

What Professional Roof Consultants Should Know About Slate Roofs

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Objectives

- 1) Understanding slate roof restoration;
- 2) Understanding slate roof installation;
- 3) Assessing slate roofs;
- 4) Identifying weather damage.

Slate roofs are made of rock that is mined or quarried.



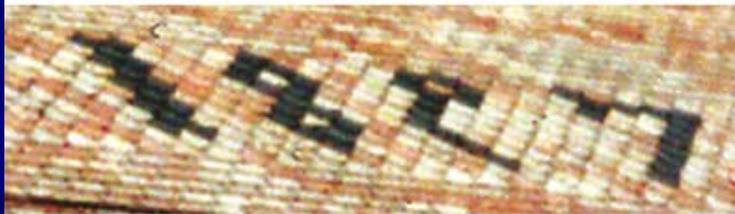
The stone is hand-worked into manageable sizes, then split into roofing shingles with hammers and chisels.



The finished shingles are punched for nail holes, then fastened to the roof with nails.



A good slate roof will last at least 150 years.



This is an original 1785 slate
roof in Scotland.



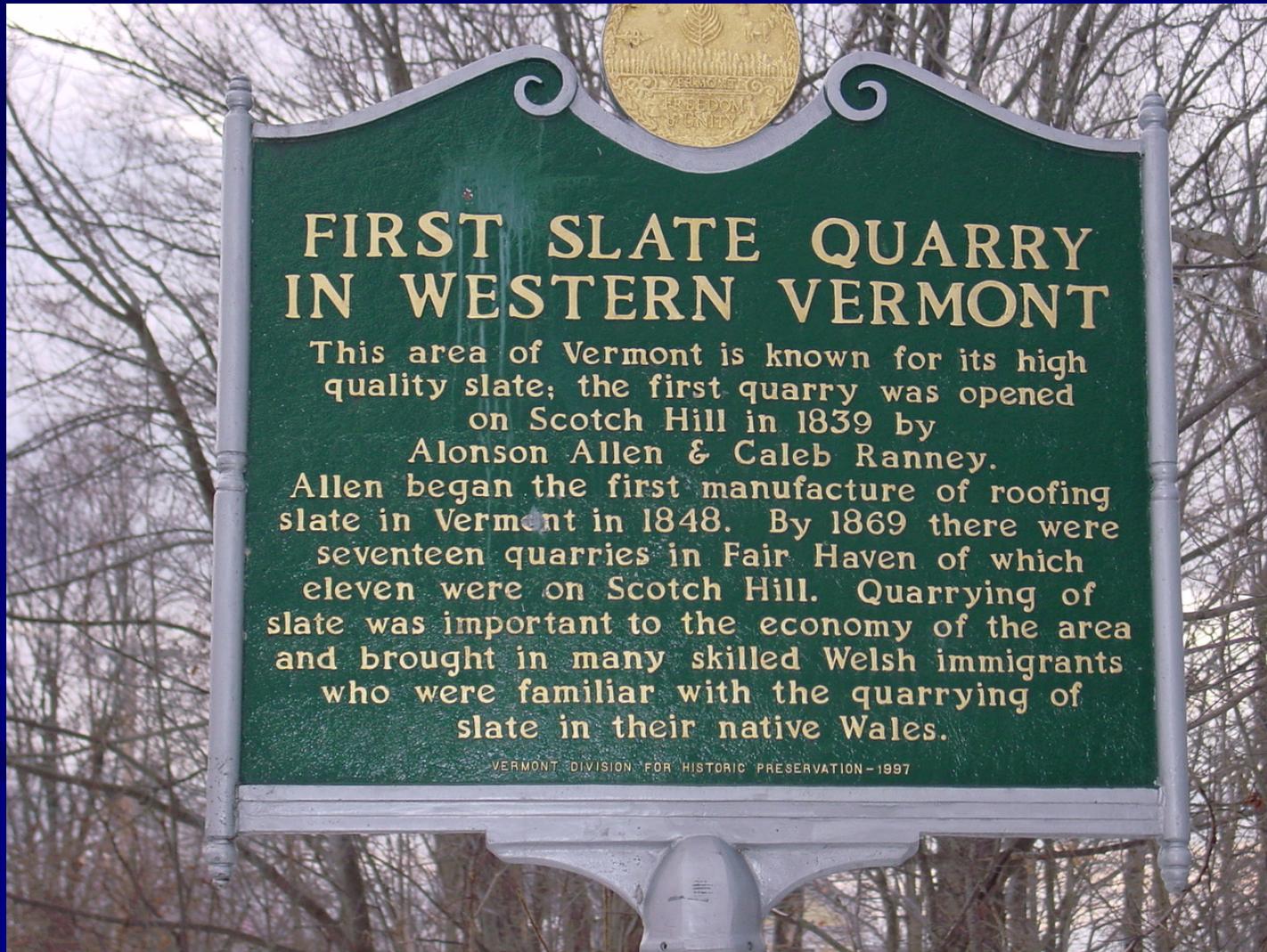
Roof installed in 1887:



1887 house – now 122 years old



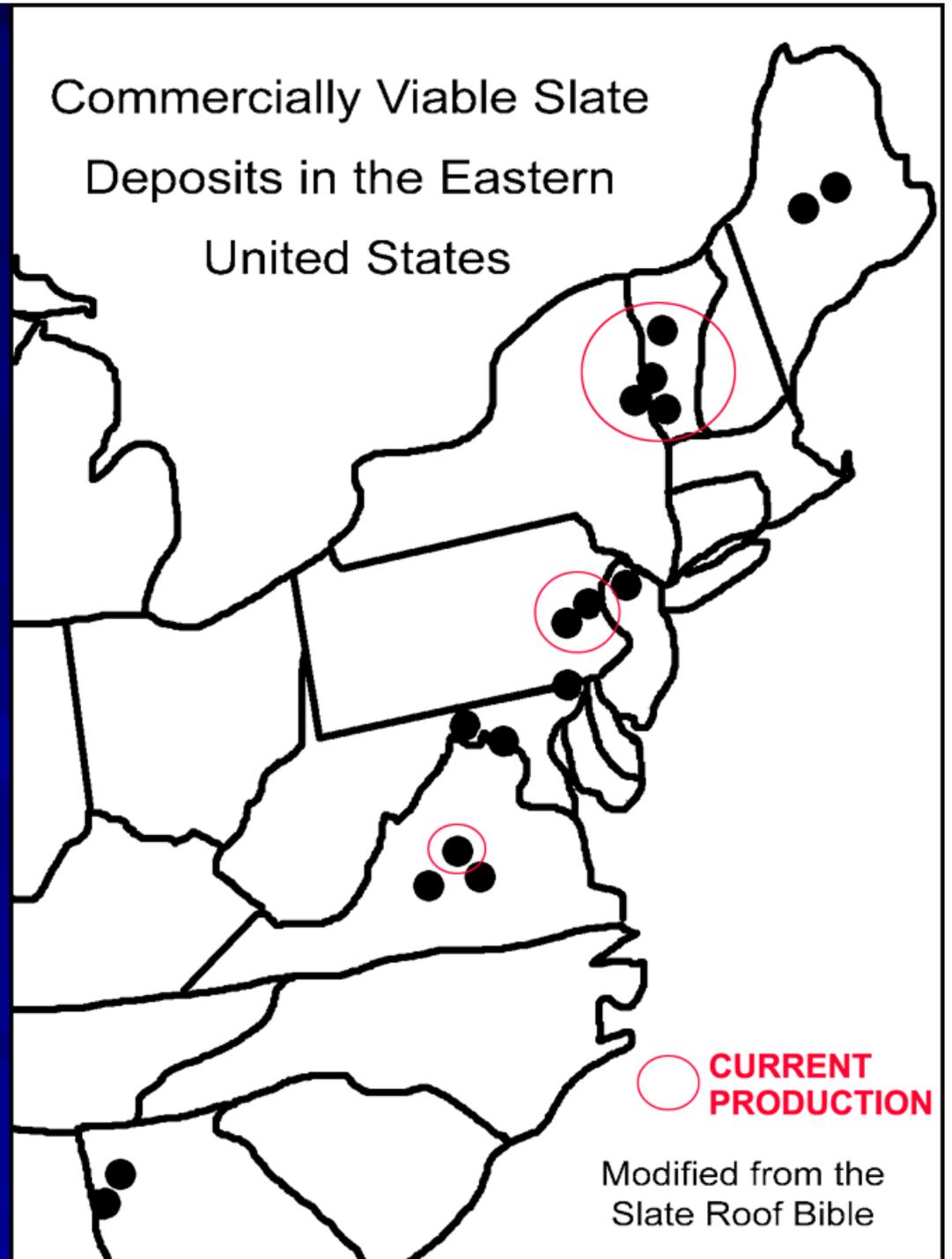
American slate has a long history.



1785 is the oldest commercial slate in America

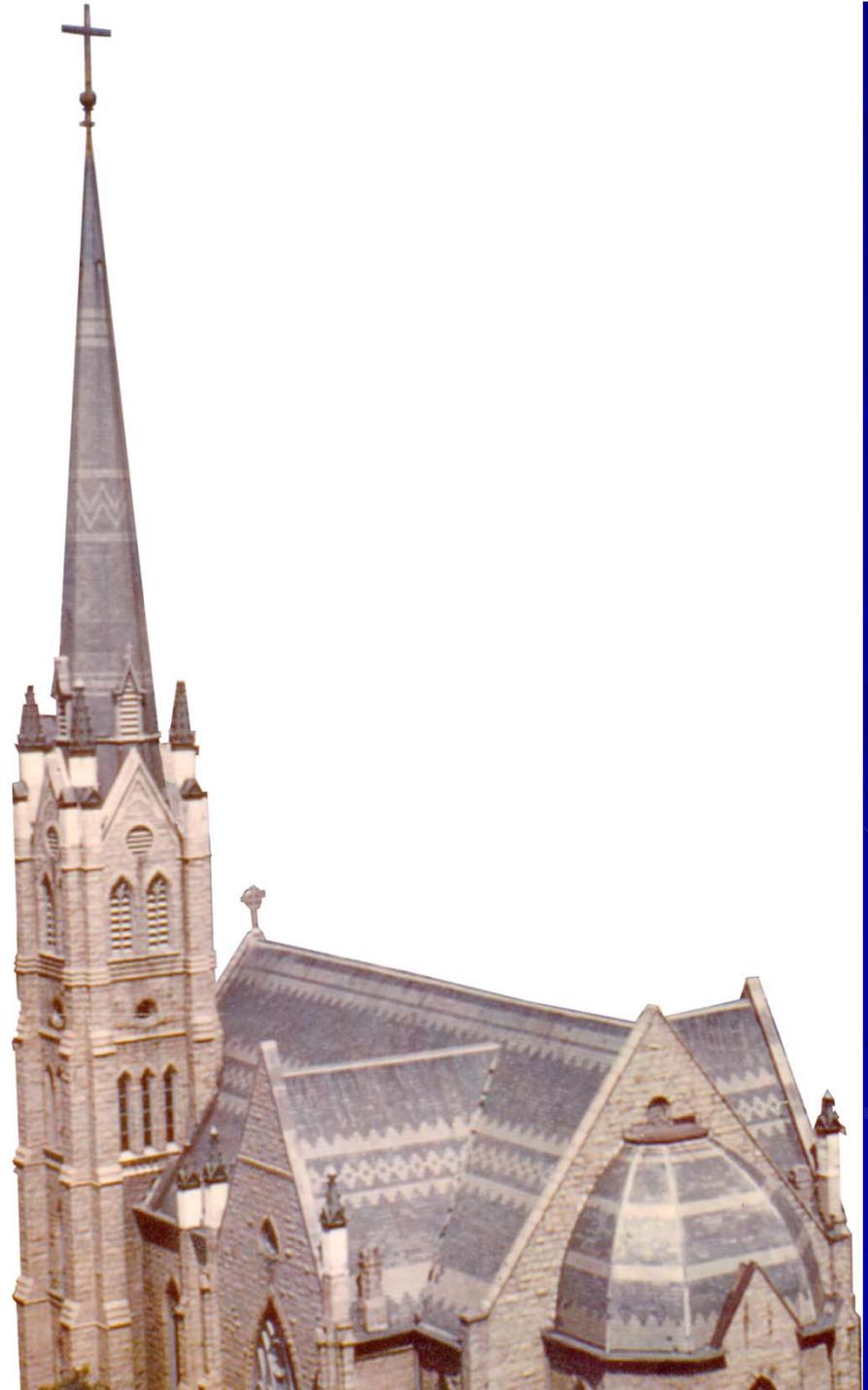


Slate is still quarried today in New York, Vermont, Pennsylvania, Virginia, Canada, and overseas.



There are two primary reasons why older slate roofs fail:

- 1) type of slate,
- 2) flashing failures.



Approximate Colors of American Roof Slates When New

There are
many
varieties of
slate:



New York Red



Vermont Mottled Purple



Vermont Gray



Pennsylvania Black
or Spanish Black,
similar in tone to
Virginia slate



Vermont Green



Vermont Purple



Vermont "Sea Green"



Vermont Gray-Black

Here you see Pennsylvania black slate and Vermont unfading green slate, both 120 years old, on a cathedral in Arkansas. The black slate is worn out, the green slate is still good.



PA black slate wears out sooner than many others. PA slate may last 55-125 years (or longer). VT slate may last 150 years. Others may last even longer.



This is Vermont
“unfading green”
slate on a 120
year old house.
The slate is still
quite good.



This black “Buckingham” slate is from Virginia. At 100 years, it show no wear at all.

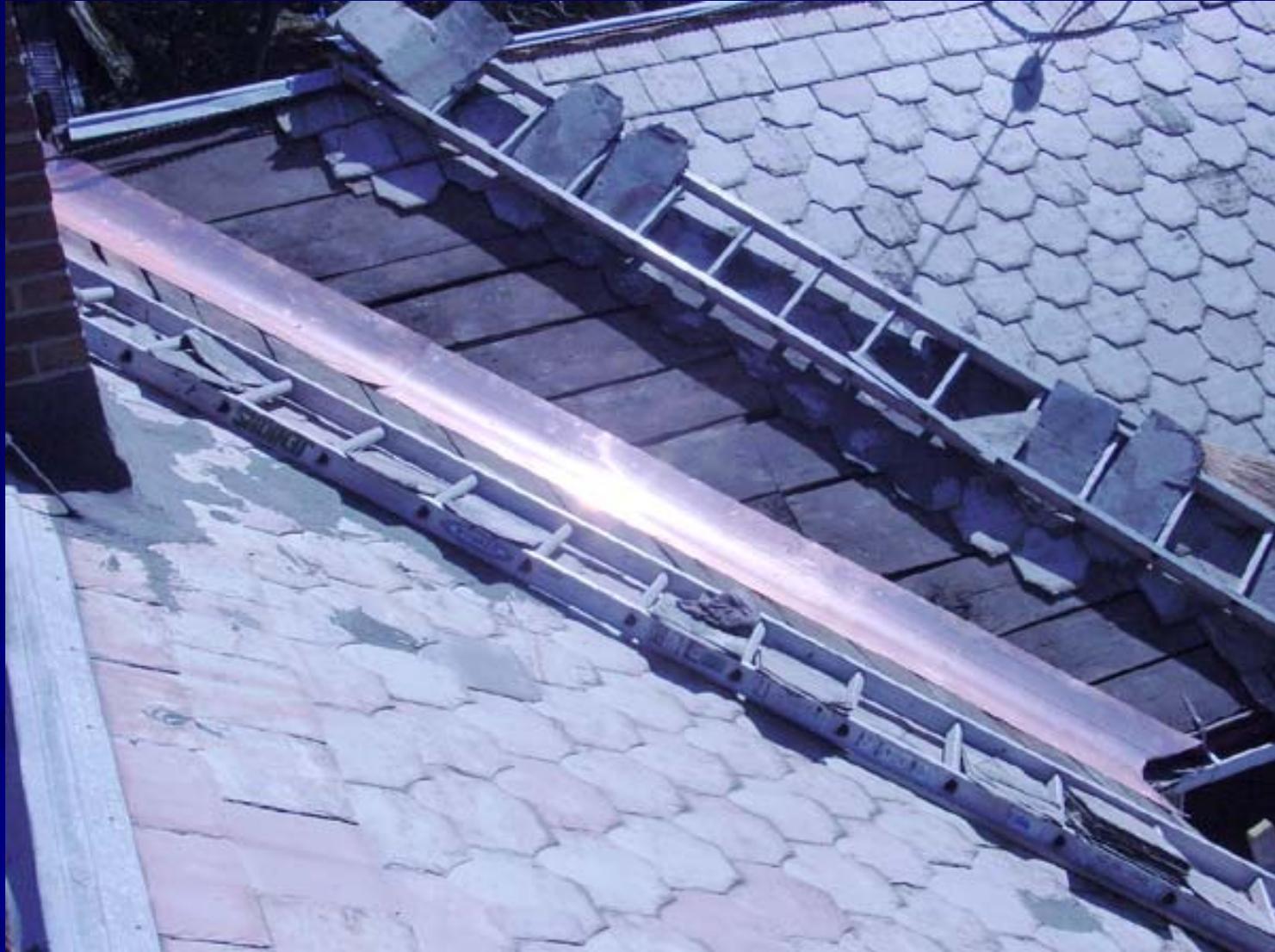


2) FLASHING FAILURES:

Flashings are replaceable if the slate is still good, no matter how bad the roof looks.



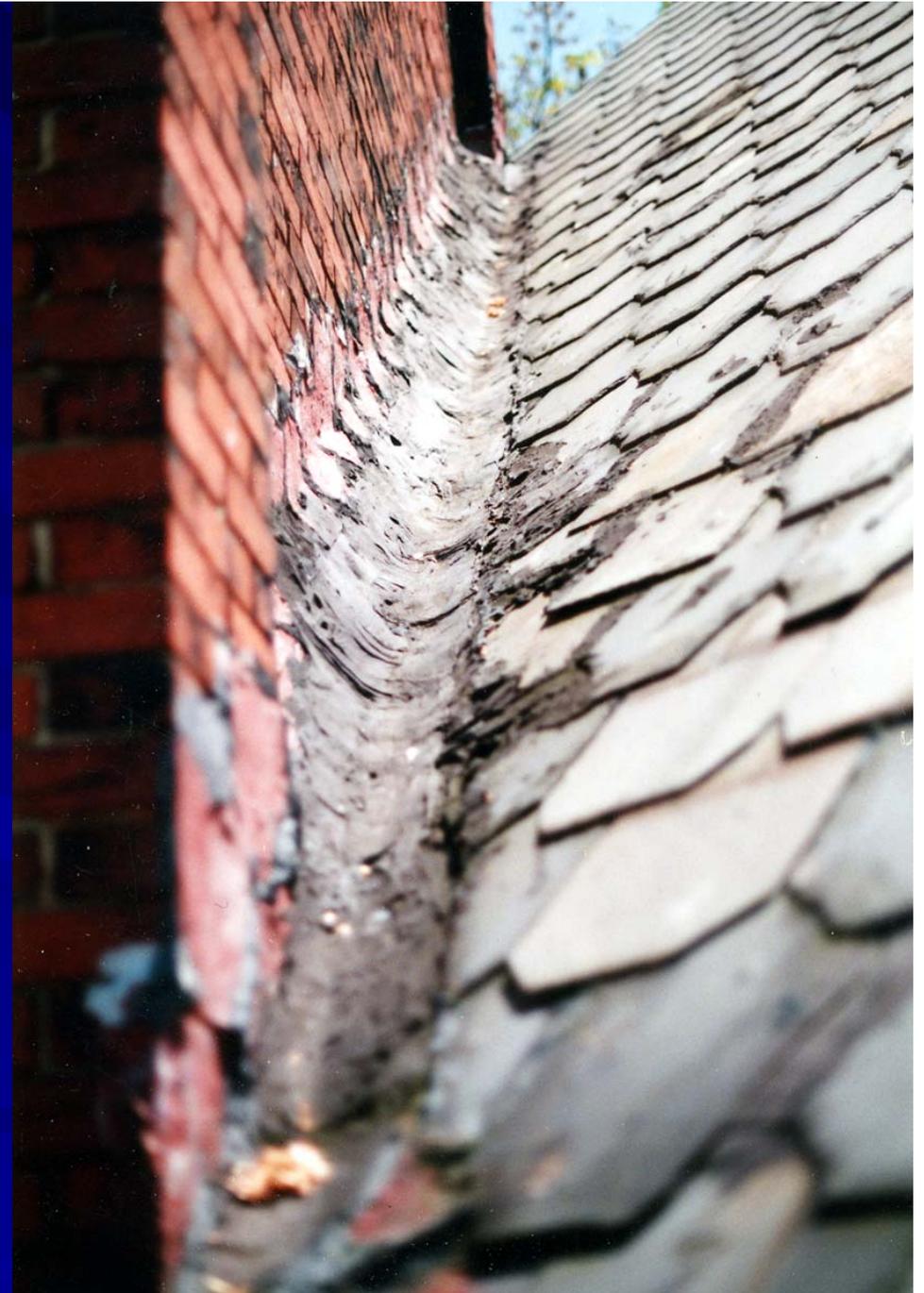
Flashings are easily replaced.



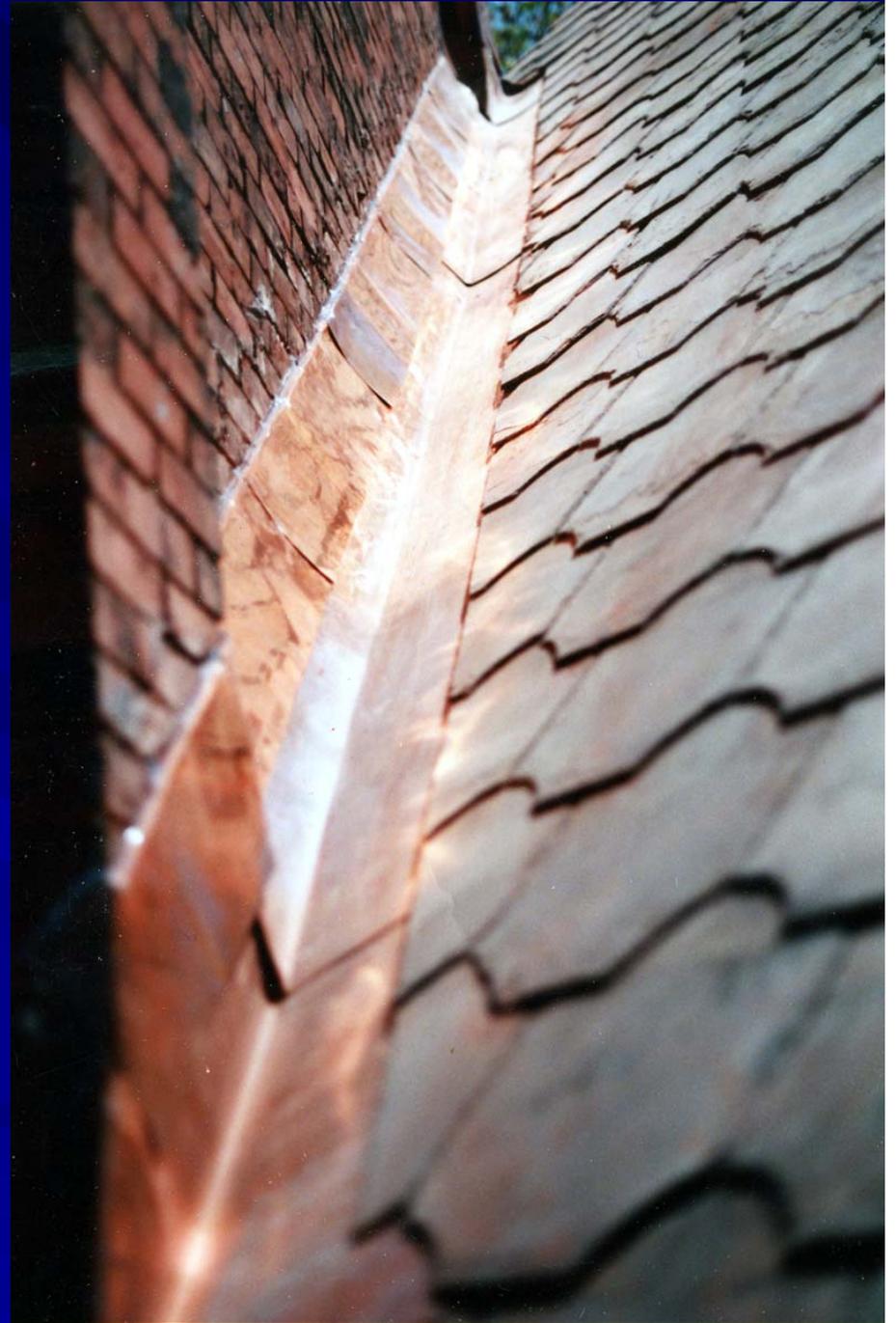
This is the new copper valley on the century roof.
Slate roofs, by nature, are restorable.



Another
example of
what looks like
a hopeless
case: a church
bell tower.



One day's work
for a slater and
helper restores
the roof.

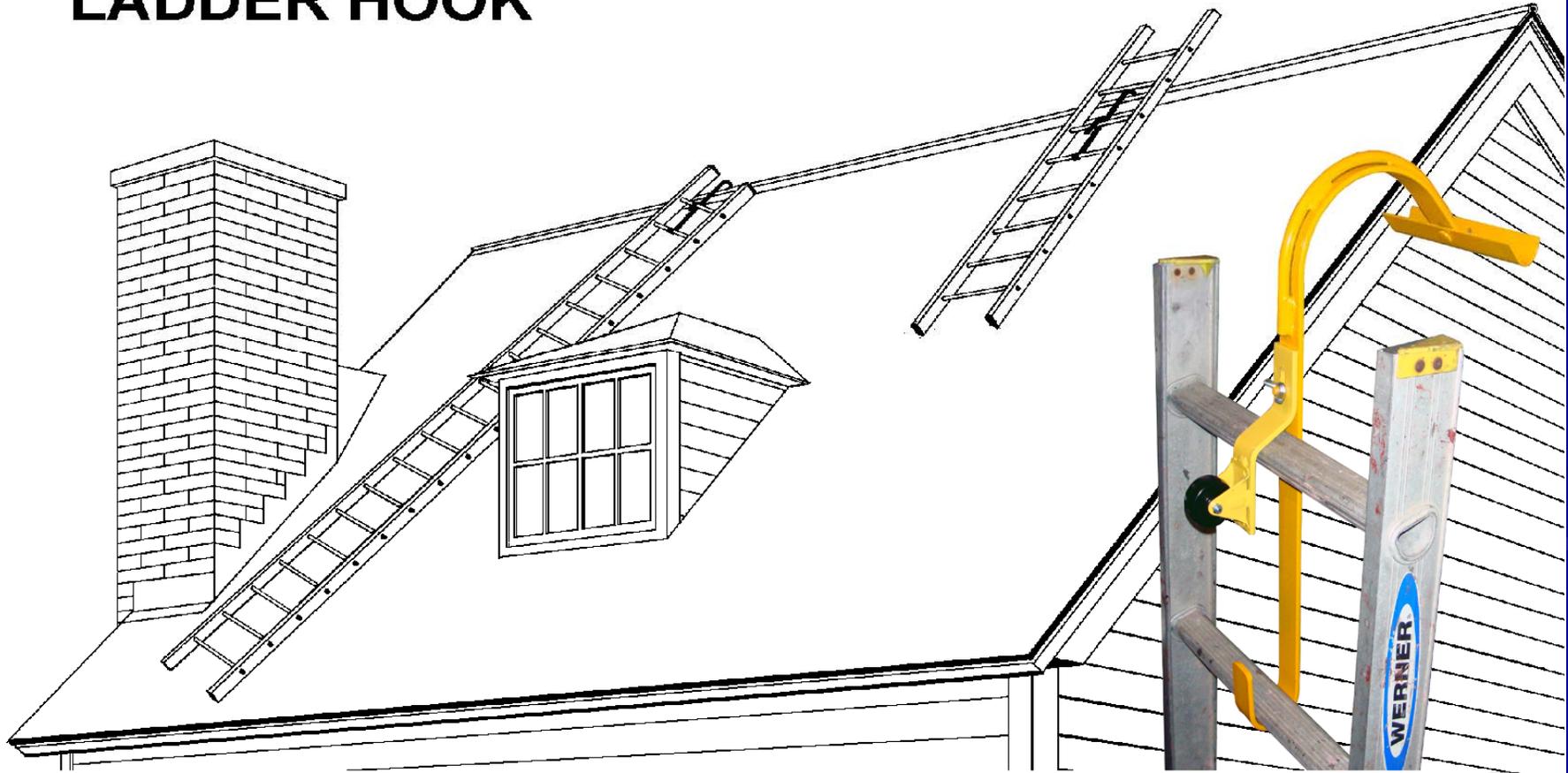


Basic slate roofing tools include the ripper, slate hammer, slate cutter and stake.



Hook ladders allow for safe access to steep roofs.

LADDER HOOK



Traditional slate roofs use board decking.



Lath roofs are also common.

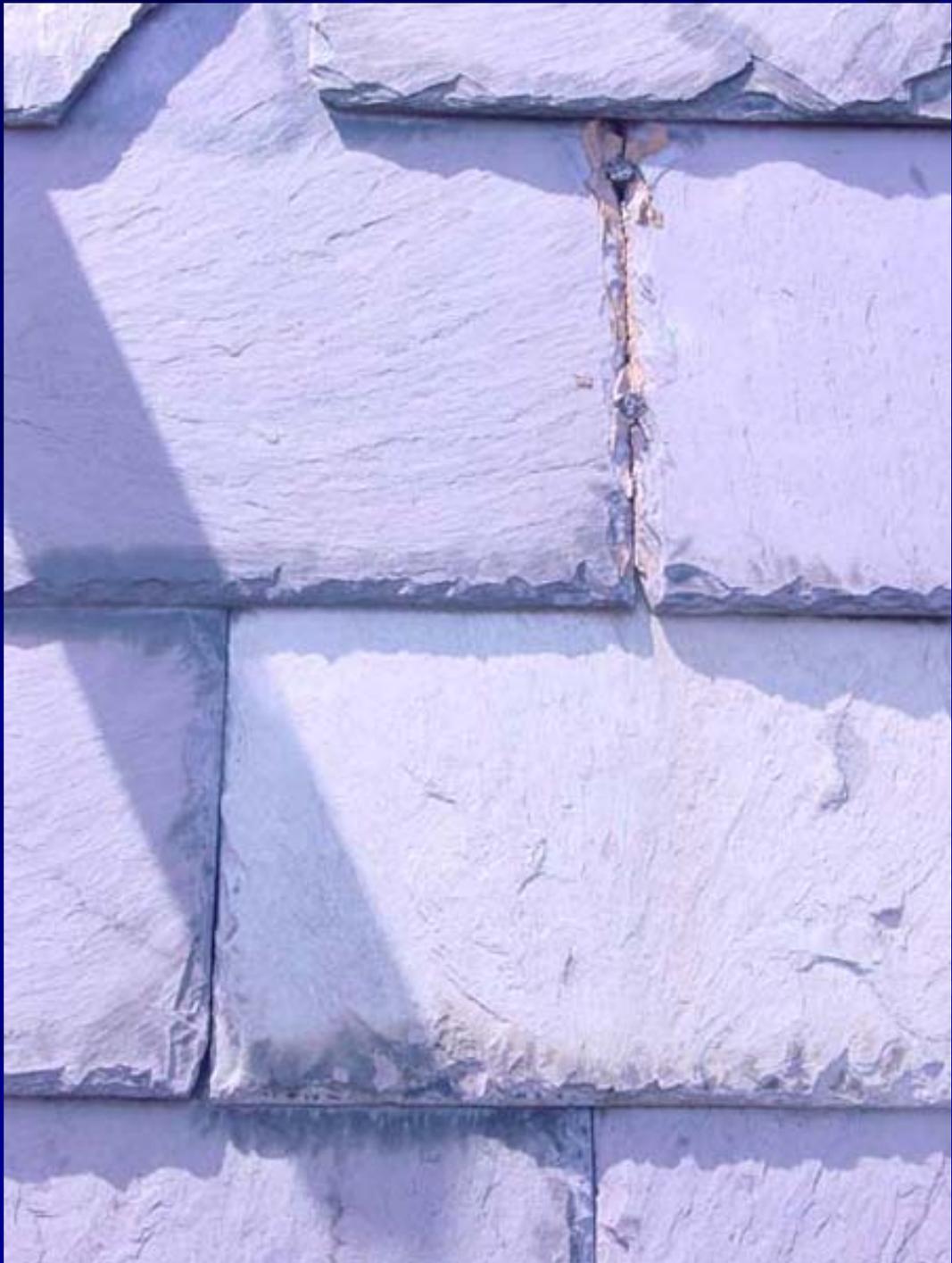
Underlayment is not required on slate roofs.



One of the most common causes of leaks in older slate roofs is improper repairs.



This is another example of a bad repair. Sometimes, these can be very hard to spot.

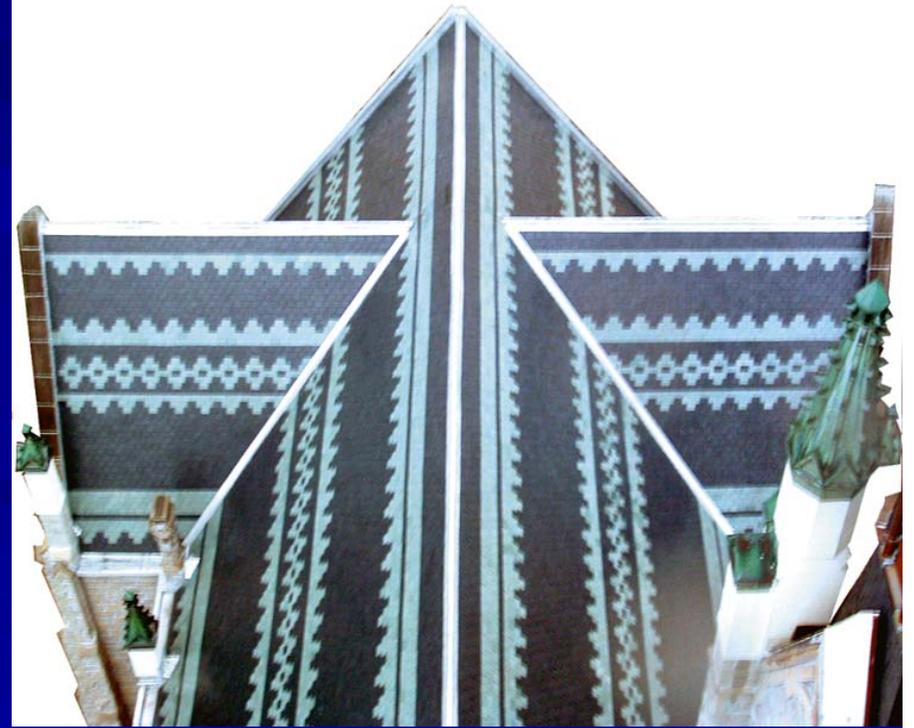


Individual slates are easy to replace using either a slate hook or a nail and bib:



NEW SLATE ROOFS:

Roof consultants will be called upon to advise on the installation of new slate roofs.



The three principal components of a slate roof are:

- The slate shingles
- The fasteners
- The roof deck
- Flashings are also common

The Slate Shingles

- Should be from a known source
- Should have a known longevity
- Should be manufactured correctly
- Should have punched nail holes

New slate roof, Chinese slate



New roof – Spanish slates



The Fasteners

- Must have a longevity equivalent to the slates
- Do not use electro-galvanized fasteners
- Hot-dipped galvanized nails are common
- Copper nails are recommended
- Stainless steel nails are good too
- Slate hooks are popular in Europe

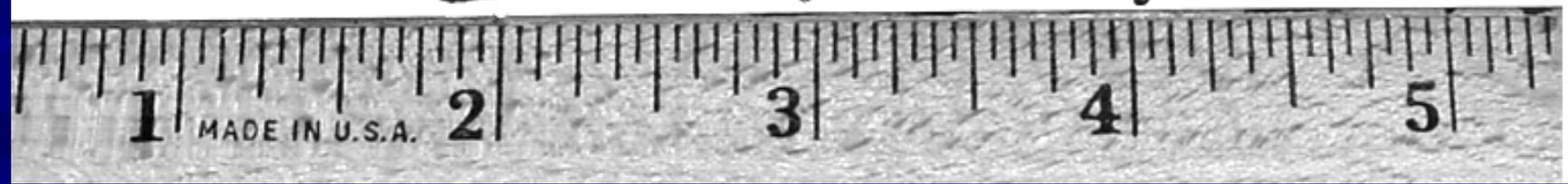
OLD
SLATING
NAILS



1919
82 years old



1890
111 years old

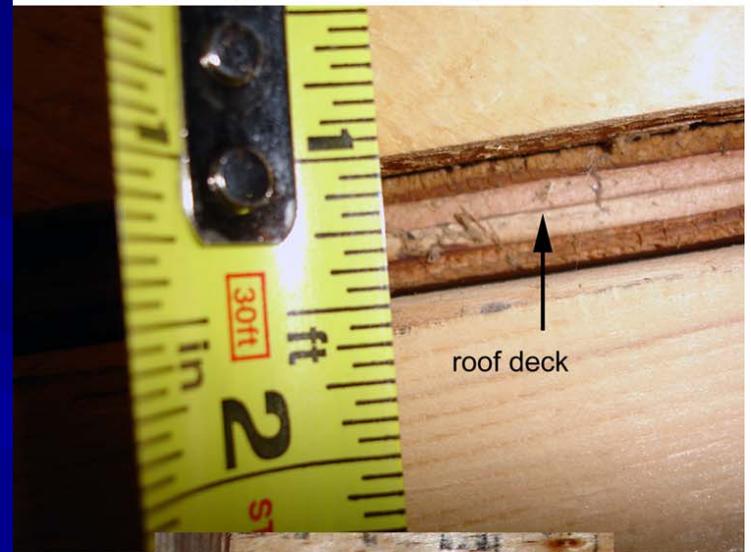


The Roof Deck (Substrate)

- Must have a longevity equivalent to the slates
- Should be minimum $\frac{3}{4}$ " thick
- Laminated or glued materials are not recommended
- Solid decking (instead of lath) is recommended

Inadequate roof decks are becoming too common.

Figure 2



Underlayment

- The underlayment is a temporary covering
- It is not needed to keep the roof water tight
- Many slate roofs have been installed without any underlayment
- On new construction, minimum 30 lb. felt is recommended

Contractors

- Should be experienced in slate roofing
- Should review available instructional materials prior to an installation
- Should be able to read English
- Should have the correct tools
- Should have all project details spelled out in a contract
- Should guarantee their work

Contractors should NOT walk on the slate during installation.



New installations can be condemned when incorrectly installed. This new roof was condemned because of lack of headlap, among other things.



This new roof was also condemned due to lack of headlap, among other things:



This is an
example of
the
workmanship
on that roof.



Another new roof, condemned because of insufficient headlap:



There is no way
to repair
inadequate
headlap other
than to remove
the slates and
reslate the roof.



New University roof – condemned due to lack of headlap:



The university roof headlap ranged from an inch to negative 1”.



This slate roof was installed with little or no headlap. It will have to be completely removed and reslated. It is a huge roof.

Common installation mistakes:



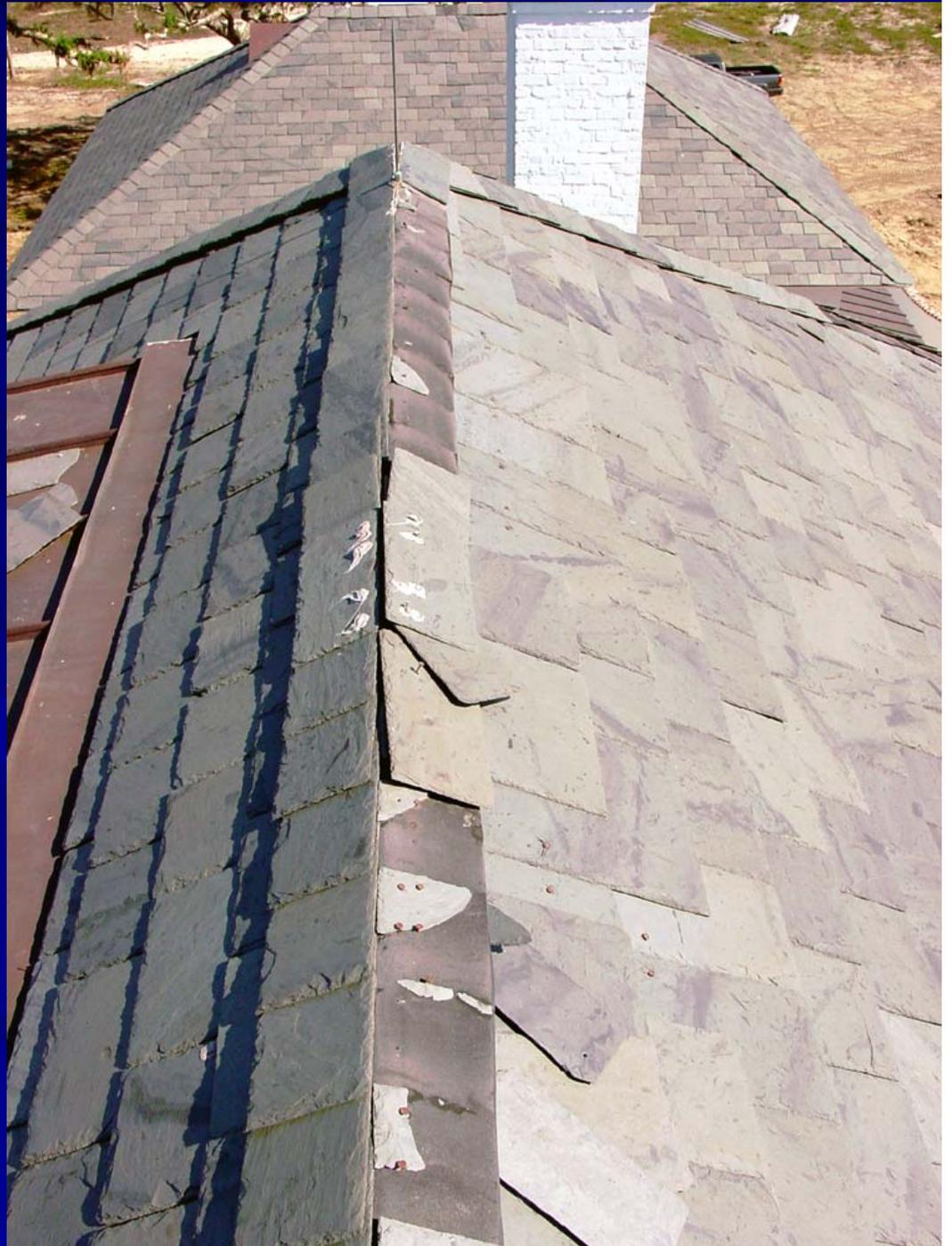
**WEATHER
DAMAGE:**
The most
common types of
weather damage
are wind and hail.
Wind damage
tends to be
obvious.



Wind damage looks like flashings blown off or slates blown off. It is repairable.



Biloxi, MS,
hurricane Katrina
– only the
windward side of
the hips blew off
(in places).



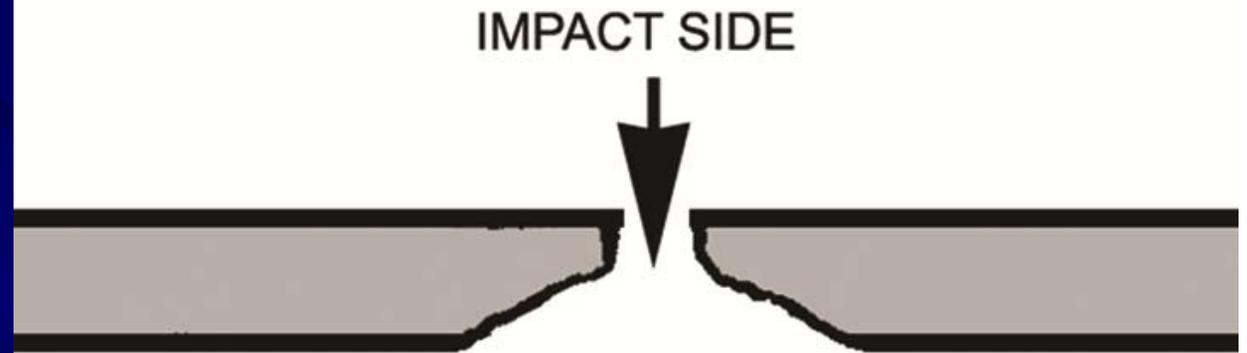
Hail damage is not usually a problem, but large hail can puncture slates, especially softer ones. These are hard slates punctured by massive hail stones. Note that the edges of the holes are smooth. This indicates an external puncture.

Figure 3



Identify hail damage:

- 1) Clean edges around holes
- 2) Localized on windward side
- 3) Look for indentations in metal



The side of the slate opposite the impact side breaks out and leaves a crater. The impact side has a clean edge and no crater.



NOT HAIL DAMAGE
The crater means the force was internal.

HAIL DAMAGE
The clean edges means the force was external.

Hail can also dent metal components of slate roofs.
This damage does not usually cause leakage.



HAIL IMPACT INDENTATIONS ON METAL ROOFING

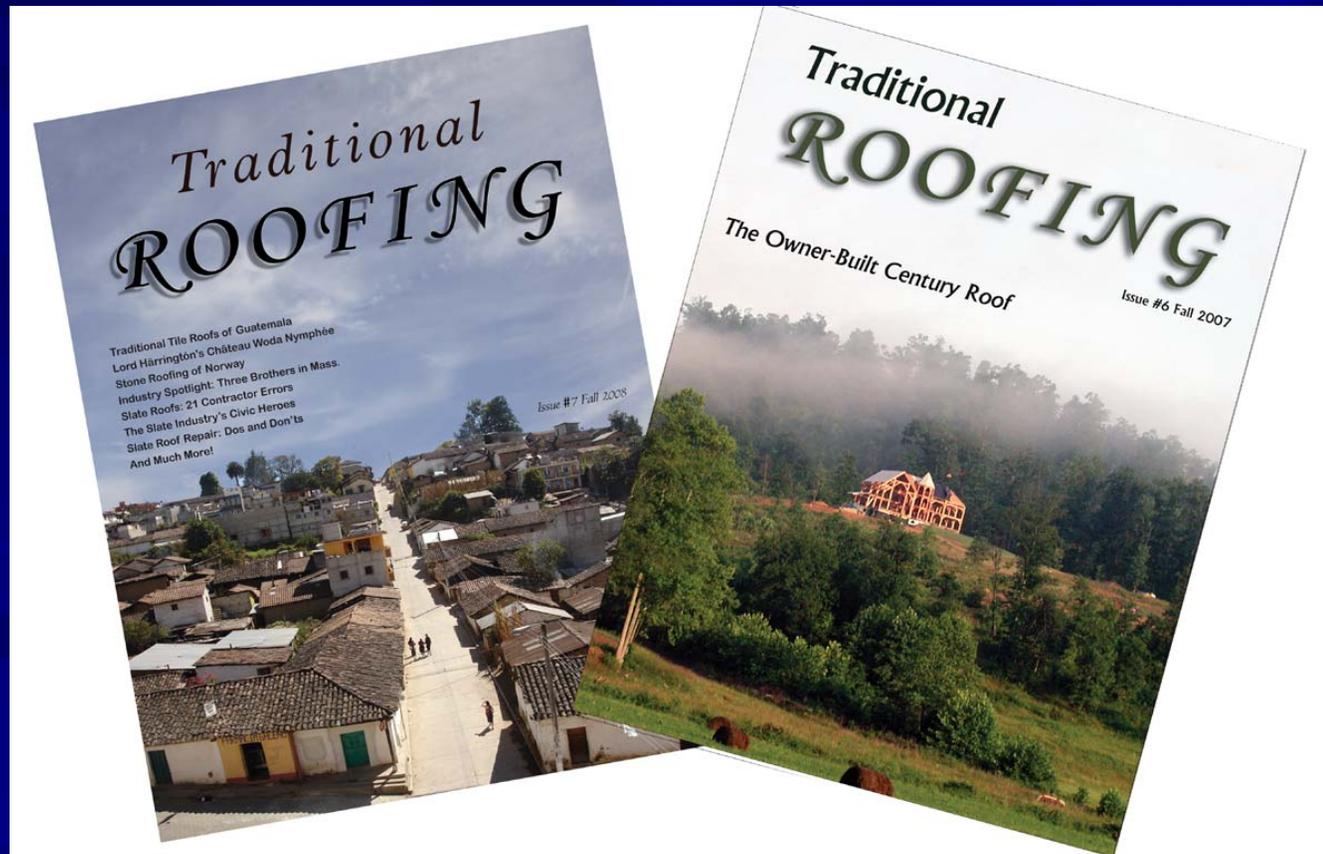
Much more information about slate roofs is
available free at

SlateRoofCentral.com

- Directory of roofing contractors
- Source lists of slates, tiles, materials, etc.
- Public message board
- Tools, materials and supplies
- Installation instructions
- Repair instructions
- Videos

Traditional Roofing Magazine

- The entire magazine is free online (traditionalroofing.com).
- Includes in-depth articles about slate and tile roofs.
- There is lots of illustrated how-to information.
- The print version is free also (sign up online).

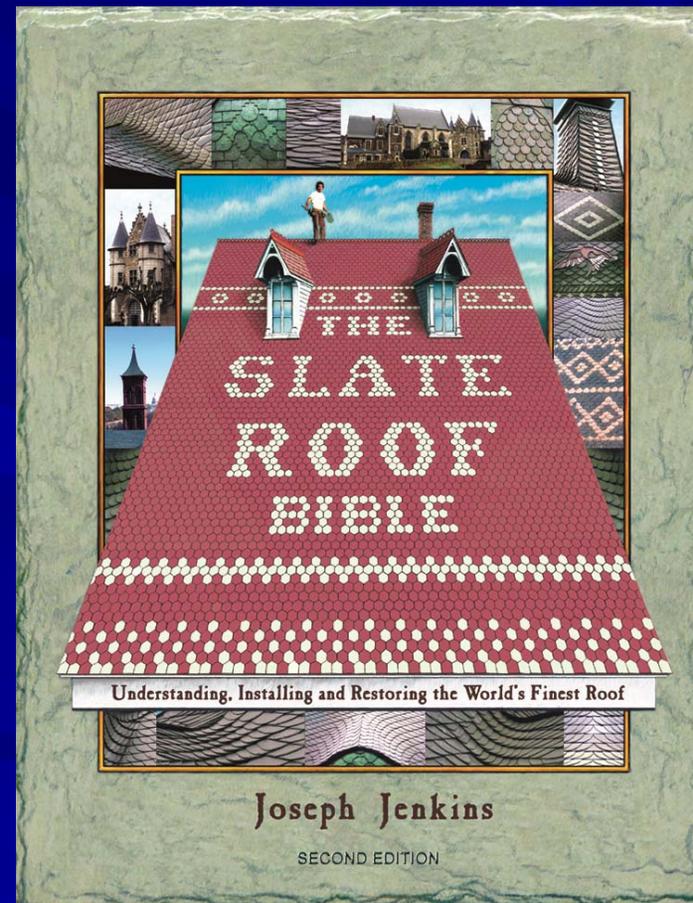


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- Source of the Traditional Roofing Magazine
- Source of the award-winning Slate Roof Bible, 2nd edition
- Source of slate roofing tools, supplies, materials
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Questions?

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