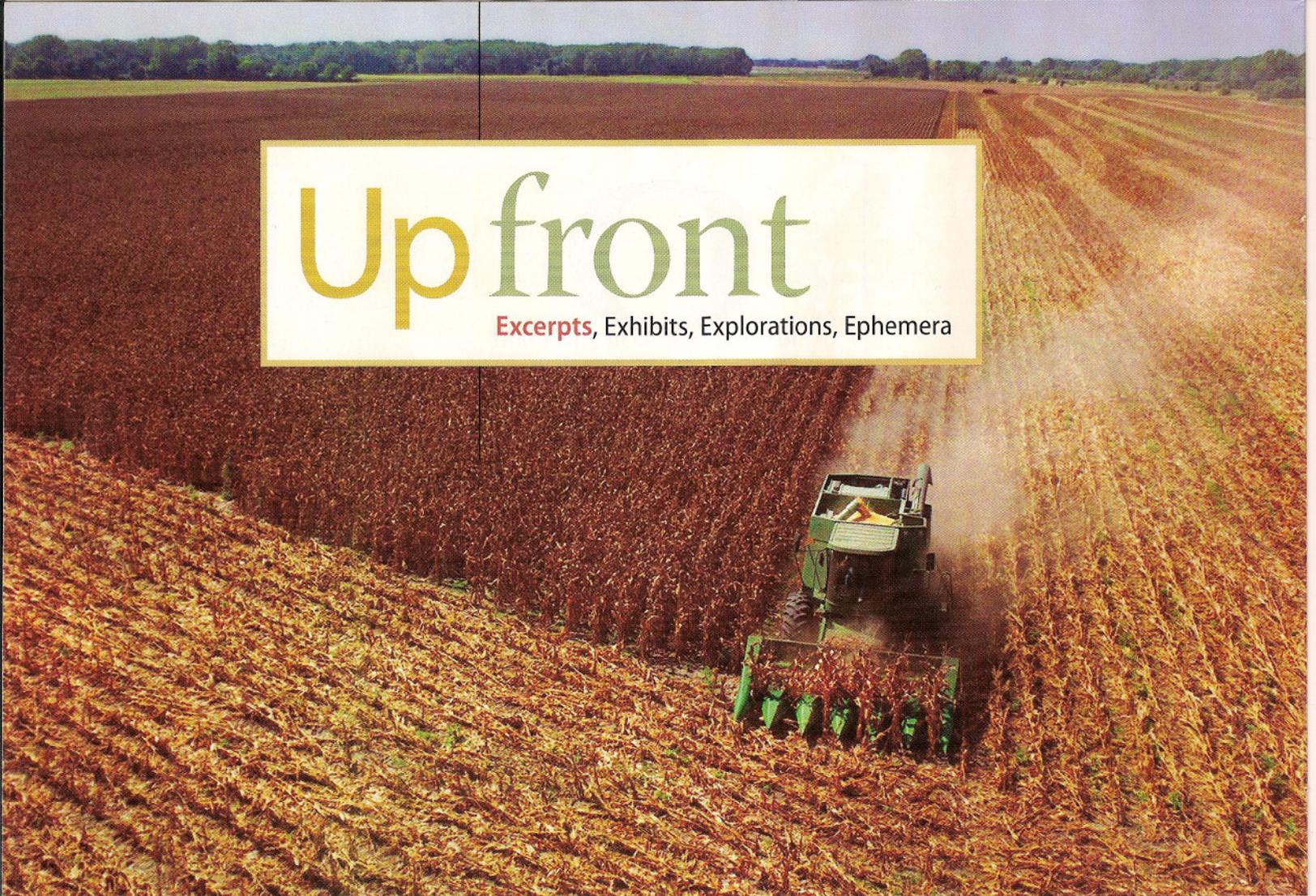


Up front

Excerpts, Exhibits, Explorations, Ephemera



Thin Air, Fat People

*Billions of us should have starved to death by now according to past conventional wisdom, but we have not. Last century's dire prognostications of overpopulation-caused mass starvation have mostly withered, replaced by an unforeseen and ever-worsening global epidemic of... obesity. How this startling reversal came about is explored by former Oregon Quarterly editor Thomas Hager, M.S. 81, in his new book, *The Alchemy of Air: A Jewish Genius, a Doomed Tycoon, and the Scientific Discovery That Fed the World but Fueled the Rise of Hitler*. Hager sketches key elements of the story in an essay titled "Fat World"—reprinted below—which first appeared in the Spring 2008 issue of *Etude*, a quarterly online publication of the literary nonfiction program at the UO School of Journalism and Communication. Hager spoke at Knight Library in October as part of the Duck Store's Author Events series.*

OKAY—WHO'S MAKING US FAT? I don't mean that we should try to wriggle out of personal responsibility—we are what we eat, folks, and nobody's making us take seconds.

But who's making all of us, worldwide, fat? According to a number of reports, the globe is bulking up for an era of mass obesity. This goes counter to what I have always thought of as accepted wisdom. According to the experts, this was supposed to be an era of mass starvation.

Global famine makes perfect sense.

As the Reverend Thomas Robert Malthus pointed out two centuries ago, fast-growing populations outstrip their food supply. Do the math: population grows geometrically (two become four, four become eight, etc.) while food production grows, well, field by field, adding a few more acres here, eking out a few more bushels there, hoping for good weather. Population grows fast, food grows slowly. The logical result, Malthus pointed out, is starvation.

I grew up on books such as *The Population Bomb* that echoed the theme; I joined a group called Zero Population Growth that

sent out seemingly unassailable data doing the same; and I (with many others) bought into the prediction that the skyrocketing number of humans on earth meant that we were going to run out of food. Soon.

It did not happen as soon as Malthus thought because of the opening of the vast grain-growing plains of the American West and the Russian steppes. But those were just temporary delays. In 1898 the physicist Sir William Crookes, then-head of Britain's leading scientific association, noted that there were no more open plains to put under the plow and made worldwide

headlines by trumpeting the coming starvation of the civilized world, starting no later than the 1940s.

Then we made it even worse by making it better. As the twentieth century marched on, we invented antibiotics, lowered infant death rates, and extended average lifespans. The result? Our global population skyrocketed, the statistics far beyond what the doomsayers had projected. Surely now, it was thought in the 1960s, Malthus would be proven right.

It was then, with the population bomb ticking ominously, that Paul Ehrlich and a new generation of eco-activists took up the cry: Mass famine was coming soon to a nation near you. This time it was predicted to start in India in the mid-1970s. Again, it did not happen.

Instead, everywhere you look, from Buffalo to Brussels to Beijing, it's ballooning bellies. Instead of mass hunger, mass fat. Instead of famine, India is suffering an epidemic of diet-related diabetes. Obesity is on the rise in virtually every developed nation and many less-developed nations from Europe, Asia, and North America to South Africa and Latin America. The shocker for me was a recent academic study asserting that there are now more overweight people in the world than hungry ones.

So who's to blame? All the usual suspects are being trotted out: fast food, trans fat, high sugar, low exercise, television, blood chemistry, computer potatoes (like couch potatoes only with a game controller in their hands), and the associated problem of a seemingly hard-wired human instinct that favors sitting around eating salty, crunchy snacks and drinking beer over doing hard physical labor.

All of these factors are certainly related to the "insidious, creeping pandemic of obesity . . . now engulfing the entire world," as one gung-ho expert put it. But they are not the root cause.

The real issue is this: Malthus was wrong. He was not wrong about population growth. He was wrong about food. Food production has not only kept up with population growth, it has outstripped it. On average, humans are consuming more calories per person per day now than they were a century ago, despite the fact that total population has quadrupled. Somehow we beat the odds.

Who is to blame for this tidal wave of food? How are we creating the seas of cheap

grains that we process with cheap sugars to make our donuts, and fry in lakes of fat to make our chips? Who is making it possible to eat hamburgers by the bag and guzzle soda by the gallon when we're supposed to be starving?

The answer is: a couple of guys you never heard of.

Back around the time Warren Harding was president, these two Germans—a genius chemist and a budding tycoon—figured out a little trick that humans have been dining out on ever since.

They discovered how to make bread out of air.

... Consider that if all these Haber-Bosch plants in the world were to shut down today, more than 2 billion people would starve to death. Or that half the nitrogen in your body is synthetic, the product of one of these factories.

That's a fanciful way of saying it, but that's what they called it back in 1910 when Fritz Haber perfected the dangerous, complex chemistry needed to grab nitrogen out of the air (air is 80 percent nitrogen). Then Carl Bosch, a young chemist just starting his career, figured out how to build factories to turn it into synthetic fertilizer, the kind you get in a bag down at the local garden store.

They flooded the world with fertilizer. The results were a couple of Nobel Prizes and the creation of the world's largest chemical company (the infamous IG Farben, which Bosch headed).

Today, Haber-Bosch factories the size of small cities, much refined and improved, are humming around the world, burning 1 percent of all the energy used by humans each year, breathing in hundreds of thousands of tons of air and pumping out hundreds of thousands of tons of fertilizer. This is the substance that enriches the fields that grow the crops that turn into the sugars and oils and meats that are cooked into the burritos and pizzas and snack cakes that make us fat.

If you doubt the importance of these two scientists, consider that if all these Haber-Bosch plants in the world were

to shut down today, more than 2 billion people would starve to death. Or that half the nitrogen in your body is synthetic, the product of one of these factories.

The good news is that the Haber-Bosch discovery (along with the "Green Revolution" of higher-yield grain types developed in the late twentieth century) has allowed humanity to sidestep the Malthusian trap.

The bad news is that starvation has not gone away. People still starve to death, tragically, in isolated pockets of the world. The problem is not a lack of food to feed them; the problem is that the food cannot be moved quickly enough to where it

is needed. Starvation today results almost always from distribution slowdowns due to local wars or government interference.

But the best news is this: If everything goes right, humans need never suffer global famine. Rising food prices, the subject of much recent media attention, are also tied to Haber-Bosch: The process burns a lot of natural gas, so when energy prices go up, so does the price of fertilizer—and food.

Some time in the next few decades, birth rates worldwide will dip below replacement levels. What that means is that the growth in world population will begin to slow, then eventually grind to a halt, some time after all the baby boomers and most of their kids, the baby boomlet, die out. The human tide, in other words, will crest, then slowly ebb. The United Nations estimates that it will peak somewhere between 9 and 10 billion some time just after the middle of this century.

There will be a lot more mouths to feed. But if we eat wisely—less meat and more vegetables, enough to be healthy but not enough to be obese—there will be enough food to feed everyone. Thanks to Haber-Bosch (and the Green Revolution), it is within our grasp to avoid mass starvation forever. ☺

Slithy Toves Gimbling in the Gyre

Every beachcomber's fantasy is to find an unexpected treasure—an agate, a starfish, a gold doubloon—but all too often, what washes up is plain, old plastic junk. Where does this stuff come from? In *Strand: An Odyssey of Pacific Ocean Debris*, travel writer and amateur naturalist Bonnie Henderson '79, M.A. '85, traces the wide-ranging stories of items such as a glass fishing float, a tennis shoe, a sea bird, all discovered on a one-mile stretch of Oregon beach. The excerpt below focuses on the mother lode of ocean-borne trash. Henderson spoke at Knight Library in October as part of the Duck Store's Author Events series.

THE PATCH—THE TERM WAS coined in the mid-nineties at an international marine-debris conference—lies in the middle of the North Pacific Gyre between about 30 and 35 degrees north latitude. It's a calm area of high atmospheric pressure, twice the size of Texas and centered roughly halfway between Honolulu and Seattle, though its precise location is constantly shifting. It's like a huge eddy in the middle of the Pacific Ocean; flotsam that's pushed into the Patch by wind and current tends to spiral toward its center and can stay there for decades. . . . Now and then, strong winds from the southwest push the Patch north and east and it releases some of its floating treasures—escaped fishing gear, athletic shoes, old Japanese glass fishing floats—onto West Coast beaches, particularly in Oregon and Washington. Those are heady days for beachcombers—days, they say, when the biggest, rarest glass floats, the kind fishermen haven't used for decades, roll onto the beach, along with every other kind of flotsam. These days, most of that flotsam is plastic.

Few humans have actually seen the debris-strewn Patch firsthand. Most of its contents float right at or just below the surface, and are too small to be seen from a plane or a satellite. Observers at the rails of ocean-going vessels cutting across the Patch wouldn't see much either; they're too far above the water. Fishermen avoid the Patch; the fishing's poor. Sailors navigate around the windless Patch. A friend of a friend told me about sailing a forty-six-foot catamaran from Hawaii to Santa Barbara back in the mid-1960s; partway back, the novice teenage navigator and crew of five found themselves becalmed on a sea as smooth as a mirror and bobbing with glass floats of all sizes and colors, as far as they could see. They began grabbing at them, gathering as many of the biggest and brightest as they could stash in their living quarters or in nets suspended between



hulls, especially the golden yellow floats three feet in diameter that they came across by the hundreds. After two days of floating through glass ball heaven, the winds picked up, and the floats were gone.

These days there's a lot more than glass floats in the Patch. In the past, as recently as the mid-twentieth century, nearly anything caught in the Patch besides glass floats—those can bob for decades, maybe for hundreds of years—would eventually have decomposed and biodegraded. But the worldwide proliferation of plastic changed all that. . . .

Over time, plastic photodegrades, breaking down into smaller and smaller pieces that continue to float, many of them trapped in the Patch. Some particles get scooped up by fulmars and albatrosses and other seabirds skimming the waves, feeding on the surface of the ocean. The smallest pieces, resembling microscopic zooplankton, are eaten by jellyfish, which are in

turn eaten by larger sea creatures and thus become part of the marine food chain.

"Trash never disappears," as [ocean current expert Curtis] Ebbesmeyer puts it, "but just goes somewhere else."

Captain Charles Moore had an inkling of what he'd find when, on a whim, he steered his catamaran research vessel *Alguita* (equipped with two auxiliary diesel engines) through the middle of the Patch on his way back to California from Hawaii in 1997. He'd spent his life at sea—as a deckhand, an able seaman, and eventually as captain of his own ship—and had witnessed the increase in plastic debris on the ocean. But Moore's shortcut, through what would eventually become known as the Eastern Garbage Patch, still stunned him. Gazing at the surface of "what ought to have been a pristine ocean," he wrote in *Natural History* in 2003, "I was confronted, as far as the eye could see, with the sight of plastic."

"It seemed unbelievable," he continues, "but I never found a clear spot. In the week it took to cross the subtropical high, no matter what time of day I looked, plastic debris was floating everywhere: bottles, bottle caps, wrappers, fragments." He returned with a crew of oceanographers in 1998 to sample the surface waters of the Patch. They collected six times as much plastic, by weight, as zooplankton. Oregon beachcomber Steve McLeod joined Moore in summer 1999 on a three-week voyage [during which they discovered that even] the guts of the fish they caught for dinner were full of plastic bits.

"Most oceans probably have a garbage patch like this," Ebbesmeyer remarked in an event I attended at the Beachcombers' Fun Fair in Ocean Shores, "but this is the only one that's been well documented. I'll

"Trash never disappears," as [ocean current expert Curtis] Ebbesmeyer puts it, "but just goes somewhere else."

bet you there's a dozen abandoned yachts out there in the Patch. It's archaeology of the ocean—just a wide-open field."

Ebbesmeyer is an entertaining speaker—articulate, knowledgeable, funny, as you'd expect of a guy who posed naked (from the waist up) in a bathtub full of toy ducks for *People* magazine in 1995. And his passion for his favorite topic is infectious. "It's sort of a poor man's oceanography," he told the magazine. "To me, if science isn't fun, then it's really drudgery and it's probably not good science," Ebbesmeyer later remarked. "I always try to tell kids, it doesn't matter what you keep track of, if you keep track of it long enough, it's awesome stuff." But behind the zeal and sense of wonder are some undeniable and sobering facts. "People ask me all the time, how do we clean this up?" he said to the standing-room-only Fun Fair crowd. "I honestly don't know. My view is that plastic is eventually going to end humanity." 

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