

How soon nuclear steelmaking?

In the latest edition of *STEEL FACTS*, an industry bell-weather published by the American Iron and Steel Institute, Donald J. Blickwede, Bethlehem Steel Corp.'s vice president for research, is quoted as saying the industry hopes to overcome some of its present environmental difficulties and avoid the rising costs of fossil fuels by shifting to making steel using gas-cooled nuclear reactors. He expects this capability to be developed within 10 to 15 years.

The gas-cooled reactors would operate directly in two separate ways in the steelmaking process. The hot gas would produce heat for furnaces and for operating the catalytic steam reformers that convert natural fossil fuels into a "reducing gas" that changes iron ore into "sponge iron." Electricity generated by the reactor would be then used in the high-temperature electric arc furnaces that refine the sponge iron into steel.

The nuclear steelmaking process would also offer a chance for improved recycling of scrap iron. Present steel mills can accept only about 30 percent scrap iron into their oxygen furnaces, but the electric furnace could take as much as 100 percent scrap metal.

The research and development required before commercial application of nuclear steelmaking becomes feasible will concentrate on the interfaces of the component processes—each of which is already well developed. The system carrying hot helium gas from the reactor to the steam reformer will require particular attention, as it must operate nearly flawlessly for long periods of time. Nuclear steel plants will probably be set up near deep water ports to facilitate shipping, rather than being added to traditional mill complexes.

Color microholograms

Three physicists at the RCA laboratory in Zurich have announced development of a technique for reproducing full color microfilm records without the need for expensive color film. With inflation hitting the publishing industry at rates up to 15 percent a year and the micropublishing business growing from \$15 million in 1966 to an expected \$400 million in 1980, the advent of an inexpensive technique for reproducing full color pictures in miniature could represent a major advance.

Most people associate holograms with the three-dimensional transparencies one views through a laser, but the technique of recording on film the interference patterns of light from an object, using lasers, has other capabilities. In the present case, the interference record holds information for only two dimensions but includes information on color. And best of all, for the commercial market, only a simple nonlaser viewer is necessary to reproduce the colored images.

In the RCA version, color encoding is accomplished by recording three separate holograms—one for each primary color—on top of each other, using laser light. The interference patterns are recorded so that when collimated white light falls on the hologram at an angle, each component diffracts its color perpendicular to the hologram surface. The observer sees the three primary colors superimposed on a screen after a 15-times magnification by a series of lenses and mirrors. The technique may reduce the cost of a color microfiche from more than half a dollar each to only a few cents. Surface relief patterns can be replicated by stamping with a metal master.

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Snowy owls are flocking to Kansas

Snowy owls appear to be hooting it down to Kansas this winter, and experts there think it's because they're starving. Some skeptics say the invasion by the Arctic bird into Kansas is a sure sign the Midwest is in for a bad winter. But corn farmers aren't complaining. Unlike other owls, the snowys hunt by day, and often kill crows which harass them, something Kansas horned owls won't do.

The huge, white owl also feeds on rodents, waterfowl and rabbits, and is reportedly feasting on injured geese and ducks along the Great Bend flyway. Because the owl population has snowballed, Kansas ornithologists and game wardens are warning hunters that the owls are protected by law and, since they normally inhabit isolated terrain, that they aren't afraid of humans. Stephen Fretwell at Kansas State University in Manhattan is anxious to receive sighting reports from anyone who spots a snowy owl in that area.

For these boobies, it's a death trap

Abbott's boobies, sad-faced sea birds that seem oblivious to man, may be extinct soon because their home is being dug out from under their webbed feet, February *CONSERVATION NEWS* says. The rare bird is found only on Christmas Island in the Indian Ocean, but unfortunately the 52-square-mile island is almost pure phosphate of lime.

Since phosphate makes good fertilizer, a mining company jointly operated by Australia and New Zealand is hauling away about a million tons of the island's deposits every year. To expedite the process, the island's trees and soil are scraped away and burned, leaving the land almost 70 percent nude of possible nesting sites. The boobies will probably have the island to themselves when the miners are finished, but naturalists are afraid there won't be enough land left for the 4,000 or so boobies.

What's worse, the boobies don't seem concerned about the invasion of their territory, and in fact sit sublimely by as bulldozers crisscross their habitat. The masked, red-footed brown boobies are found in many parts of the world, but the Christmas Island Abbott boobies are the last of their kind.

Pets: All you add is money

America's pet industry may be going to the dogs. Last year the United States spent \$100 million to get rid of 14 million unwanted, nonutilitarian domestic animals it didn't want, and bought six million pounds of food to feed the ones it already had. Besides eating high-protein food fit for humans, American dogs and cats mess up sidewalks, spread disease (including through their fleas), bite children and create too much racket, says the January/February *ENVIRONMENT*. Even the Government is raising a stink about the problem. Foreign fish, monkeys, turtles and birds infect or bite thousands of people every year, the Interior Department says. Newcastle's disease, brought in by parrots and myna birds, killed over 11 million California chickens in 1973. And wildlife lovers say current importation laws are vague. Many endangered species shipped to this country as pets die before they ever get here, and of the few that make it most die without ever producing offspring. No regulations restrict shipping methods or proper facilities for the animal once it arrives. Faced with both world famine and a growing list of endangered species, Americans may have to change their pet priorities.

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