# Fact or Fiction?

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# Myths

Free to choose what we believe, Americans choose myth over reality every time, says Dayton Duncan.[1] He adds, "Americans are dreamers, and a myth after all, is merely a dream of the past rather than the future. Our national dreams have always edited out any nightmarish realities and rewritten popular history whenever our actions fall short of our ideals."

Some examples: In the movie, *The Man Who Shot Liberty Valance* (1962), Senator Ranse Stoddard (Jimmy Stewart) returns to the city of Shinbone in the wild west to go to the funeral of his friend, Tom Doniphon (John Wayne). Stoddard is something of a celebrity in this town having spent time there before eventually moving to Washington. When talking to some journalists, who are wondering what the senator is doing in Shinbone, he reminds them how his career started as 'the man who shot Liberty Valance (Lee Marvin).'' He goes on to tell the press that it was John Wayne who really shot and killed Liberty Valance. The press folks say "we will never report this—you've become a legend and when the legend becomes fact, print the legend."

## The Wild West Myth

We're all familiar with the image of the wild west during the years of the cattle boom. Gunfights, lawlessness, and so on, gave places like Dodge City its fame and this lives in our memories. Much of this is a myth. In all the years of the cattle boom, fewer people were shot or stabbed in Dodge City than died violently in New York City in three days. There were 15 homicides in Dodge City during the years of the cattle boom; about five people a day died of violence in New York City in 1987, the year Ian Frazier reported these facts.[2] One reason Dodge City got its fame was the fact that the town had several weekly newspapers chronicling each gunfight and its aftermath in detail. This was then picked up by other media in the rest of the country. Eventually, Hollywood got into the act, and as Paul Harvey would say, "that's the rest of the story."

Another myth that has become accepted wisdom is that we should drink at least eight glasses of water a day. This universal advice that has made guzzling water a national pastime is more urban myth than medical dogma and lacks scientific proof, reports Joel Best.[3] The 8 x 8 rule is lavishly followed. Everywhere, people carry bottles of water, constantly sipping from them; it is acceptable to drink water anywhere, anytime. A pamphlet distributed at one southern California University even counsels its students to "carry a water bottle with you. Drink often while sitting in class." This had its origin in an analysis that did, in fact, recommend the eight glasses level of water intake. But the analysis also noted that most of this water would ordinarily come from food (bread, for example, is 35 percent water), and meats and vegetables contain even higher proportions of water. However, the notion that food contained most of the water needed for good health was soon forgotten, in favor of urging people to consume the entire amount through drinking.[3]

## Myths Die Slowly

Myths, if they die at all, die slowly, stubbornly, clinging tenaciously to life even in the face of incontrovertible facts. We see and hear a lot of this today in the areas of health and environment. High doses in animal testing provide myths about the so-called dangers of foods. When rodents are tested for exposure to chemicals and food additives they are often given very high doses, averaging 380,000 times the dose humans would be given. A person would have to drink 800 cans of diet soda in a day to equal the saccharin dose given to rats, or a 155 pound person would have to eat 82,600 slices of bread every day for a lifetime to be exposed to a dose of furfural comparable to that which causes cancer in rodent tests. One could go on and on with many of these types of examples, and I have in a previous column.[4]

The beloved 'good old days,' a pristine pre-human landscape, frozen in time and space as a sort of base point from which to measure change is as good a myth about the environment as you can find.[5] This pastoral idea, embodying the belief that a simple life, without technology, commerce, or industry, was man's natural state, ensuring peace, health and happiness, and that it had existed in a Golden Age from which society had deteriorated, simply never existed.[6] The 'good old days' simply weren't that good. The past world was in no way spared the problems we consider horrendously our own, such as pollution, addiction, or urban blight. This subject alone could cover an entire book. For a shortened version see my column in the June 1998 issue of this journal.[7]

Another example of an environmental myth is the tropical rain forest. As Philip Stott reports, "Tropical ran forest does not exist as an object: it is a human construct and is, thus, subject to myth making on a grand scale."[8] He adds, "Our attachment to the tropical rain forest has grown over the past hundred years from a minority colonial pursuit to mainstream environmental obsession. The tropical rain forest has variously been assumed to be the world's largest repository of biological diversity and the lungs of the planet."[9]

## Rain Forests

Stott and others say there is not one shred of recent scientific evidence to support the powerful historic and mythic language employed about 'rain forests.' Bjorn Lomborg observes that we will not lose 50 percent of all species as claimed by many, but more like 0.7 percent.[10] James Trefil adds, "For the record, I think it would be truly astonishing if something as far-

reaching as the effect of human activity on the planet didn't drive some species to extinction. Whether the rate of extinction is truly unprecedented, however, is not so clear. I have to confess that I have this sneaking suspicion that animals have probably been becoming extinct at a high rate for hundreds of millions of years. After all, an animal so specialized that it can only survive on one part of one kind of tree is not a good bet to win the Darwinian sweepstakes. And, of course, since we have no idea how fast they became extinct in the past, we have no way of knowing whether their extinction rate is going up or down today."[11]

The 'lungs of the planet' claim is also mythical. Lomborg explains that plants produce oxygen by means of photosynthesis, but when they die and decompose, precisely the same amount of oxygen is consumed. Therefore, forests in equilibrium neither produce nor consume oxygen in net terms.[10]

More from Stott; "The Northern environmentalists conception of the tropical rain forest is far removed from the ecological realities of the places it purports to denote. Most of the 'million year old forest' to which environmentalists sentimentally refer turns out to have existed for less than 20,000 years. During the last ice age the tropics were colder and drier than today and probably more closely resembled the savanna grasslands of East Africa.[9]

Yet, here's an example where the statement about "millions of years old forest" is used. It's from a 1992 textbook by Chris Park, *Tropical Rainforests*, which is widely employed in schools and colleges throughout the UK.

"Tropical rainforests are the most complex ecosystems on earth. Rainforests (better known to many people as jungles) have been the dominant form of vegetation in the tropics for literally millions of years and beneath their high canopy lives a diversity of species which is unrivaled anywhere else on earth."[12]

E.F. Bruenig, Emeritus Professor of Forestry, Hamburg University, says this, "Knowledge of ecology and forestry is poor among the public and understanding of ecosystem properties is almost absent, while myths abound especially with respect to tropical rain forests and their peoples. There is a certain unwillingness to bridge the knowledge gap and abandon inherited or newly developed myths, if they serve self-interests."[13]

## References


1. Dayton Duncan, *Out West,* (New York, Penguin Books, 1987), 55.
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3. Joel Best, *More Damned Lies and Statistics*, (Berkeley, CA, University of California Press, 2004), 20.
4. Jack W. Dini, "Of Mice and Men," *Plating & Surface Finishing*, **91**, 30, September 2004.
5. Steven F. Hayward, *Index of Leading Environmental Indicators 2005*, (San Francisco, Pacific Research Institute), 9.
6. John Lenihan, *The Crumbs of Creation*, (New York, Adam Hilger, 1988), 30.
7. Jack W. Dini, "The Good Old Days," *Plating & Surface Finishing*, **85**, 88, June 1998.
8. Philip Stott, *Tropical Rain Forest*, (Lancing, West Sussex, Great Britain, Hartington Fine Arts Limited, 1999), 8.
9. Philip Stott, *Tropical Rain Forest*, 4.
10. Bjorn Lomborg, *The Skeptical Environmentalist*, (Cambridge, Cambridge University Press, 2001), 115.
11. James Trefil, *Human Nature*, (New York, Times Books, 2001), 122.
12. Chris C. Park, *Tropical Rainforests*, (London & New York, Routledge, 1992), 1.
13. E. F. Bruenig, Paper presented at Oxford University, May 15, 1998.


## Advice & Counsel

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We noted that when copper clad wire is plated, the stainless steel electrodes used to apply DC voltage to the nickel-iron wire are not removed from the acid tank. With the power off, if stainless steel is immersed in any acid containing copper ions, copper metal will galvanically deposit out of the acid and onto the stainless steel (the accompanying photo illustrates the heavy amount copper deposited over the stainless steel).

When the nickel-iron alloy is processed, DC voltage is applied to these copper coated electrodes. We suspect that under DC power some of the copper on the electrodes re-dissolves and is "plated" onto the wire in the acid tank, or may be galvanically deposited over the steel.

Since the acid tank is not designed to be a copper plating tank, the nickel plated over this undesired copper deposit may not have the level of adhesion required, and the copper between the nickel and the surface of the nickel-iron alloy may de-laminate.

### Immersion Deposits

When any metal is immersed into a water based solution containing free (un-complexed) ions of other metals, an immersion deposit will result of those free ions in the solution are more noble than the base metal you are processing. Coatings of metals produced by immersion deposition (also known as cementation) are notoriously in-adherent, unless the solution producing the immersion deposit is specifically formulated to contain complexing agents that control the population of free ions in the solution. Immersion deposits produced from commercially available solutions (example: silver, gold, and zincate) are typically very adherent because of the presence of such complexing agents. Strike solutions are typically formulated to contain low concentrations of metal ions, complexing agents (example: cyanide in a copper strike) or very high levels of acidity (to favor deposition of hydrogen instead of metal ions) to control the population of free ions.

Nickel and iron are both less noble than copper. Your phosphoric acid does not contain any complexers that will prevent the copper from acting as free ions. The acid may be high enough in acidity to favor hydrogen production when it is fresh (2% volume), but as it ages, we suspect the acidity is too low to prevent copper deposition. Then an immersion deposit of copper over the nickel-iron alloy is highly likely.

Whether the immersion deposited copper has sufficient adhesion depends upon a number of factors including concentration of copper ions, temperature and the strength of the acid. As the acid gets older, the copper concentration increases and the temperature goes up, less adherent immersion deposits result, possibly leading to your sporadic adhesion problems.

In a recent "Advice & Counsel" article (see "Galvanic and Other Corrosion Mechanisms" March 2006 *P&SF*, page 24), we published a galvanic series. Any metal that is below another metal in that table will act as the more noble metal. The further apart the two metals are on this table, the higher the likelihood that an in-adherent immersion deposit will be produced when you immerse the less noble metal into a solution containing un-complexed ions of the more noble metal. A basic knowledge of the positions of various metals on this table is very valuable in avoiding adhesion problems related to immersion deposits. ***P&SF***