

Silver: precious in more ways than one

A metal finish that offers desirable properties in even the most ancient of uses

Around 327 BC — having defeated Persia, Egypt, and Phoenicia — Alexander the Great's indomitable army was about to advance on India when a mysterious gastrointestinal ailment broke out among the troops, yet inexplicably spared the commanders. Why were the commanders unaffected? Because the common soldiers used tin cups, while the commanders used silver ones — and as modern science has proven, even small amounts of silver (a few thousand-millionths of a gram) are enough to purify a quart of water of harmful bacteria.

In more modern times — and specifically in certain industrial finishing applications — silver can be just as valuable, and not merely for its dollar-value as a precious element of jewelry, flatware, and other items that are either solid silver or silver plated.

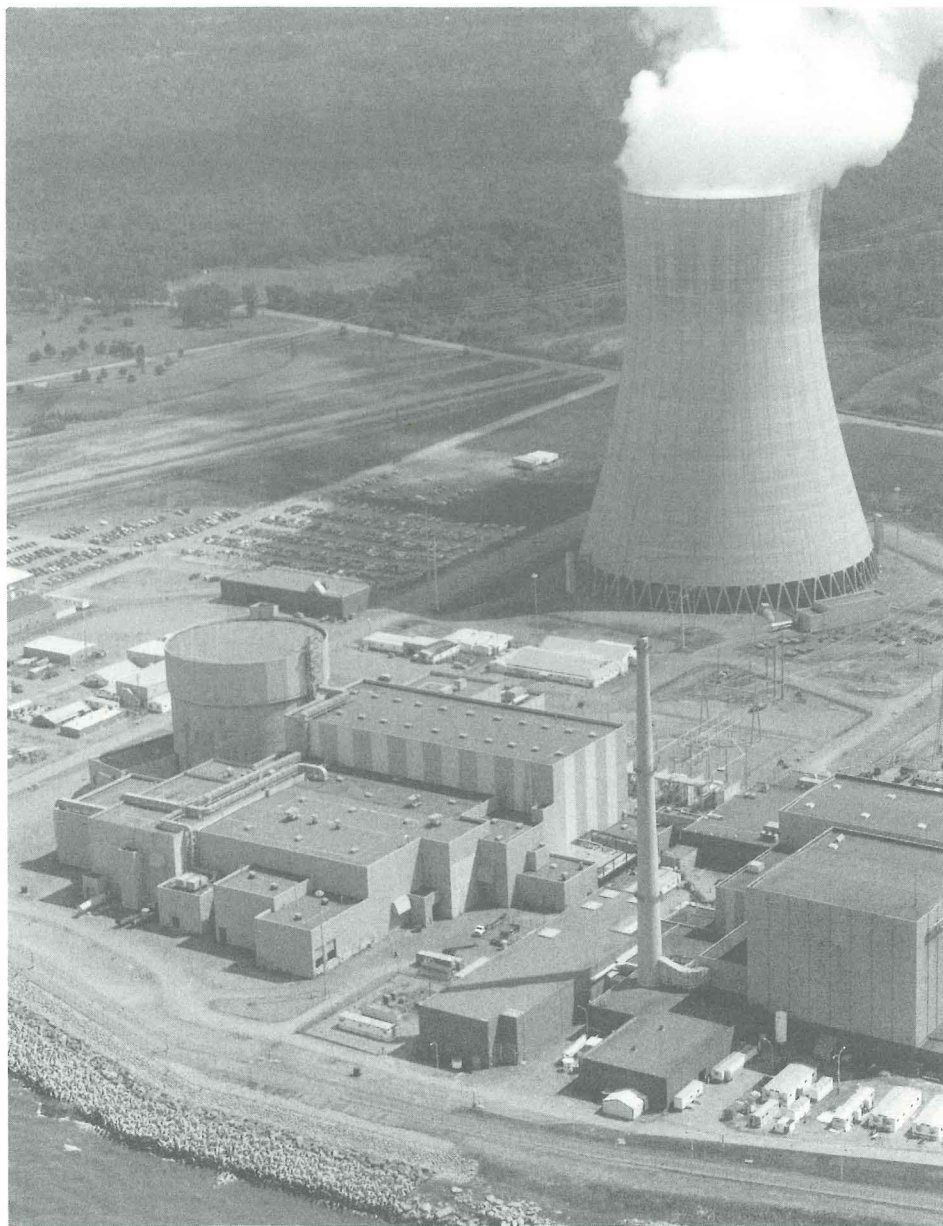
In addition to its purifying and aesthetic qualities, silver offers unmatched ductility or "stretch-ability." In fact, under perfectly controlled conditions, a one-gram grain of silver can be drawn out into a single piece of wire stretching nearly a full mile. Furthermore, when it comes to electrical conductivity, high-temperature lubricity, joinability, and resistance against cold-welding, silver plating offers surface enhancements that no other metal can provide.

Considered next are a few real-life applications in which silver plays a crucial role.

Silver in electronics

Of all metals, silver is the most electrically conductive. It's preferred in a wide range of electronic applications,

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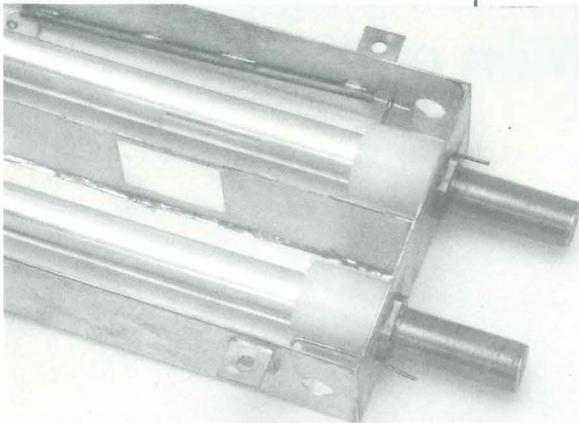
Anoplate applies silver finishing to nuclear control elements for generating facilities like this one at Nine Mile Point in Oswego, NY.

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from radar and sonar equipment to communication devices.

Silver plating is the key to successful refurbishing of worn or degraded high-voltage-carrying buss bars for electrical-generating facilities, including nuclear power stations. Currently, Anoplate is consulting with a utility about the use of brush plating to repair damaged silver connections on-site at the utility's generating plant.

Transmission line filters also rely on silver — specifically, they rely on its



Microwave filters rely on the high electrical conductivity provided by silver plating.

high conductivity, which helps to minimize dissipation losses. Because of the frequencies at which transmission line filters operate, most of the currents flow on the surface of resonators and their cavities. This allows the use of inexpensive, low-conductivity metals to be plated with a high-conductivity metal like silver.

In such an application, because the silver plating is thicker than the depth at which the current flows, the filters "act" as if they're made entirely of silver, reducing dissipation and increasing the cost-effectiveness of plating at the same time.

Aerospace applications

Bearings of most types — and particularly those used in aircraft engines — require silver plating due to its inherent lubricity at high temperatures and its resistance to seizing even while operating at very high loads.

Similarly, aircraft engine igniters (called "spark plugs" in automobiles) are typically manufactured from threaded

stainless steel components. Without silver plating of the threads, the stainless steel would cold-freeze to its mating metal surface, making replacement impossible. Since igniters are replaced at regular intervals based on the number of flight hours, silver plating of their threads is critical not only to proper functioning of the igniter but to the life of the entire aircraft engine as well.

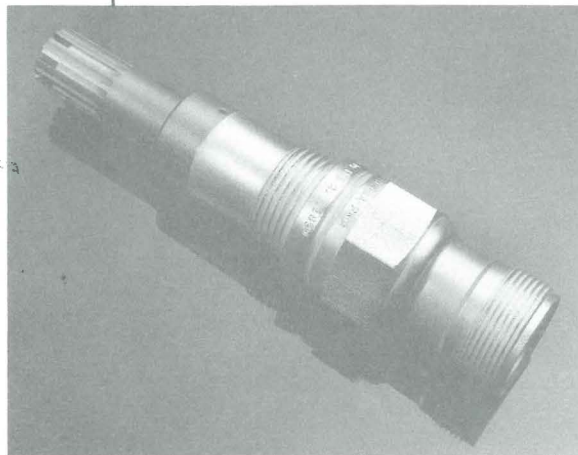
Silver in consumer products

Throughout the '70s and '80s, the world's leading manufacturer of room air conditioners contracted to have thousands of copper tubes silver-plated. The silver finish was important because it allowed hermetic sealing by brazing of the coils and tubes. A break in the silver due to stress cracking, pits, or poor adhesion would have resulted in refrigerant leaks and an inoperable air conditioner.

Silver plating is fundamental to the performance of a host of other consumer products, too — radios, TVs, video games, telephones, stereo equipment,

VCRs, and more — due primarily to the metal's high electrical conductivity.

When you mention silver, people outside of industry usually think of holloware, flatware, rings, necklaces, and the like. (Even among metal finishers, few are likely to think of Alexander the Great.) Silver has an obvious appeal as a precious substance in art objects and jewelry — but it can be just as precious in a less obvious, industrial sense. ■



A thin silver finish prevents aircraft igniters from cold-freezing to other metal parts.

ANOPLATE PEOPLE



Roy Beechner: 1931 - 1993

Roy Beechner served as Anoplate's Plant Superintendent since his arrival in 1971, after filling that role for many years at National Plating in Mattydale, NY. Until Roy's medical retirement last year, he provided expert, hands-on supervision during a period of continued growth for Anoplate.

Roy was one of the best troubleshooters ever to work in the upstate New York plating industry. He had an outstanding ability to control plating solution quirks and to develop effective new plating cycles for complex jobs. He passed much of his knowledge on to Anoplate's group leaders, in particular to his two assistants, Jill Boyle and Brian O'Brien.

Roy will be missed immeasurably by Milt Stevenson Sr., Anoplate's President, since the two men tended to teach and learn from one another. On tough jobs, they would combine their "tricks of the trade" and agree on the best starting solution. Roy found every job a challenge, and nothing pleased him more than solving a problem for a customer, relying first on his experience and then heading for the technical library to read every word he could find on the subject.

Roy Beechner was a dedicated, knowledgeable team player, and a good and honorable man. His co-workers, customers, and friends will miss him dearly.

SHOPTALK

A recent Government Affairs Briefing in Washington, D.C., assembled leaders from industry and the federal EPA. The conference was titled "Preparing for Environmental Change: The Clean Water Act, Hazardous Waste Laws, and Regulatory Approaches in the New Administration." It focused on the changes in environmental policy we can expect from the Clinton administration and on the impact those changes will have on the economy and the regulated community.

Briefly stated, the EPA intends to work toward four main goals:

1. Integrated, multi-media pollution prevention, which includes eliminating or at least minimizing water, air, solid, and hazardous waste pollutants at their source of generation. The buzzword here is "M2P2" — Multi-Media Pollution Prevention.
2. Ecosystem and wetlands protection favoring "holistic" source control methods over highly prescriptive regulatory limitations.
3. Improving public and Congressional trust in the EPA's ability to work in a timely, cost-effective manner, without the need to incorporate into laws (such as the Clean Air Act Amendments) stipulated "hammers" — hard deadlines, by which the EPA must promulgate rules.
4. "Environmental equity and justice" — equal protection for communities regardless of their economic, geographical, or social make-up.

A key topic of debate was the impact of regulations on the economy. One set of speakers noted that facility upgrades have to be funded by profit reductions, price increases, layoffs, or reductions in internal costs — all in today's atmosphere of stagnant growth and increasing global competition. An example offered of permanent, long-term cost to the U.S. economy was the relocation by Borden, Inc., of 11 of their 14 plants to foreign sites since 1971, due largely to the pressures created by current and anticipated environmental regulations.

These same speakers noted that the massive funds spent for industrial wastewater pretreatment in the '70s and '80s yielded significant environmental improvement per dollar spent, but that we may have approached the point where the environmental benefits are not worth the cost to the national

economy.

Speakers sharing a different perspective suggested that strong environmental regulations in fact strengthened the U.S. economy at minimal up-front cost. A representative from the Environmental Defense Fund voiced that organization's intention to help overturn the landmark U.S. Supreme Court "Gwaltney" decision, which prevents private citizens from suing for damages for wholly past violations that have been corrected.

Other comments that met with general agreement from panelists and conference attendees:

- Two opposing forces are now shaping federal policy — a sluggish, depressed economy and a new administration that will push for more stringent environmental protections.
- Several high-profile issues (such as health-care reform and the economy) will limit Washington's ability to address environmental policy issues or to fast-track re-authorization of the Clean Air Act.
- Industry is being required to earmark funds and plan environmental protection projects that will meet future requirements at a time when regulations appear as changeable as the political winds.
- Preventing pollution at the source of generation is the key to future environmental planning and control. It provides effective, permanent cures rather than temporary improvements.
- The U.S. is in danger of crossing over from environmental awareness and protection to environmental extremism. Law- and policy-makers need to base their decisions on good science, sound test data, and reasonable discharge limitations, and not be caught up in "regulatory machinery, now in place, that must be fed." More than 2,700 scientists, including Nobel Prize winners, have signed a petition



Mike Florczykowski, Anoplate's Facility Engineer, reports on a recent Washington briefing

to Washington stressing this one point.

- Congress and the EPA need to critically examine the trend toward regulating pollutants down to extremely low levels — parts per quadrillion — seemingly because even the minutest amounts can now be detected with advanced analytical equipment.
- The perception by the European Economic Community is that the U.S. has not only shot itself in the foot with current mind-numbing regulations, but shot itself in both knees as well, giving strategic advantages to foreign competitors.

The challenge of meeting increasingly stringent regulations creates both problems and opportunities. Companies able to comply with the regulations will be best equipped to survive. For survivors, the field of play will likely widen as those who cannot keep up drop away.

Anoplate Trade Show Schedule: Fall 1993

September 14, 15, 16
National Tooling & Machining Association (NTMA) Rochester
Riverside Convention Center,
Rochester, NY

September 28, 29, 30
Ben Edwards
Job Shop Show
Royal Plaza Hotel & Trade Center,
Marlboro, MA

October 20, 21
Central New York
Industrial Product Exhibit
Center of Progress Bldg., State
Fairgrounds, Syracuse, NY

November 9, 10, 11
Ben Edwards
Job Shop Show
Charlotte Convention Center,
Charlotte, NC

The grades are in...

Of the 522 customer satisfaction surveys we recently mailed, more than 30 percent were filled out and returned. We figure this high return rate shows that Anoplate customers have been eagerly awaiting an opportunity to provide this feedback. Whatever the reason, we were grateful for the high percentage of responses, and we're using this feedback as the basis of ongoing improvement efforts.

Probably the most valuable section of the survey polled customers on Anoplate's various quality attributes. From a group of 13, customers identified the following quality attributes as the four most important:

- ☐ Delivers on time, as promised (126)
- ☐ Schedules work to fit your needs (69)
- ☐ Prices fairly and competitively (62)
- ☐ Provides timely technical support (52)

Somewhat surprisingly, these four ranked higher than such factors as "provides quotes rapidly" (24), "acts promptly on order inquiries" (22), and "always quotes the lowest prices" (12).

Survey respondents also filled out a section that rated Anoplate's performance on all quality attributes. Of the four identified as "most important" (above), here is how Anoplate scored:

Comparing Anoplate's overall quality of work to turnaround time — as shown in the two bar charts — it's clear what customers rate higher, and from this we draw a valuable lesson: to offer total

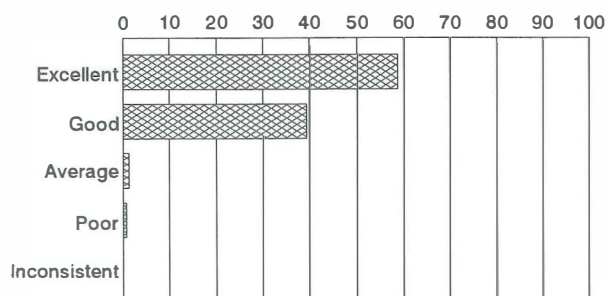
While overall quality at Anoplate received impressive marks, turnaround showed room for improvement.

quality service, Anoplate needs to improve turnaround time the way we've dedicated ourselves to providing work of superior technical quality.

Since the survey results were tabulated, work teams within Anoplate have critically analyzed every phase of a typical order for processing, attempting to drive the cycle time down. In doing so, we've found that we're not only reducing lead times. We're also becoming more efficient overall, which works to control costs and, in the long run,

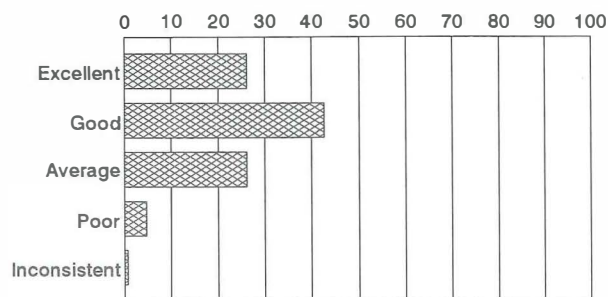
Overall Quality of Work

Percent of Respondents



Turnaround

Percent of Respondents



saves the customer money.

Thanks again for your help in making Anoplate a responsive, effective supplier. If you did not get a survey but would still like to receive one, just call Anoplate at 315-471-6143. ■

ANOPLATE

Anoplate News

Fall 1993

A publication of
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FAST FACTS

A recent two-day audit by Boeing prompted several upgrades to Anoplate's process control and laboratory analysis areas. Anoplate remains a Boeing-approved source for chromic anodize and cadmium finishing. ♦ Tom Adydan and John Stevenson attended a conference in Minneapolis focusing on motivational analysis and performance management as means of achieving peak efficiency in individual employees, managers, and production teams. ♦ Carol Czysz, a Plater who works among several departments at Anoplate, organized two soft-

ball teams as part of the Easter Seals marathon. For this worthy cause, the teams raised \$1,300 — the third highest amount raised. ♦ Scott Stevenson and Tom Adydan organized a bowling team which helped raise \$1,100 for the Syracuse chapter of Junior Achievement. ♦ Fifteen Anoplate employees are currently receiving instruction in blueprint reading. ♦ Scott MacKinder (Production Control) toured Schweizer Aircraft and, while there, took the opportunity to ride in a Schweizer Sail Plane — a two-seat glider manufactured by the company.