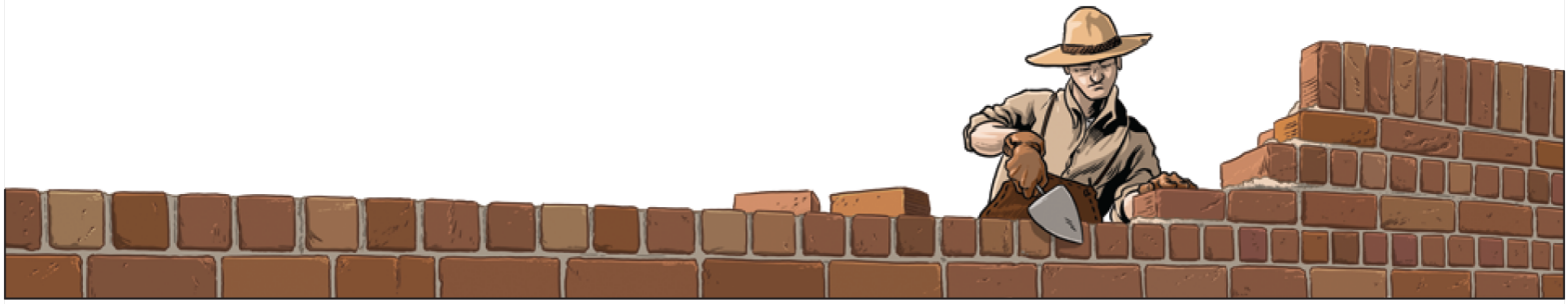
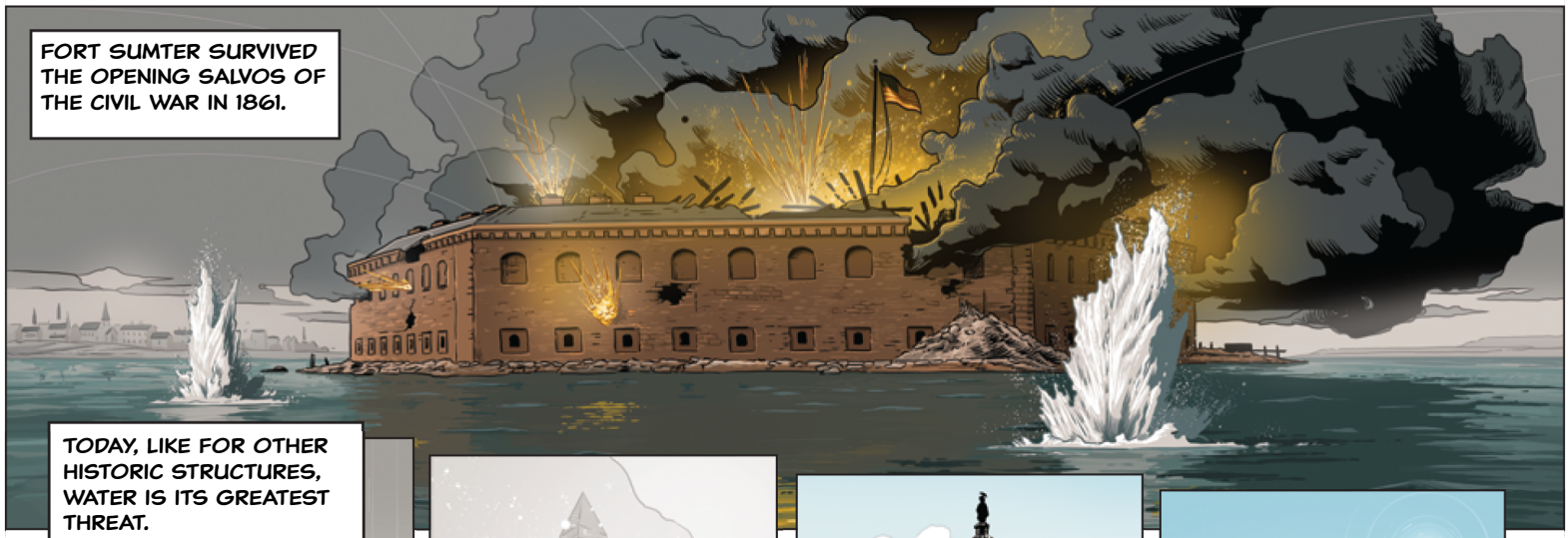
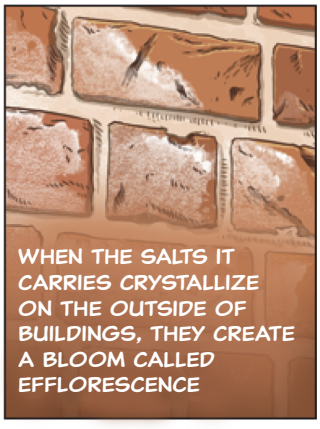
MORTAR, UNSUNG HERO OF HISTORY

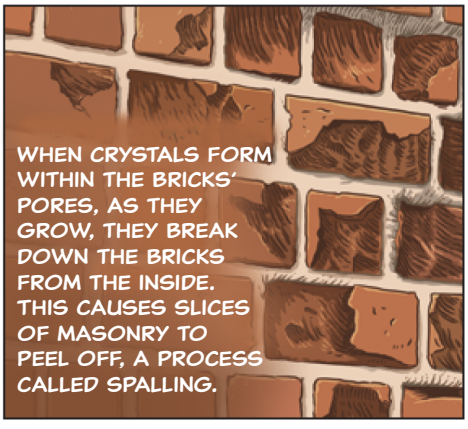
BY JOHNNA RIZZO AND MATTHEW TWOMBLY

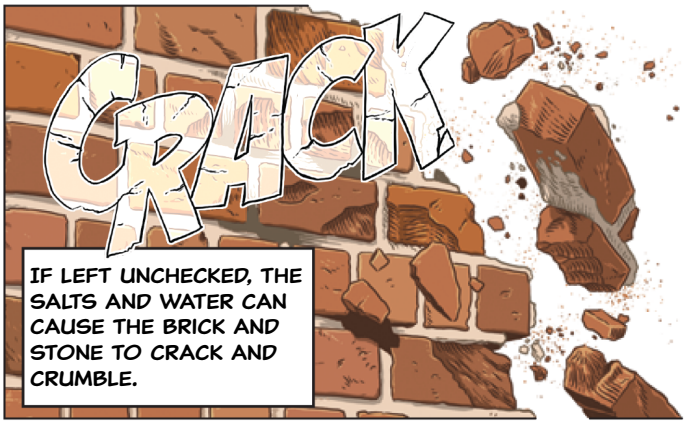




TODAY, LIKE FOR OTHER HISTORIC STRUCTURES, WATER IS ITS GREATEST THREAT.

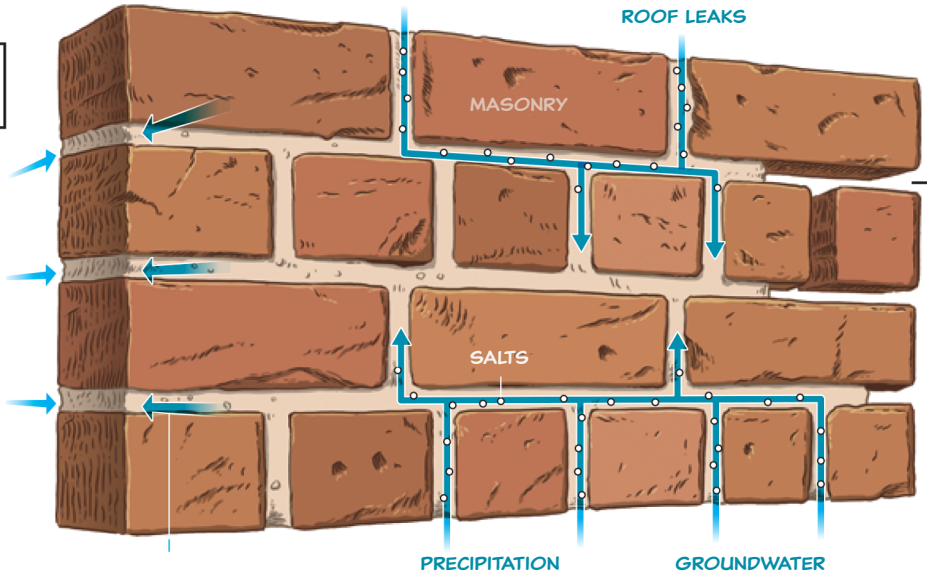






SO A WALL IS BUILT TO BE A SYSTEM

MORTAR IS THE SOFTER COMPONENT. BECAUSE IT IS SOFTER, IT LETS WATER AND SALTS PASS THROUGH INSTEAD OF MOVING INTO THE BRICKS AND CAUSING DAMAGE.



SINCE MORTAR IS REPLACEABLE, A PROCESS CALLED REPOINTING, IT SACRIFICES ITSELF FOR THE GOOD OF THE SYSTEM.
BUT FOR THE SYSTEM TO WORK, THE MORTAR HAS TO BE SOFTER THAN THE MASONRY IT HOLDS TOGETHER

THE BASIC RECIPE FOR HISTORIC MORTAR IS SIMPLE

LIME IS MADE BY BURNING LIMESTONE OR SEASHELLS

THE INTENSE HEAT CREATES A NEW COMPOUND CALLED QUICKLIME THAT CAN THEN BE PULVERIZED

WHEN MORTAR IS NEEDED, SAND AND WATER ARE ADDED.

SAND PROVIDES STABILITY, WATER CATALYZES A CHEMICAL REACTION WITH LIME

THIS REACTION, CALLED CARBONATION, LETS THE MORTAR CREEP INTO THE PORES OF THE BRICK OR STONE

WHEN IT HARDENS, IT CREATES A LASTING BOND WITH THE MASONRY

FOR THOUSANDS OF YEARS, THIS RECIPE WORKED, BUT AS MASONRY MATERIALS GOT HARDER OVER TIME, OTHER THINGS HAVE BEEN ADDED TO MORTARS TO MAKE THEM COMPATIBLE

EARLY MAN
CLAY AND MUD IS HANDMOLDED AND SUN-DRIED TO MAKE BRICKS AND ADOBE

C. 30 B.C.
ROMANS BEGIN ADDING VOLCANIC ASH TO LIME, SO THAT IT CAN HARDEN IN WET AREAS

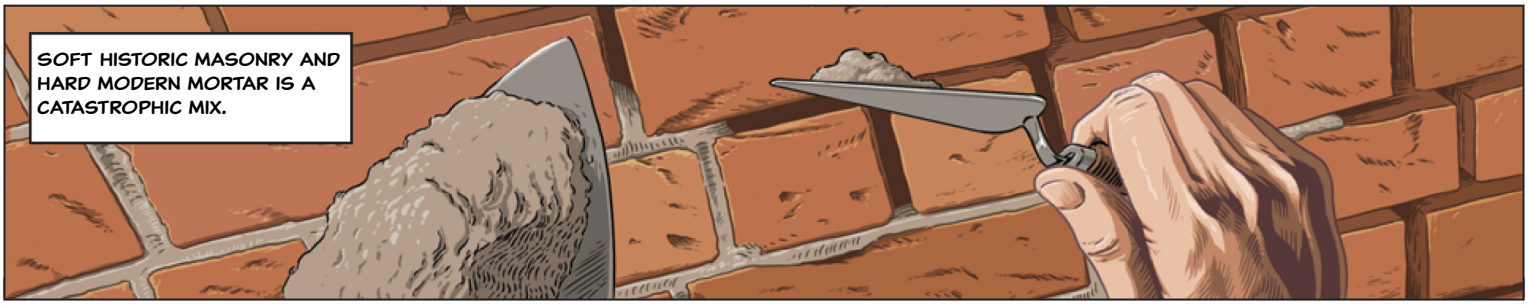
LATE 1800S
BRICKS ARE MADE OF SPECIAL CLAYS AND FIRED IN FACTORY KILNS.

EARLY 1900S
SOME PORTLAND CEMENT IS INTRODUCED INTO MORTAR MIXES TO HARDEN THEM

MID-1940S
AFTER WWII, PORTLAND CEMENT ALL BUT REPLAES THE MUCH SOFTER LIME IN MORTAR.

LEAST HARD → MOST HARD

SOFT HISTORIC MASONRY AND HARD MODERN MORTAR IS A CATASTROPHIC MIX.



WHEN MORTAR NEEDS REPLACING CAREFUL CONSIDERATION OF MATERIALS IS REQUIRED IF WE WANT THESE AMERICAN ICONS TO LAST.