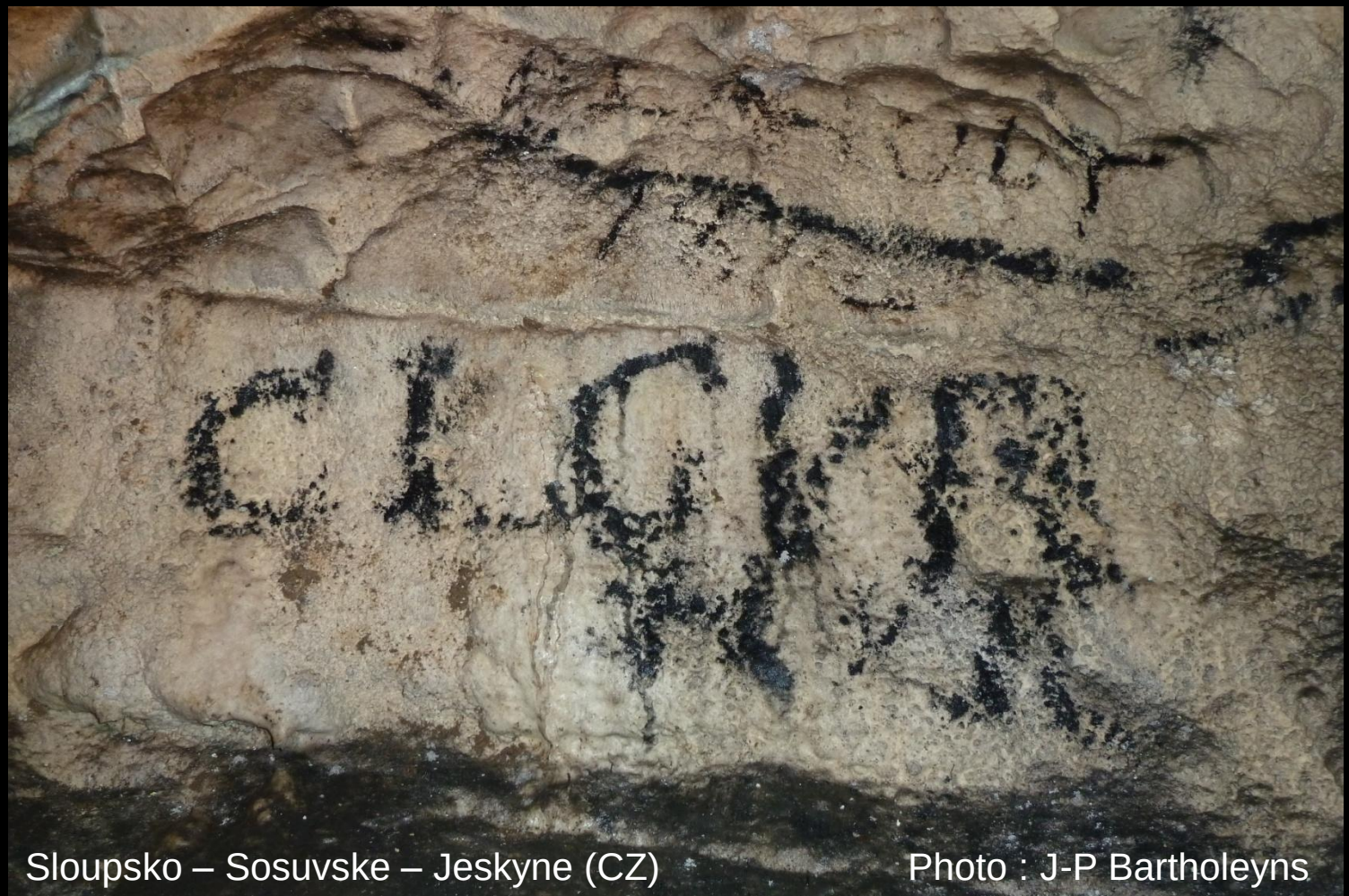


Photo: Paul De Bie

Graffiti has existed for all time...

Do youthful mistakes justify a later incentive for cave protection ?

Is this not the case, Mr Cigna?! ;-)



Sloupsko – Sosuvske – Jeskyne (CZ) Photo : J-P Bartholeyns

Could it be worse?

The latest inscriptions are disproportionate, horrible.

Do not write, do not paint on a wall.

Do not show the way with arrows. Use only temporary reference marks and do not forget to remove them.

Savonnières-en-Perthoi (FR) Photo: Paul De Bie

Could it be more unreleable ?

Gruta do Rezar - Peruaçu -Brasil

Photo J-P Bartholeyns

« Art » parietal modern "art“

Disrespectful modern wall art now has no limits. This portal of the Molignée valley (BE) seems to have inspired Jean-Luc Moerman (can he still be described as an “artist”?). He painted this for the photographer Jean-Luc Laloux de Anhée (BE) to illustrate the catalogue of the STUV stoves factory.

Photo : Vincent Foret

Carbide lighting is out of date

LED technology now offers just as many advantages. Carbide was good for a time but left many traces… Great, the entrance easily be found!

Aven de la Salamandre (FR) Photo: Paul De Bie

Carbide lighting: no thanks

Frequent condition of an underground bivouac!

Gouffre Berger (FR)

Photo: Paul De Bie

Carbide lighting: no thanks

Follow the carbide deposits so that you do not get lost.
Even if, from a chemical viewpoint, the lime deposited does not pollute much, it is an aesthetic disaster. It is very difficult to remove it in the future.

Pierre Saint Martin (FR)

Photo: Paul De Bie

Carbide lighting: no thanks

Photo: Paul De Bie

"Ceiling burners": an easy to understand nickname given by cavers.

Traces of black smoke from carbide lamps are unsightly and almost impossible to remove.

A disgrace in the caves.

Lighting with carbide: slow and insidious effects

The ochred flow of this cave, discovered in 1983, was pure and luminous.

In spite of a 10 x 20 m gallery section, everything is now covered with a thin layer of black smoke after less than 20 years of intensive visits under acetylene lighting.

Aven des Pèbres (FR) – 2000 Photo: Paul De Bie

Lighting with carbide: permanent damage. What about in two centuries' time?

All the carbide flames, even with new nozzles, release black smoke (carbon).. Very light, it floats in the air and settles on all semi-horizontal surfaces, even hundreds of metres away.

Grotte de Jujurieu x (FR)

Photos : Nathalie Duverlie

Carbide: the good use in caving

- A caver who is respectful of protection never uses carbide lamps in the decorated caves even if they are enormous.

- The only two advantages of carbide: its great autonomy and its heat source. Use it only if you really need it: during remote expeditions or for very long treks in very cold cavities (alpine).

- Always carry a plastic bag to put on the ground to empty/fill your lamp. Never do this directly on the ground.

- Always leave your old lime. As for the dry carbide, a tire tube is ideal.

- Replace the nozzle as soon as the flame no longer has a "V" shape.

Actions speak louder than words

Often irritated to see waste and carbide deposits?

Grotte Riflet (BE) Photo J-P Bartholeyns

Never be too proud to pick them up.

Photo : Paul De Bie

Underground bivouacs

Places where several people stay for long periods.
They amass material, carbide lime, excrements, urine there…
Use when it is absolutely necessary. Never for fun.

Photo: Paul De Bie

Bivouac – deposit?!

-Leave nothing there (food, carbide, equipment) for next time. You may never return there.

-The last team will not be able leave the cave with all that was accumulated there.

- Organize accordingly.

Anialara System -600m (ES) abandoned camp Photo : Paul De Bie

It is a necessity, it is urgent...

To avoid smells during the weeks in the cave:

- most important: urinate in a plastic bottle which you take out,
- dig a hole in the clay, then cover it
- if it is not collected, urinate in running water.

Postojnska Jama (SLO) Photo: J-P Bartholeyns

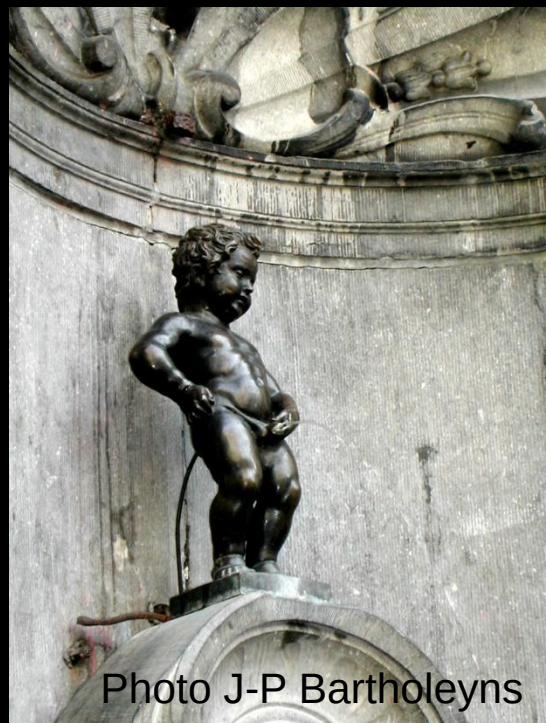


Photo J-P Bartholeyns

Over frequenting

We have estimated that 200,000 people saw the most visited wild caves in Belgium these 40 last years!

Can you imagine the impact?

Guidance by paid activity centres (an excellent business) has ruined a dozen caves in Belgium.

Trou d'Haquin (BE) Photo: Paul De Bie

Disney Underground

Real cavers respect their code of ethics and refute that

-caves are open funfairs

-the more participants, the more lucrative

- one day visitors don't give a damn about anything (concretion formation, bats, owner…) and are there only to have fun.

Photo: Paul De Bie

Quality but not quantity!

For a good many years, Belgian cavers as well as others respect a code of ethics approved by the UIS.
This way, it is possible to initiate beginners or people interested in an educational way with a minimalist effect on the environment.

Some key rules:
- group limited to 10 people with safe equipment and in good condition
- two motivated supervisors per group
- restrict the number of people guided per annum (quota per club)
- activity limited to the “schools” caves
- respect the property and the wishes of the owner
- no financial benefit
- inform the participants of the frailty of the underground world and the importance of its protection

Made to feel guilty? Depressed?

Despite all these negative aspects, caving remains

* a wonderful experience,
* the ultimate integration of nature, adventure, sport and science.

Without cavers, there would be no caves! Their discoverers are their best protectors.

Caving, a gentle sport

Caving is a sport that is respectful of its playing field because it is practised carefully thanks to its scientific approach of the environment.

- do not rush in the caves; take your time, they took thousands of years to be formed
- leave in small groups; you will draw all the more satisfaction from it
- do not touch the concretions, do not dirty anything
- in a sintered zone: look carefully where you put your feet and hands. Supervise your team mates
- scrupulously follow the same route, respect the mark-outs
- do not leave any traces and in particular no inscriptions
- respect the peace of the animals (bats)
- remove all the rubbish from the cave, even other people's

What more can one do?

Condemn those who offend good practices. They have no place in our caves.

Refuse to see concretions put on sale; this gives ideas to the ignoramuses.
Why these and not those I could take from the cave that I am visiting!

Punkevni Jeskyne (CZ) Photo : J-P Bartholeyns

Shop in Brussels Photo : J-P Bartholeyns

Conclusion

Cavers, they who discover the jewels of the underground world, must remain the attentive protectors of this fragile and irreplaceable collective inheritance.
As such, they must always be regarded as essential and impossible to circumvent partners in the management and the protection of the karstic environment.

The work is not finished: everything has not been cleaned, and there is still a lot to be done. It's a promise, we'll be back.

Copyright and acknowledgements

- Paul De Bie of the Spéléo Club Avalon – Belgium, initiator of this reflexion.
- To the cavers all over the world who replied to my search for pictures
- To the Commission Wallonne d'Etude et de Protection des Sites Souterrains
- To Karen Sobol for her immeasurable linguistic support.