

Michele Horrigan



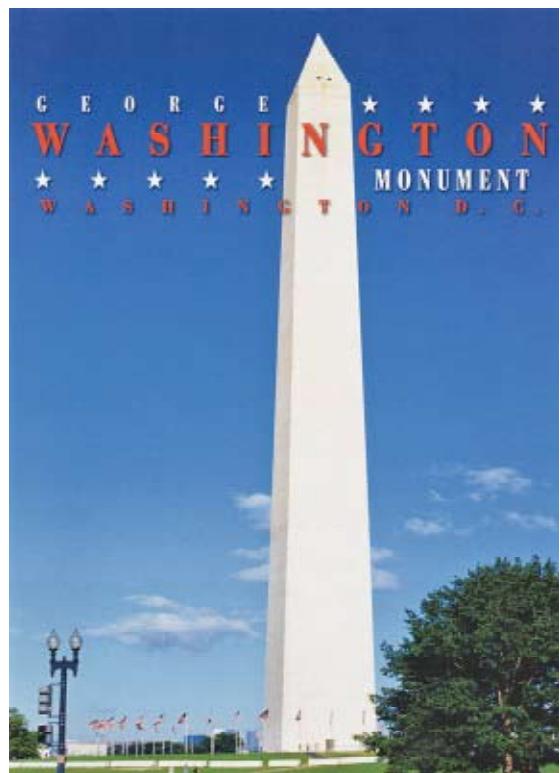
Stigma Damages

Growing up in the southwest of Ireland under the shadow of a giant industrial plant was bound to have an effect on me. In 1978, Canadian company ALCAN broke ground at Aughnish Island, beginning a project that became the largest building site in Europe at that time. A sprawling aluminium refinery, costing over one billion US dollars, was constructed in a five-year period. At a time when Ireland was in the heart of an economic recession, the venture was welcomed with open arms. The local mayor encouraged ALCAN during a press conference in November saying, "I regard you as Santa Claus, coming to us a little early but all the more welcome." Thousands were soon employed on the island. An almighty crew of workmen swept into the town, bringing from other parts of the country seemingly exotic stories and traditions. Accounts of trucks getting wedged in the eight-hundred-year-old stone bridge, drivers falling asleep at the steering wheel and crashing in through people's living room windows, and other escapades relating to the moving of heavy machinery through a medieval town ran abound during those first few years of construction. The call of the curlew gave way to the sound of bulldozers and blasting operations. The morning of my first holy communion was spent trying to ferry me from the front door of our house through the muck of the main bypass road being built to accommodate this new industry, in an attempt to keep my pristine white dress clean. Rumour has it that the exhausted earthmoving equipment was driven into a large hole in the ground and buried once the factory was up and running.

Geologist Pierre Berthier discovered Bauxite rock, the mineral ore used to make aluminium, at Les-Baux-de-Provence in the south of France in 1821. In his experiments, Berthier was the first to recognise that this rock contained a new substance, aluminium. It is still possible to visit this site and origin of the industry, stroll around its designated walking trails in an empty quarry and pick up loose stones.



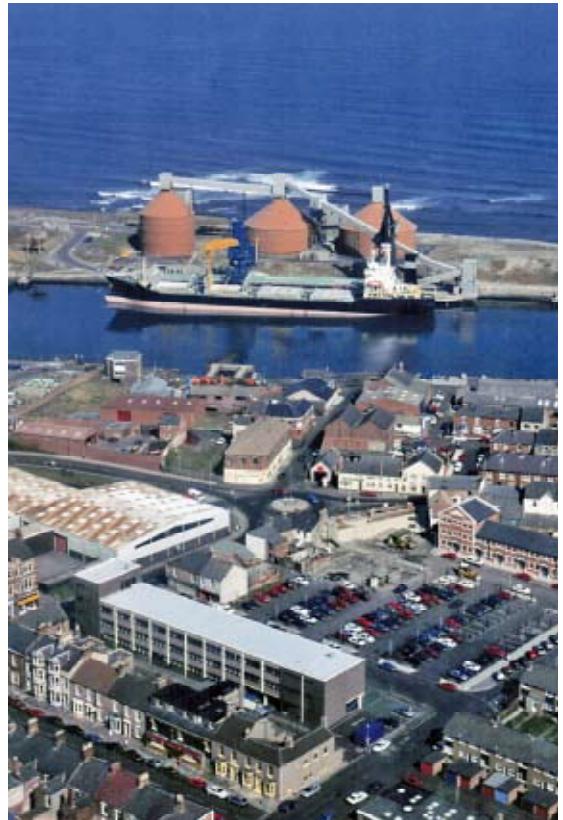
Soon after, aluminium became the most precious metal of its age. The Washington Monument in the United States was completed in 1884 and capped with a piece of solid aluminium, more valuable than gold and so deemed fitting for the national monument. Weighing exactly one hundred ounces and almost nine inches high, the apex was the largest single piece cast at the time. Gale force winds and driving rain at the top of the monument precluded the taking of an actual photograph of the moment of installation, and an artist's sketch of the event had to suffice. The placement of the apex in Washington was symbolically derived from the vocabulary of freemasonry: an all-seeing eye casting a net entirely over the activity below it as an imperialist overview. Yet, in a gentle détournement, the apex was first put on public display in the window of Tiffany's jewellery store in New York and viewed by visitors who could later say they had "stepped over the top of the Washington Monument." Two years later, the Hall-Héroult manufacturing process made aluminium easier to produce and the price of the metal plummeted, de-appreciating the value of this symbol of the American state.







Today, bauxite ore is mined worldwide, predominantly in Australia, China, Brazil, India, and Guinea. It is transported to and processed initially in refineries, then moved to smelters before becoming the finished product, aluminium. The Bayer process is the first chemical treatment of the ore, where crushed bauxite is mixed with caustic soda in a grinding mill to produce slurry, then heated at a temperature of 150 to 200 °C. This dissolves any aluminium compounds in the ore to a soluble substance. Next, the slurry is pumped into a tank where a residue (commonly referred to as 'red mud') is removed. Following that, the remaining liquid is pumped through a series of filters, precipitation tanks, and to a kiln, where it is heated to remove water and produce dry alumina crystals.



This material is transported to a smelter to begin the next phase of production, the Hall–Héroult process. The alumina is dissolved in molten cryolite and aluminium fluoride to reduce its melting point. A low voltage electrical current is passed through the mixture, producing liquid aluminium metal and carbon dioxide. Finally, the finished product is transported to factories and manufacturing centres across the globe to be shaped into airplanes, cars, drinking cans and much more. These procedures all require huge amounts of electrical power. Most refineries and smelters are located close to deepwater ports to accommodate their transportation needs, often stretching production between nations and continents. The need for energy means they tend to be sited close to power stations, sometimes even building their own.





BAUXITE

In our new bauxite mines in Jamaica there is enough rich aluminum bearing ore to last more than half a century.

Our increased supply of bauxite is only part of our vast expansion. This year our many plants will turn out over 25% of all the aluminum made in this country. This is twice as much as the whole industry produced before World War II.

We are proud of the leading part we are playing in the most vital and exciting of all American industries today.

For, aluminum is not only revolutionizing American manufacturing—it is revolutionizing American living. In thousands and thousands of useful products, aluminum is taking the place of other metals—making these products better—and cheaper.

Because of aluminum, a brighter future lies ahead. We are continuing to expand—and to work with manufacturers to turn aluminum's unlimited opportunities into realities.

Kaiser Aluminum

America's fastest growing major producer of aluminum





Scene from the Alcoa Technicolor film, "Unfinished Rainbows", showing Albert Morin as Napoleon III, Jean De Briac as Count Walewski, Jean Del Val as Henri Sainte-Claire Deville. Available on request for your church, school, or organization. Address 1804 Gulf Bldg., Pittsburgh 19, Pa.

Napoleon knew the way to win World War II

This chapter in the history of aluminum opens with Napoleon III and closes with the screaming roar of a 1949 jet. It's a chapter mighty important in your life—and ours.

In the court of Napoleon, aluminum was a curiosity. So scarce it cost \$16.00 an ounce! But the Emperor saw a vision in its light weight. Maneuverability for his heavily-weighted troops. Victory! He ordered his scientists to make it cheaply—and in great quantities.

Years of their effort produced only small quantities of aluminum—at \$12.00 a pound.

Then...in 1886, a twenty-two-year-old American mastered the secret of freeing aluminum from its ore, by electricity. Soon the tiny company that was to become Aluminum Company of America was offering his "cheap" aluminum at \$2.00 a pound. But

Napoleon's vision was history, and World War II was fifty years in the future.

As that half-century passed, our Alcoa family grew strong. Working together, we brought the price of aluminum down to 20 cents a pound!* And our plants for producing aluminum grew from a little shed in Pittsburgh to...

To an American arsenal! For in that fifty years, the foot soldier had grown shining aluminum wings. Maneuverability had come to be measured in hundreds of miles an hour. As thousands of tons of American aluminum poured from Alcoa plants, our American Air Force grew to invincibility. 80% of every plane was aluminum. A metal Americans made plentiful in a typically American way.

*The price is still lower today—16 cents a pound!

THE MEN AND WOMEN OF

Aluminum Company of America

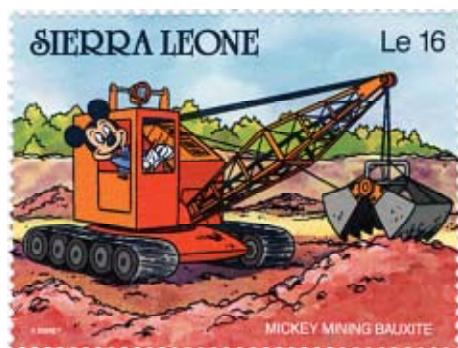


To know other stories of the Alcoa family and the growth of aluminum's usefulness to you, write for free copy of "Aluminum—Its Story," 1804 Gulf Bldg., Pittsburgh 19, Pa.

The aluminium industry has an evolving identity, seemingly moulding itself to any given era and functioning as necessary to its survival. It is both resilient and flexible as demonstrated in the various forms it takes in everyday usage. Company advertisements show the demand for its uses, from women's fashion to the construction of aircraft during World War II. Motion pictures tell of an epic story from the court of Napoleon to speedy fighter jets. Do-it-yourself guides inform

postwar society of the many household objects to be made out of the wonder metal – from birdhouses to shower doors and suits of armour for children. In these documents, civilisation cannot function coherently without aluminium. Other ephemera feature illustrations of quarries and mining equipment appearing on legal tender and notes in developing countries where bauxite is extracted. Postal stamps depict Mickey Mouse working in a Guinean mine and industrial expansion sanctioned by the Emir of Bahrain. Postcards from Australia and Trinidad show 'wish you were here' moments of refineries and smelters. Promotional videos, Hans Haacke artworks on multi-national conglomerates, biscuit wrappers, recyclable drinking cans, car parts... all compiling to form a kind of Wunderkammer; aluminium as a material resource, a lifestyle, an identity, a motif and signifier of what a manufactured substance can be in the world.





FREE PLANS include:

Bill of materials

Step-by-step construction details

Drawings

It's easy to make everything from Room Dividers to Patio Lights with versatile Reynolds *Do-It-Yourself* Aluminum.

Complete instructions for a wide variety of projects, developed and proved in Reynolds *Do-It-Yourself* test workshop are available at your dealer's handy Self-Service Center.

New Project Sheets are continuously being made available, so check with us for additional ideas. If your dealer is temporarily out of a particular Reynolds Project Sheet, send your order directly to: Reynolds Metals Company, Richmond 18, Virginia.

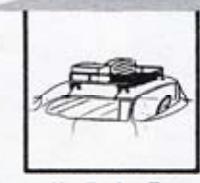
CURRENT PROJECT SHEETS



Screens and
Window Sash



No. 3—Rose Trellis



No. 7—Car-Top
Luggage Rack



No. 9—Corner Table



No. 10—Modern Dining
Table and Coffee Table



No. 11—Shower
Enclosure



Boy's Shield



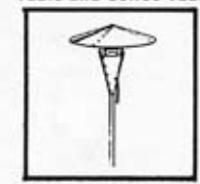
No. 15—Love Tables



No. 16—End Tables



No. 17—Trivets



No. 20—Patio Lights



No. 21—Garden Caddie



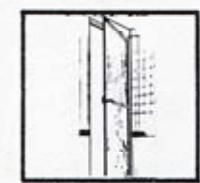
No. 22—Utility
and Hand Carts



Christmas
Mobiles



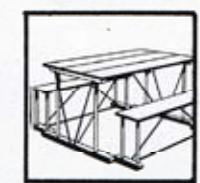
No. 24—Coffee Table



No. 27—Shower Door



No. 28—Tot's Table
and Stools



No. 29—Patio-Picnic
Table



No. 30—Stallion Wall
Plaque



No. 31—Kitchen
and Laundry



Duplex
House



No. 33—Modern
Bird-Feeder



No. 36—Aluminum
Desk Set



No. 37—Radiator
Enclosures



No. 38—Cabinets with
Sliding Doors



No. 39—Room Dividers



No. 40—Shelf
Picture Frame



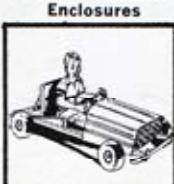
Shower Door
over Tub



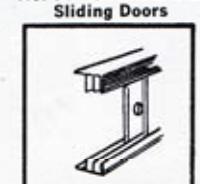
No. 42—Cold Frame
and Hot Bed



No. 44—Aluminum Uses
for your Craft



No. 45—Gasoline
Go-Cart Accessories



No. 46—Sliding Door
and Panel Track



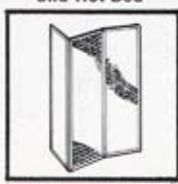
No. 47—Blackboard Desk



No. 48—Hand
Tubing Holder



Range Hood



No. 50—Folding Room
Divider Screen



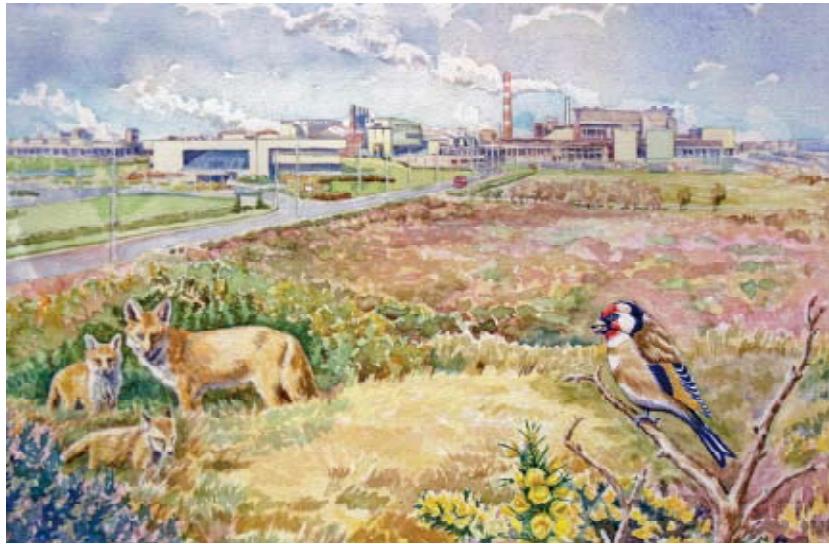
No. 51—How to Solder
Aluminum



No. 52—Picture Frames



No. 53—How to use
Aluminum "T" Section



As time went by in Aughnish, the refinery began to encompass many aspects of local life, providing steady employment and boosting the economic morale of the region. The company reached out, and began collecting the work of artists for its offices and boardroom walls. A nature reserve, complete with butterfly sanctuary and birdwatching facilities dotted around the vast industrial complex became a popular attraction.

Satellite businesses sprung up to accommodate extra workloads and sub-contractors helped out with the maintenance of the refinery. Yet, throughout the 1990s the industry was haunted by environmental scandals as a debate arose around deformed agricultural livestock, toxic deposits in the soil and harmful sulphur emissions. These issues still officially remain a mystery. Ireland's Environmental Protection Agency continue to renew the factory's licence, defend its record and deny any links. These concerns endure to highlight the struggle for survival between nature and industry, and between environment and economy.



The leftovers of bauxite refining, comprising of sand, dust and chemicals, are contained in an ever-expanding landfill to the south of the factory, known locally as "the red mud." Planning permissions for this area continue to be granted, as seventy seven million tons of this residue are annually produced worldwide. Nothing can grow on top of the mud, and there are currently no plans to move or dispose of this material anywhere else.



As this journey through heavy industry progresses, the role of women, or lack of, in the story becomes noticeable, excluded as being physically constricted and by the social constructs of family. Yet, during years of war factories were emptied of strong young men, all on their way to battle. Women were called on by the state, and worked in all manner of production ranging from making ammunition to uniforms to airplanes before being usurped again from these positions when men returned.



In today's drive for equality, recruitment videos for women working in the sector talk about personal expansion and equal career opportunities. You can be a mother and a miner. Meanwhile in Jerry Bruckheimer's 1983 motion picture *Flashdance*, the heroine Alex Owens works in a steel mill in Pittsburgh during the day while at night pursues her real dream of dancing. Flitting between Hollywood populism and the possibility of individual determinism, the ever-pervasive hulk of a brooding factory continues to act as a backdrop to this spectacle.

Stigma Damages is a term bandied around in the legal profession to define possible loss or suspected contamination due to environmental circumstance. It could also describe a dance borne out of disaffection of global flow and capital.



None of us remain untouched. Aluminium is the primary synthetic material of our age. Speculative futures have yet to unveil another substance with such potentiality. To move through our everyday world requires an interaction with aluminium on such an elevated plane that we can no longer see nor realise our dealings with this substance any more, from using a laptop computer in the writing of this text, to the printing machines that produce this book, to the trucks and vans that will deliver it into your very hands. Even as you are now holding this book and reading the final paragraph, perhaps you are wearing reading glasses or examining the time on your wrist watch or checking for text messages on your mobile phone. And though you may wish to wash your hands of these implications bear in mind, as you turn that aluminium faucet, that it may not be so easy to remove yourself. We are all more complicit in the process of extracting bauxite ore from the earth's surface than what we think...

Images, in order of appearance

Lynemouth aluminium smelter,
Northumberland, England, where
production ceased in 2012
(front and back cover)

Remaining bauxite ore found at
Les Baux-de-Provence, France

Illustration from *The Washington Post*,
1884

Postcard of the Washington Monument,
Washington DC, United States

Replica of the apex of the Washington
Monument, displayed in the window of
a jewellery shop, Galway, Ireland

Images detailing the process of casting
an aluminium apex at Scottish Sculpture
Workshop, Aberdeenshire, Scotland

Aerial view of the town and port of Blyth,
Northumberland, where alumina is
imported to the United Kingdom, c.1990s

Anglesey aluminium smelter, Wales,
where production ceased in 2009

Lochaber aluminium smelter,
Fort William, Scotland

Advertisement for Kaiser Aluminium,
1953

Reynolds Metals Company promotional
photograph, 1974, illustrating the
largest aluminium ingot produced at its
Illinois plant. An accompanying caption
mentioned that the ingot “conjures up
memories of the monolith in 2001:
A Space Odyssey.”

Advertisement for the Aluminium
Company of America (ALCOA), 1949

Photograph of an evening sweater of
golden-hued aluminium yarn, 1943

Selection of recyclable materials
consumed during the installation of
Stigma Damages exhibition, 2014

Postal stamps from Suriname, 1966,
Sierra Leone, 1990, and The Kingdom
of Bahrain, 1992

Page from *How to use Aluminium*,
published by Reynolds Aluminium,
c.1950s

Artist impression of the Aughnish
Alumina nature trail with refinery in
the distance, c.1980s

Bauxite residue storage, photographed
from a hill overlooking Aughnish
Alumina, 2010

ALCOA promotional photograph of a
woman with a new aluminium
transmission cable, 1975

Stills from *What a Feeling!*
Projected video, 2014

