

The FELIX Letter

A COMMENTARY ON NUTRITION

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MERCURY AND FISH SAFETY

In 1997, a stunning review by Dr. Harumi Okuyama et al. of Nagoya City University traced Japan's puzzling surge in "Western-type" cancers, cardiovascular ailments, allergies, as well as "altered behavioural patterns" (e.g., aggression, "attention deficit-hyperactivity disorder"), to a single factor: the 40-year rise in its people's intake of omega-6 [w6] oils, coupled with lowered intake of w3-rich aquatic foods.

Western pervading influences have radicalized food habits particularly among younger Japanese, "who commonly eat commercial foods that have been soaked in high [w6 linoleic acid] vegetable oils."¹

But there were compelling reasons for Japanese to alter centuries-old food habits. "Minamata disease" was the name given to the ravages of *methylmercury poisoning*, first identified in 1956 near Japan's Minamata Bay where chemical factories discharged mercury-containing wastes into its waters, and again in 1965 along the Agano River. Elemental mercury and mercury salts dumped into waterways had been converted by microorganisms into *methylmercury*, the organic compound that could then enter the aquatic food chain.

Mercury itself is damaging enough when absorbed through the skin or ingested. Methylmercury, however, wins the toxicity prize because it can go directly to the brain and nervous system. In the contaminated areas, victims suffered progressive weakening of muscles, impairment of brain functions, blindness, eventual paralysis, and in some cases coma and death. Women gave birth to retarded and blind babies. Contaminated fish/shellfish brought the disease even to seabirds and to household cats.

The tragedy of Minamata disease led to the uncharacteristic drop in fish/shellfish consumption all over Japan long after overt mercury discharge into its waters had stopped. Japan's traditional w6/w3 intake (about 3-to-1) rose to almost 5-to-1 – seemingly trivial -- but the 50-page review by Dr. Harumi Okuyama and his colleagues laid out stark evidence for the damage this "minor" change inflicted. It played a matchless role in ringing alarm bells in Japan, but in the U.S. we also began looking with newly critical eyes at the 10 to 30 times more w6 than w3 fats and oils consumed here.

Changing Your Oil

The w6s are not villainous in themselves. In fact, like w3s, they are *essential* nutrients, that have to be in your diet, like vitamins and essential minerals. It's the horribly skewed w6:w3 ratio that's doing people in. To achieve a

wiser ratio it'll take more than adding one or two fish meals a week. In practical terms, it means cutting back sharply on high-w6 cooking/salad oils, margarines, as well as commercial foods prepared with them. High w6 oils include corn, safflower, peanut, cottonseed, and soybean. (Widespread availability of these oils is a 20th century phenomenon, beginning around the 1950s.) Only soybean has an appreciable w3 alpha-linolenic acid (ALA) content, but has about 7 times more w6 linoleic. (In contrast, flaxseed has a reasonable w6 content, and about four times more w3 ALA.)

Where do you go for "top of the line" w3s – the super-polyunsaturated EPA and DHA that do wonders for your heart, eyes, brain, and immune system? Many of you may be able to manage all enzymatic steps to convert some of the ALA you eat into these winners – but many people can't—just like cats, which need EPA and DHA delivered in ready-made form.

Aquatic foods, of course, are your best bet. Content of EPA and DHA in fish and shellfish depends on total fat in the species, and also whether the creatures are denizens of colder or warmer waters. The fatter they are and the colder the waters, the more w3s they have, because w3s regulate calorie-burning in response to cold, as well as allowing aquatic creatures' tissues, as well as yours, to be properly flexible in colder environments.

So, the answer is easy: cut way back on vegetable oils, eat more aquatic food, right?



Sorry, folks, I wish it were that simple. Right here in San Francisco Bay, for instance, we have a home-grown mercury disaster. Until closed in 1975, the New Almaden Quicksilver Mine in the hills above San Jose operated for 120 years to provide mercury for dental fillings, thermometers, batteries and, yes, gold mines. Hydraulic gold mining used pressurized water to blast mountains, pouring the mud into sluice boxes and employing mercury – about 26 million pounds over the century -- to chemically extract flakes of gold. All of this meant dumping vast quantities of mercury in California's rivers and streams, many of which flowed into the great Bay. [See story by Jane Kay in *S.F. Chronicle*, December 22, 2002; also, online at www.sfgate.com/news]

Choose Your Poisons!

Mercury, PCBs from power transformers, and deadly dioxin from industrial plants and waste incinerators are the Bay's worst pollutants. As a matter of fact, warnings against consuming *anything* from the Bay appear regularly. But of course mercury and other pollutants are vaster than the Bay—they're worldwide. I'm choosing to focus on mercury because it's much in the news.

Methylmercury tends to accumulate up the food chain, "...with large fish at the top carrying the biggest loads," Jane Kay wrote in the Nov. 5, 2002 *Chron*. She reported on a study by Jane M. Hightower MD (Calif. Pacific Medical Center, S.F.) of Hightower's own patients, many of them affluent, who were complacently consuming 'choice' swordfish, sea bass, halibut, and ahi tuna steaks from various worldwide waters. All of these large, long-lived fish tend to accumulate high contents of methylmercury.

Sixty-three of 89 patients "had blood-mercury levels more than twice the safe level," 19 had 4 times the level, and four had levels greater than 10 times the so-called safe level of 5 parts per billion. One child whose mom reported "she was lethargic, lost verbal skills and forgot how to tie her shoes," had a blood-mercury level of 13 parts per billion. "She was eating two cans of tuna a week, within the guidelines recommended" by the FDA.

The good news is Hightower's high-mercury patients saw big drops in mercury blood levels when they either gave up fish for six months, or switched to fish that doesn't accumulate mercury.

1. Harumi Okuyama et al. *Progress in Lipid Research*, Vol. 35, No. 4, pp 409-457, 1997.

You Have Choices!

Yes, there *are* fish and shellfish that don't. Following lists are from the U.S. Food & Drug Administration, May 2001, www.cfsan.fda.gov/

First, the no-no's, in descending order of unacceptable mercury levels: Tilefish (Golden Snapper), Swordfish, Shark, King Mackerel, Grouper, Tuna - fresh or frozen, Lobster, Halibut, Sablefish, Pollock. Mercury levels go from 1.45 parts per million (ppm) in Tilefish, down to 0.20ppm in Pollock.

Based on much more limited FDA samplings are **more no-no's**: Red Snapper, Marlin, Orange Roughy, Saltwater Bass. Mercury ppm go from 0.60 in Red Snapper down to 0.49 in Bass.

The following are in the ?? class, the assumption being you may be able to deal with these amounts of methylmercury on a limited basis – **but not if you're a child, or a pregnant or breastfeeding woman**: Atlantic Cod & Mahi Mahi 0.19ppm; Ocean Perch & Dungeness Crab 0.18ppm; canned Tuna & Atlantic Haddock 0.17ppm; Herring 0.15ppm.

Very low mercury levels: King Crab, Catfish, Scallops.

Non-detectable mercury levels: Sardines, Salmon (fresh, frozen, canned), Sole, Tilapia, Clams, Shrimp.

The California Medical Assoc. passed a resolution in March encouraging physicians to educate patients on the dangers of mercury in fish especially to children and pregnant women. Jane Kay reports in the April 2 *SF Chronicle* that Calif.'s Attorney General, Bill Lockyer, sued grocery stores in February, charging that "their failure to label certain types of fish for mercury is a violation under the state's anti-toxins law, Prop. 65. ..." She writes that 10 groups, including Physicians for Social Responsibility, sent a letter to Lockyer asking him to add canned tuna to the Prop. 65 warnings.

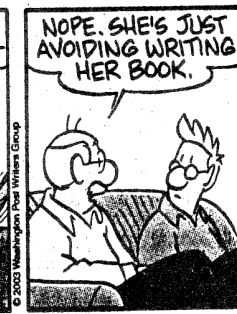
"Canned tuna is one of the most consumed fish in the U.S.," the letter stated, "and in some cases the only fish pregnant women and kids eat. Ten states now warn pregnant women ... to limit canned tuna consumption."

My Way

I've been enjoying for a long time mostly salmon, sardines, scallops, catfish, clams, squid (calamari), and dabs of pickled herring. No FDA data on squid yet, but its small size and short life bode well for low contamination.

I also decided about 20 years ago, after I read Dr. Donald O. Rudin's stunning 1981 paper in *Biological Psychiatry* (vol 16, pp 837-49), that my w3 reservoirs were so low it would take more than fish to fill 'em up. For that many years I've been supplementing not just with flaxseed oil and flaxmeal, but **with fish oils**. Reputable manufacturers use tried and true pharmaceutical procedures routinely to purify the oils, which usually come from Menhaden and other small fish, i.e., low on the aquatic food chain. A

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chemist at J. R. Carlson Laboratories in Illinois, a longtime supplement manufacturer, told me all their fish oil products are molecularly distilled to remove any toxins or unwanted substances, then independently assayed for content, potency, and 32 contaminants, including mercury.

That's good enough for me.

I can barely keep up with the flood of new medical research on measurable benefits bestowed by w3s on the human system. It thrills but doesn't surprise me, because EPA & DHA need to be incorporated into cellular membranes from head to toe for your optimal tissue/organ functioning. Substituted w6 fatty acids just don't cut the mustard!

I suspect this has a lot to do with our origins as a species that may or may not have left arboreal life for an aquatic one, but which surely thrived on the bounty provided by fresh or salt waters. Even baboons in the wild today pick up clams from shallow waters, break them open with rocks, and slurp the contents. Before our species got enough smarts and weapons to emerge as mighty hunters, the easiest flesh foods to grab would have been mollusks and crustaceans. The skills to catch fish undoubtedly followed. All early humans had to be near drinkable water, and many were near seas, so what could be more logical than to feast on aquatic prey? Many aquatic plants also provide w3s.

My credo: we evolved on a high w3 diet – our unusually big brain attests to that – and we won't stay healthy and smart if we stray from it!

A Sea Song

In 1941, Miles H. Robinson, MD, began his nearly 40-year practice in internal medicine. He was a researcher, professor and, from 1962-'68, medical and scientific consultant for U.S. Senate members investigating the FDA. Dr. Robinson's work was pivotal in the FDA's 1975 decision to drop its longtime efforts to classify so-called "mega-vitamins" as drugs requiring a doctor's prescription. He lives in Santa Barbara where he and wife Ruth continue to be passionate advocates for wise nutrition – hence the following (with permission) from their 2002 Christmas letter:

"The richest source of essential fatty acids is the very primitive microscopic phytoplankton in the sea. They come up the food chain to nourish other creatures small and large, fish, dolphins, whales, and humans. In appreciation of the most tiny, and on behalf of humanity, I wrote a summary of the hopes and fears:

"Little mothers of the sea, from which we are descending, reminding what's portending as we spoil the Web of Life, which feeds us, needs us, yet now strikes us with endless strife.

"We need now to be humbler, not forget our ancient birth, lest Cosmic Justice wipe the stumbler, from long suffering Planet Earth."

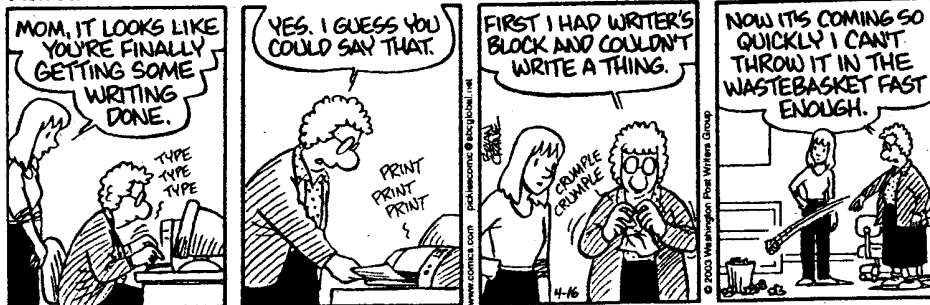
REJOICE

The best nutrition news in my lifetime came my way on April 10. Hold on to your hats, people – this was no zephyr, but hurricane-strength winds of change, whipped up by Thomas E. Levy, MD, JD, guest speaker at the Smart Life Forum* meeting I attended that day.

Dr. Levy, a trim, youngish man who's a board-certified internist and cardiologist and also has a law degree (!), spent three years gathering a mountain of peer-reviewed published medical studies on vitamin C in the treatment of infectious diseases and toxins. The Internet and World Wide Web provided MEDLINE, etc. citations from about 1966 on, but he told us a "wonderful librarian" in Colorado Springs where he practices helped him to find much earlier ones that had to be ferreted out from the stacks.

In his 2002 book, *Vitamin C, Infectious Diseases, & Toxins: Curing the Incurable*, he lists some 1200 of these references and discusses a number of them. (Moreover, their titles are there, too, in readable type size—unheard of in scientific annals!). The vitamin's healing uses were accepted long before its chemical structure was identified (between 1928-1932). Many cultures around the world had figured out that something in fresh fruits, berries, green stuff, etc. prevented deadly scurvy, descriptions of which existed as far back as 1500 B.C. Dr. Levy writes in the careful language of science, but his book is as exciting as any adventure story. He writes:

*Smart Life Forum holds open-to-the-public meetings on 2nd Thursday of each month in Los Altos, a Peninsula community ~ 40 miles below San Francisco. SLF members "seek to stay informed about breakthroughs in the new science of optimal wellness and longevity," according to an SLF bulletin. To this end, they have guest speakers and broad discussions--often passionate, because many doctors, dentists, physicists, etc. in SLF, as well as guests, are weighty discourses! For information, call Phil Jacklin (408-867-1945) or Mike Korek (650-941-3058).



"At the height of the polio epidemic in 1949...Frederick R. Klenner, M.D., published that he had successfully cured 60 out of 60 polio patients who had presented to his office or to the emergency room. Furthermore, he reported that *none* of the 60 patients treated had any residual damage from the polio virus that often left its survivors crippled for life...You will see that Klenner's research and data are clear-cut and straightforward, and it will then be completely left up to the reader to determine how such information was ignored in the past and remains ignored today."



Our Great Genetic Defect

Vitamin C kills viruses -- one of its innumerable functions. Creatures that make their own vitamin C seldom fall ill with viral infections. We, of course, and apes and monkeys can't make vitamin C, nor can fruit bats and guinea pigs. Guinea pigs thus become the ideal research subject for many human ills, poor things! Adult goats, in contrast, synthesize about 13,000 milligrams (mg) daily in good health, and may produce "as much as 100,000 mg of vitamin C daily when faced with life-threatening degrees of infectious or toxic stress," Levy writes.

Interestingly, he tells us domestic dogs and cats make only about a fourth as much vitamin C as wild creatures -- one reason pet owners have to spend so much time and money at the vets!

Mammals synthesize vitamin C in their livers; reptiles and amphibians make it in their kidneys. Our 'genetic defect' is that we and other primates can't make just *one* of the enzymes in the liver that transform glucose into vitamin C. Oddly, we have the DNA segment for that enzyme, but it isn't switched on! Levy speculates this could be a rich area for genetic researchers: "If a way can eventually be found to get the already present genetic code for GLO [gulonolactone oxidase] to 'turn on' and continually produce GLO, the health of the human population will leapfrog to levels that may seem literally unbelievable today..."

Viral Disease & the Vitamin

Levy describes studies in which dosages to fight certain overwhelming infections may need to be as high as 300,000 to 400,000 mg of C daily. "There are some viral syndromes that may even require still larger amounts of vitamin C. The rule of thumb in vitamin C treatment of viral diseases is to continue increasing the dose as long as the clinical response is inadequate or unsatisfactory, and to continue the treatment period until all clinical symptoms have disappeared."

In species that make their own C, the vitamin normally circulates in the bloodstream after synthesis in the liver. In most of the successful treatments for raging infections described in the book, the doctors administered **sodium ascorbate** (blood-compatible neutral pH) either by *intravenous drip* or a rapid *intravenous push*. When patients were able, they also took high oral doses of C. (In the infants and very young children whom he cured of polio, Dr. Klenner injected sodium ascorbate *intramuscularly*.)

Some of the viral diseases besides polio in which successful treatment with vitamin C is documented are: **acute viral hepatitis, measles, mumps, viral encephalitis (inflammation of the brain), chickenpox, herpes, viral pneumonia, influenza, dog & cat distemper****, rabies, the common cold.

***"When dogs and cats get sick enough with distemper and do not recover spontaneously, they are often put to sleep," Levy writes. "C. Belfield (1967) reported excellent results in the treatment of 12 dogs and cats. He generally gave dogs 2,000 mg of intravenous vitamin C each day for three days. For cats and small dogs he gave 1,000 mg of vitamin C intravenously per day for three days. All 12 animals recovered completely, even though two of them had been given no hope of recovery by other veterinarians." Another vet, inspired by Belfield's report, described similar success in treating 67 cases of canine distemper.

For his fellow-physicians, Dr. Levy lays out detailed accounts of the amounts, timing, number of days, etc. of intravenous and/or oral dosing used in the successful studies. (He also contrasts the piddling dosages used in less-than-successful ones.) "Although vitamin C is an incredibly effective single therapy for many infectious diseases, there are virtually no medical treatments for any infectious disease that are not substantially improved by the addition of vitamin C. The only absolute requirements are that vitamin C be given

1. in the right form,
2. with the proper technique,
3. in frequent enough doses,
4. in high enough doses,
5. along with certain additional agents, and
6. for a long enough period of time."

"Bowel-Tolerance" Dosing

In 1981, Robert Cathcart MD published the concept of using "bowel tolerance" to gauge the best *oral* doses of vitamin C for a given condition. Levy describes it: "Oral vitamin C, whether as ascorbic acid or as an ascorbate salt like sodium ascorbate, will reliably cause a watery diarrhea when a large enough dose is given. This occurs when a high concentration of unabsorbed vitamin C manages to reach the lower bowel and rectum. The high concentration of vitamin C naturally draws fluid into it..., resulting in a large volume of fluid in the rectum, which generally requires urgent evacuation." (Note: It's important to drink plenty of water to avoid dehydrating.)

A very sick person becoming vitamin C depleted will absorb so much of the vitamin "in the early segment of the gut so that a high enough concentration to cause the diarrhea never reaches the lower gut. *As a general rule, the sicker or more stressed the patient, the more vitamin C will be absorbed and utilized before enough of it reaches the lower gut, or colon, and stimulates the diarrhea reaction.*" [My italics. CF]

Dr. Cathcart found "that colds seemed to require much more vitamin C than was suggested in any published study...Specifically, Cathcart described a 'mild cold' as typically requiring 30,000 to 60,000 mg of vitamin C to reach bowel tolerance...a 'severe cold' could require from 60,000 to more than 100,000 mg...to reach bowel tolerance. Cathcart recommended administering the vitamin in six to 15 divided doses daily to maintain optimal blood and body tissue levels."

Levy cautions against using vitamin C buffered with calcium and other minerals when taking huge oral doses, because the mineral load can get too high for the kidneys, etc. He told the SLF audience he personally finds capsules of plain ascorbic acid quite convenient. Those who can't tolerate the acid can always take a little sodium bicarbonate -- it won't affect blood pressure the way sodium chloride (table salt) does.

"...Cathcart found that most normal adults without apparent infection or disease would tolerate from 4,000 to 15,000 mg of vitamin C before reaching bowel tolerance." [My emphasis. CF] Amazing, in light of the RDA of 75-90mg for the vitamin. It makes sense, though. I wrote in FL#109 that UC Berkeley professor Katherine Milton PhD and her team, tracking food intakes of wild monkeys in a Panama forest, discovered these little 15-pounders took in 600-700 mg of vitamin C a day. "To mimic the monkeys we'd be taking in 6000-7000 mg a day."

Levy devotes 11 packed pages to vitamin C treatment for HIV (human immunodeficiency virus), emphasizing Dr. Cathcart's work with more than 250 HIV-positive patients, some with full-blown AIDS (acquired immunodeficiency syndrome). "Cathcart asserted that any AIDS patient could be put into remission if enough vitamin C is taken to neutralize the toxicity of the disease process, and any secondary infections are adequately treated." The term "remission," rather than cure, applies where permanent damage to the immune system has already happened.

"AIDS was one of the diseases treated by Cathcart with vitamin C that consistently showed the highest bowel tolerances. In other words, AIDS showed an ability to utilize and metabolize vitamin C more rapidly than most other diseases, infectious or otherwise. Probably only an acute and massive viral infection such as Ebola would consistently require more."

In this time of new viral terrors (SARS) and perhaps reemerging ones (smallpox), the following words by Levy point to a practical plan of action: "To date, *no* viral infection has been demonstrated to be resistant to the proper dosing of vitamin C as classically demonstrated by Klenner." [My emphasis. CF]

Levy devotes the 2nd third of the book to "Non-viral infectious diseases and vitamin C."

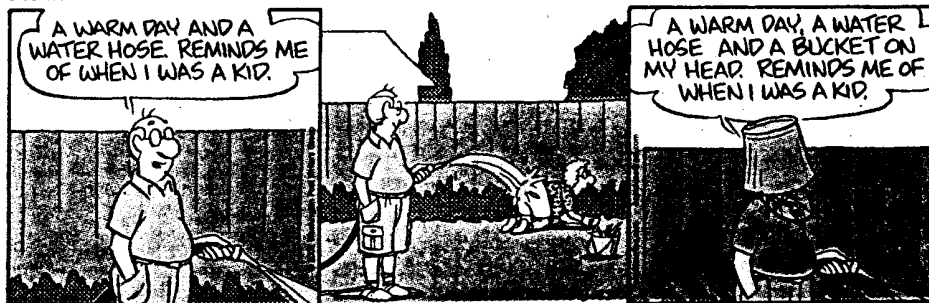
Diphtheria, like many infections, produces illness both from the primary infection and from the production of a disease-specific *toxin*. Vitamin C is uniquely capable of "eradicating the infection and neutralizing the associated toxin without any significant toxicity of its own."

Tetanus can be cured with intravenous vitamin C. **Streptococcal bacterial infections**, including tonsillitis, rheumatic fever, scarlet fever, and streptococcal pneumonia, appear to be especially responsive to vitamin C therapy.

Good results and some outright cures are seen when vitamin C is added to treatment of **tuberculosis, leprosy, typhoid fever, malaria, and tick-borne Rocky Mt. Spotted Fever**. "To date, there are *no* infectious diseases that have ever been found in which vitamin C administration can be considered dangerous or inappropriate."

In tuberculosis, "vitamin C plays an integral role in the natural walling-off and isolation of tuberculosis lesions, perhaps largely due to its *essential role in the formation of collagen, which is the body's primary connective tissue*. Vitamin C has similarly been implicated in the walling-off of focal sites of cancer as well. [My emphasis. CF] It is likely that vitamin C is the primary force in isolating and lessening the impact of any foreign or unwelcome presence perceived by the body."

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"The Ultimate Antidote"

The last third of the book reviews vitamin C treatment for a very long list of toxins. All creatures capable of making their own vitamin C, upon exposure to noxious substances will initiate increased liver production of the vitamin—nature's way to neutralize toxins.

Detoxification with vitamin C has been effective in innumerable cases of poisoning, e.g., mercury, PCBs, lead, common pesticides, snake venom, even "death cap" mushrooms. The vitamin is shown also in multiple studies to protect against **ionizing radiation-induced DNA damage** as well as protecting against its consequence of increased chance of cancer.

"Almost all toxins precipitate varying amounts of damage by generating large amounts of tissue-damaging and enzyme-damaging free radicals." For our own non-C-producing species, "antioxidant therapy, headed by vitamin C, remains the best way to deal with an onslaught of free radicals." The vitamin works also to support and induce crucial detoxifying enzyme systems in the liver.

He writes: "In light of the information cited in this chapter it is absolutely amazing that vitamin C is still so little used in the treatment of different toxic states and acute poisonings. There never seems to be enough information available for a traditional physician to 'jump on board' and start applying the incredible healing and curative properties of vitamin C."

We Can and Must Make A Difference!

"As a practicing physician for more than 25 years, I can assure the reader that virtually all doctors fear being ridiculed by their colleagues more than anything else. This fear, more than any other factor that I can identify, appears to almost completely stifle independent medical thought."

He understands that a groundswell by enlightened consumers will encourage doctors to step outside the dotted lines.

Let's do what we can to speed up this process. Lives will be saved, maybe your own, maybe your doctor's. Dr. Carlo Urbani, an expert on infectious diseases with the World Health Organization's office in Hanoi, Vietnam, was called in to treat a mysterious flu-like illness in a Hanoi hospital patient. Urbani, having identified the new virulent disease on Feb. 28, succumbed to SARS on March 29, age 46.

Levy's book can be ordered from the publisher, Xlibris Corp., 888-795-4274; or by email, Orders@Xlibris.com

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