

Nutrition, Fluoridation and Dental Health

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Weston A. Price versus Gerald J. Cox

They were contemporaries, living and working at the same time in the same country, and focused on the same topic—tooth decay. But they took totally different paths and their contributions were worlds apart. Weston A. Price was a dentist, world traveler and humanitarian who valued what people could teach him. He lived large and his laboratory was the world. Gerald Judy Cox, a chemist, involved in all that chemistry could bring, never stepped far from his lab rats. Although he traveled in the U.S. to professional meetings, he lived in Pennsylvania for most of his life.

Dr. Weston Price was born in Canada in 1870 and graduated from the University of Michigan Dental School in 1893. He had a busy and successful dental practice in the early part of the 20th century in Cleveland, Ohio. He was head of research for the American Dental Association and a well-regarded scholar. Price and his wife traveled the world examining the teeth and health of people living in primitive cultures. He found that people who kept to traditional diets were healthy, physically strong, good-looking, vibrant, and largely immune to tooth decay.¹

Price is mainly known for his work on the role of nutrition in dental and physical health with a focus on dental caries. His work is immortalized in his book, *Nutrition and Physical Degeneration: A Comparison of Primitive and Modern Diets and Their Effect*, which is dedicated to his wife, Florence. First published by Paul B. Hoeber, Inc. Medical Book Department of Harper & Brothers in 1939, the book is now in its eighth edition.² Unlike many books written in the 1930s that have long been forgotten, his book remains a popular work judged favorably by commenters on Good Reads.com, who describe *Nutrition and Physical Degeneration* as a “lifechanging” work.³

Dr. Gerald Judy Cox was born in Illinois in 1895 and graduated from the University of Illinois with a PhD in chemistry in 1925.⁴ The majority of Cox’s fame came from his work with fluoride at the Mellon Institute in Pittsburgh during the 1930s, and it was this work that earned him a permanent position of professor of dental research at the University of Pittsburgh Dental School in 1948. He stated, “I came to the School of Dentistry, University of Pittsburgh in September 1948 as professor of dental research because of my involvement in fluoridation of water.”⁵ Upon retirement in 1965 he was granted the title “emeritus professor.”⁶

FELLOW AT THE MELLON INSTITUTE

Cox had experience as a fellow at the Mellon Institute where he received financing first from the Mellon family for work with aluminum and then from the sugar industry for his work on sugar and dental caries.⁷ When the Sugar Institute of New York ceased its financial support, he applied in 1935 for funding and was successful in obtaining yet another fellowship, financed by the Buhl Foundation,¹¹ designated as the “Nutrition Fellowship,” which was a continuation of his previous work.⁸ During Cox’s nutritional fellowship from 1935 to 1940 he quickly turned his focus to fluoride and devoted the majority of his experiments trying first to prove the existence of fluoride in the diet of rats, and then to proving that this fluoride prevented dental caries.⁹

The Mellon Institute in Pittsburgh was founded by the same Mellon family that owned Alcoa aluminum manufacturing plants. The plants produced large amounts of fluoride, a toxic waste.¹⁰ They made their research facilities available to scholars for a price.

Cox had experience working with lab rats. While at the University of Illinois from 1917 to 1919 he worked in animal nutrition laboratories where his master’s degree and PhD studies focused on nutrition in rats. From 1925 to 1929 he managed the laboratories there and in July 1929 he became an aluminum fellow at the Mellon Institute.¹²

As would be expected, during this fellowship he found that cooking in aluminum pans did not cause damage, while copper cookware was a culprit in depleting vitamin C. While working for the Sugar Institute of New York, he was careful to say that sugar didn't initiate cavities, just made them worse: "We found that sucrose and glucose as a 2/3 ration after initiation of carious lesion promoted enlargement of the cavity as compared to starch, but did not initiate cavities." He also noted that eating corn meal produced caries in rats.¹³

His project proposal to the Buhl Foundation in 1935 summarized all his prior work, which he continued as a nutrition fellow: butter, halibut oil, milk, and meat prevented dental caries.¹³ But Cox did not further pursue any research into whole foods. The Mellon Institute in 1935 announced the fellowship with a press article saying that Cox had discovered a new vitamin.¹⁴ At one point, he proposed a study using various milk products but this never came to fruition. He soon took another path, identifying this mysterious vitamin as fluoride or aluminum in the rat's lab chow as the "new vitamin" that might prevent cavities.¹⁵

Cox described his experiments as the "first controlled laboratory experiments which proved that fluoride prevented cavities."¹³ In his project proposal he suggested that the Buhl Foundation call upon men of science to back him up.¹⁶ But his critics from the Pennsylvania State College, Dr. R. Adams Ducher, chairman of the department of agriculture at Penn State, in a letter to Clare V. Starrett, associate director of the Buhl Foundation, reviewed Cox's study and findings in 1935 along with those of his colleague, Dr. N.B. Guerrant of the same department, and found them wanting. They criticized him for his lack of control variables.¹⁷ Cox would feed one food, followed by a different food, then another. His critics noted that effects that Cox attributed to one substance could indeed be attributed to other substances, such as butterfat. But this criticism made no difference to any of the parties involved and Cox continued on with his flawed science, which he militantly defended.

Ducher thought the vitamin that conferred caries resistance was vitamin C, which rats could make themselves. He thought that Cox had in some way disabled the rats' production of vitamin C through the diet he fed them, which led to dental caries. To rebut this statement Cox added lettuce to the diet, which he thought had "a lot" of vitamin C. The lettuce did not prevent caries, showing that Ducher's statement was not valid. According to Guerrant, the most important finding was that "the offspring from the fat diet had distinctly lower incidence of caries than did the young on a high carbohydrate diet."¹⁷

ENTER FLUORIDE

At this time, the fluoride issue was indeed becoming a headache for the Mellons and the aluminum industry as more and more of this toxic byproduct entered our rivers. Other industries, such as synthetic fertilizer manufacturing and atomic power production, became equally implicated.¹⁸ In 1933, Dr. Lloyd DeEds, senior toxicologist with the U.S. Department of Agriculture and lecturer in pharmacology at Stanford University, published a sixty-page review on fluoride poisoning. He wrote, "The possibility of fluorine hazard should . . . be recognized in industry where this element is dealt with or where it is discharged into the air as an apparently worthless by-product." Vegetation and livestock near aluminum plants were being poisoned. "The superphosphate plants were pouring 25,000 tons of fluorine into the air and adding 90,000 tons to the top soil each year."¹⁹

Cox was a major force in giving the Mellons and other industrial giants a way to shift liability from their huge fluoride waste dumps by promoting fluoride as a health benefit. He became a vital cog in the fluoridation machine as one of the first researchers to propose, based on his rat studies, that fluoride prevented cavities and to suggest its addition to public water supplies.²⁰

In explaining how he came to the conclusion that fluoride prevented cavities, Cox said that he heard a presentation at a meeting in Detroit on the prevention of cavities in rats by feeding them aluminum salts. He then started a study to produce mottled teeth in rats by feeding them fluoridated water during pregnancy and lactation. After weaning, the rats were put on a caries-producing diet, yet none of the rats developed cavities or mottled teeth. In his convoluted thinking, "so it appeared that fluoride was good for the teeth." He didn't include the aluminum salts in the prescription.²¹

Cox was at the right place at the right time and did the "right" thing for his mentors. Cox admitted that he got his

life-time position at the University of Pittsburgh Dental School because of his fluoridation work.^{22,55}

At the University of Pittsburgh, it was his job “to stimulate research and assist those with research projects to final publication.” He was the first man to head a department of research in a dental school; he became professor emeritus upon his retirement in 1965 but was not replaced. He prepared several editions of “Survey of the Literature on Dental Caries” with U.S. government grants.²³

Pittsburgh’s water was fluoridated in early 1951²⁴ and Cox appeared gleeful in a ditty that gives new meaning to the term ‘F-word’:²⁵

Paeon In Anticipation of F-Day In Pittsburgh

On with the dents
Let alloy be unconfined!
For F is in our water
And peace is in my mind.
Gerald J. Cox February 27, 1951.

Sixty years after fluoridation, dental caries remain a problem in Pittsburgh’s children. According to the Pennsylvania Department of Public Welfare, tooth decay affects 48 percent of children by the age of eight, even those who drink fluoridated water. “By age fifteen, this percentage increases to 50 percent. In low-income households, 33 percent of children have untreated tooth decay, in comparison to only 10 percent of children in higher-income households.”²⁶ An oral health assessment commissioned by the Pennsylvania Department of Health and conducted by the University of Pittsburgh School of Dentistry from 1998-2000, found high rates of caries and untreated caries in the cities of Philadelphia and Pittsburgh; both cities have had fluoridated water supplies since the 1950s.²⁷

PRICE’S WORK ON FLUORIDATION

As chairman of a Committee on Brown Staining of the Teeth for the National Research Council’s Division of Medical Sciences, Price was also involved in fluoride research. While head of the committee in 1926, he was in contact with other international researchers. The French had noted that the same brown mottling occurred with frequency in Morocco, Algeria, and Tunisia— they called it *le darmous*.

The head of research for those countries, Dr. Henri, sent samples to Price for analysis in his laboratory.²⁸ Price found 2.3 and 3.1 parts per million (ppm) fluoride in the samples from North Africa and published these results in a paper which he read at a meeting of the International Association for Dental Research in 1932, “Evidence of a need for fluorine in optimum amounts for plant and animal growth, and bone and tooth development, with thresholds for injury.”²⁸ Price pointed out that the water from districts in North Africa was extremely high in fluoride and that there was severe damage to teeth of “sheep, cows, goats, donkeys and horses, as well as humans living in that area.”²⁹

While serving on the the committee, Price noted the toxic effects of fluoride on mineral metabolism and on permanent enamel defects, but his research was ignored. He pointed out that the addition of natural sodium fluoride to the rats’ food results in a decrease in blood levels of iron, calcium, phosphorus, and potassium. A one percent concentration of sodium fluoride in the diet resulted in a general disturbance of mineral metabolism. Because bone and tooth tissue differed and teeth did not regenerate, defects to enamel caused by mottling would be permanent.²⁹

Today the Centers for Disease Control (CDC) and the Public Health Service state that the enamel defects caused by fluoride are “cosmetic” but the discoloration cannot be removed by abrasion or creams and the only solution to correct the unsightly teeth are expensive caps and crowns.³⁰

Around the same time that Price was working on the problem of *le darmous* and publishing his paper on fluoride

and mineral metabolism, Cox was an aluminum fellow at the Mellon Institute. He was not a dentist but followed the dental literature. It is very possible that he read Price's articles.

NUTRITION AND DENTAL DECAY

In his book, *Nutrition and Physical Degeneration*, Price concludes that "foods of commerce," such as flour, sugar, canned milk, pastries, and modern processed vegetable oils cause nutritional deficiencies that result in many dental issues and health problems. The dental problems he observed were tooth decay starting in the first generation and, in the second generation, dental deformities such as crowded teeth, improper development of the facial structure, narrow jaws, overbites, and underbites, a general condition he referred to as the "underdevelopment of the middle third of the face."³¹ Price noted that these processed foods displaced nutrient-dense foods in the primitive diet, causing a decline in all vitamins and minerals, but particularly the fat-soluble vitamins A, D, and K₂ (then referred to as the X Factor).

Recent research corroborates his conclusions. For example, a malformative mid-facial alteration, known also as maxillonasal dysplasia or Binder's Syndrome, is caused by a lack of vitamin K₂ brought on by the drug warfarin taken during pregnancy, vitamin deficiency during pregnancy because of excessive nausea and vomiting during the first trimester, or a defect in vitamin K₂ metabolism.³² These factors can result in a cleft lip, a flat profile with a convex upper lip, a short nose and a flat or depressed nasal bridge, usually resulting in a Class II malocclusion, a misalignment of teeth or an incorrect relation between the teeth of the two dental arches requiring treatment with orthodontics.³³

Price convincingly argued that this lack of development was nutritional in origin, that without adequate vitamin and mineral intake, the facial bones cannot be built strongly enough to support broad facial structure. He explained that the facial narrowing was not a genetic condition, nor caused by mixing of races (the current theory of his day), but occurred in spite of genetics, through factors we now refer to as epigenetic. But Price concluded, as did Dr. Francis Pottenger through his work on cats, that this physical degeneration could be positively reversed within several generations of good nutrition.³⁴

Throughout his career Price produced several technological innovations and published many papers in medical journals and textbooks. His research materials include some fifteen thousand photographs, four thousand slides, and many filmstrips.³⁷ For instance he knew that root canals were dangerous and associated with adverse health problems whereas tooth extraction was much safer. His only child died from an infected root canal which he had placed.³⁸ The dental establishment, prospering on the new procedure of root canals, ridiculed his observations and called him "radical."³⁸ Price was not afraid to acknowledge the elephant in the room—the fact that there would be little need for dentists, endodontists, and orthodontists when people practiced good nutrition.

Still, his book *Nutrition and Physical Degeneration* received glowing reviews. In 1940, a review in the *Canadian Medical Association Journal* called the book "a masterpiece of research." A 1950 review in the *The Laryngoscope* called Price, "The Charles Darwin of nutrition."³⁹

PRICE AND COX ON A COLLISION COURSE

Despite their differing work ethic and focus, the paths of Price and Cox did collide. Cox clearly expressed his opinion of Price in a letter he wrote to Clare V. Starrett of the Buhl Foundation board in July 1938. Price was seeking funding from the Buhl Foundation to publish his book, initially named *Primitive Keys to Modern Degeneration*. Price wrote to Starrett on June 21, 1938 (on the recommendation of B.F. Carley of Pittsburgh) asking for funding for the publication of his book.⁴⁰

With the letter Price included a prospectus describing his book and exhibits based on a text that he had prepared for the National Academy of Orthodontic Surgeons and the Connecticut and Ohio State Dental Associations which had given him medals of honor. He also noted that Dr. Ernest Hooten of Harvard University, the most famous physical anthropologist of his day, made several complimentary references to Price's work in his book *Apes, Men and Morons*. Dr. Hooten went on to write the preface for *Nutrition and Physical Degeneration*.⁴⁰

Starrett turned to Cox for an opinion. Cox was aware of Price's work on fat-soluble vitamins as activators important for dental health. He wrote, "I would expect that a book by Price would be depressing to the civilized reader, that is, it would be pessimistic and play upon fears that would promote still further ill-reasoned food fads that irritate conventionally trained nutritionists."⁴¹

He painted Price as a dentist "of poor repute professionally, according to two unnamed sources." Price's dental practice was located across the street from the Cleveland Clinic and Cox was scornful of the fact that a neon sign on Price's building proclaimed, "Cleveland Dental Clinic."

"The proximity of the establishment and the near copying of their name was quite irksome to the staff of Cleveland Clinic," he wrote, which was pure conjecture on his part as he did not name witnesses. And as far as we know, he never visited Cleveland. Cox continued to cast aspersions on Price by stating that his name was not found in the Cleveland phone directory and he may have changed the name of his clinic or moved.⁴¹

Referring to a conversation with a Gunderson from the Quaker Oats Laboratories, Cox reported that Dr. Gunderson "believes Price is 'quackish' and that he is highly opinionated with insufficient evidence."⁴¹

The Buhl Foundation declined to fund Price's book. But despite Cox's negative review Price soon published his book with a prestigious firm.

Cox sent a book review to his handlers at the Buhl Foundation. He again called Price "pessimistic," yet admitted that Price "believes that civilization has the power within itself to survive and advance itself to even more trying conditions." He referred to the groups studied by Price as "really weaklings who never survive the rigors of civilization."⁴²

He also mentioned an article in *Harper's Magazine* by Walter C. Alvarez, MD, entitled "Why Can't We Have Perfect Teeth?" which discusses the work of Price. Cox dismissed Alvarez because his book, *Nervous Degeneration*, was advertised on the jacket of Price's book.⁴³ Cox suggested that "this fact suggests promotion by the publishers at the expense of *Harper's Magazine*." The publishers did, in fact, own *Harper's*.⁴⁴

Nutrition and Physical Degeneration continued to receive accolades. Ironically, Cox's proposal to the Buhl Foundation for funding for the nutrition fellowship in 1935 seemed to echo the words of Weston Price, who had written about his travels in dental journals. Here Cox dared to praise the primitives whom he would later call "weaklings" in his review of Price's book in 1938.

Indeed, one section of Cox's proposal begins with the title, "Are Sound Teeth a Heritage of the Human Species?" in which he supports Price's findings that tooth decay is not a natural part of the human condition, although he does not credit Price's work: "It seems entirely proper to speak of caries-resistance as being inherent in the human race. Evolutionary processes would scarcely permit the survival of a species whose digestive process is hampered at the outset. But it is not necessary to invoke mere theory for a belief that man can carry all his teeth into the grave. Eskimos are famous, if not even notorious, as having little trouble with tooth decay. Inhabitants of isolated islands or of areas shut in by mountains have been known as groups to have excellent teeth."⁴⁵

LETTER OF WESTON A. PRICE TO THE BUEHL FOUNDATION, SEEKING FUNDING FOR PRIMITIVE KEYS TO MODERN DEGENERATION

(Later published as *Nutrition and Physical Degeneration*)

Handwritten: treatment CVS

Handwritten: K.M. 1/21/38

WESTON A. PRICE, D. D. S., M. S.
DENTAL RESEARCH LABORATORIES
8926 EUCLID AVENUE
CLEVELAND, OHIO

June 21, 1938.

Mr. C. V. Starrett, Asst. Mgr.,
Buehl Foundation,
Farmers' Bank Building,
Pittsburgh, Penna.

My dear Mr. Starrett:

Through the kindness of Mr. B. F. Carley of your city I am advised to write you relative to a very important manuscript that I just completed dealing with the wisdom of primitive races and indicating the means whereby many of them have been able to perpetuate their stock in good physical condition through thousands of years. This is in striking contrast with the rapid degeneration of our modern white civilization and in contrast with the rapid breakdown of these primitive racial stocks wherever they come in contact with our modern civilization and have adopted certain of its methods of living. The title of the book is **PRIMITIVE KEYS TO MODERN DEGENERATION**. My investigations throw very important light on the cause of our rapidly increasing modern physical, mental and moral degeneration in many communities.

The book will carry two hundred full page illustrations and twenty-eight half page and about three hundred and forty pages of text. The message is so important and the scope so far reaching that the book should have very wide distribution. I have an estimate from one of the leading printers for printing 5000 volumes at \$1.39 a copy. This would be in excellent binding and paper with fine illustrations.

There is an opportunity here for some foundation to make a very important contribution to humanity throughout the world as a philanthropic work. My concern is that the material shall have wide distribution. The expense has of course been very great for obtaining the material involving travelling approximately one hundred and twenty-five thousand miles.

I am enclosing herewith a prospectus of the work for your information.

I anticipate that Mr. Carley has already discussed the matter with you as he suggested he would do so. I would be glad if you would advise me whether the Buehl Foundation would be interested in investigating this matter to note whether it comes within the scope of its activities, and interest.

Yours very sincerely,

Handwritten signature: Weston A. Price
Weston A. Price

WAP:RWM

MELLON INSTITUTE OF INDUSTRIAL RESEARCH

UNIVERSITY OF PITTSBURGH

PITTSBURGH, PA.

July 1, 1938

Mr. C. V. Starrett,
The Buhl Foundation,
Farmers Bank Building,
Pittsburgh, Pa.

Dear Mr. Starrett:

I have studied the letter and prospectus of Weston A. Price as requested by you and herein are my impressions.

Since the beginning of active study of dental caries I have been familiar with the work of Weston A. Price. He strongly favors the theory of malnutrition as the dominant influence in dental caries and thus offends those who believe bacteria play the leading role. Price has developed a test for susceptibility to caries which consists of analyzing saliva for calcium and phosphorus before and after contact with bone chips. If these elements are lost to the bone chips the subject is regarded as immune to caries; if calcium and phosphorus are taken up by the saliva, susceptibility is indicated. Price has voluminous data to indicate that his test is sound. Corroboration is supplied by the dental group at Northwestern University which uses the Price test with some modification.

Using his test Price claims that he can render susceptible subjects immune to caries by feeding certain "activators". The activators, in normal parlance, are the fat soluble vitamins. Persistence in the use of the term suggests a crank, but Price may be a crank of the type the world needs.

The activators used by Price are principally the low melting fractions of butter obtained from cows which have been selectively pastured preferably on the green wheat plant. In spite of his objections to cod liver oil, Price uses it in making up his activator mixture.

There is no need to comment on the travels of Price. They are authentic and deserve recording in book form.

I am aware of two adverse views on Price, one indicating that he has poor repute, professionally. His Cleveland location was, at least about 1932,



Cox continued on page three of his project proposal to describe the devastating effects of modern diets on teeth, which he had certainly read in the work of Price and others: “Eskimos, reared on the diets of civilization, develop the need of corrective dentistry as rapidly as any of the admittedly susceptible races. This insidious influence of the diet indicates that the individual may be born with immunity to caries if it has been fed into him; that the heritage of the human race is rather a mechanism of producing enduring teeth if that mechanism is supplied with all its requirements at the proper time. Some, however, have been notably substantiated by systematic study as for example, the elevation of cod liver oil to an essential place in the infant’s diet.”⁴⁵

THE END OF THE FELLOW

Cox argued that caries could be prevented with fluoride, ridding parents of the need to practice good nutrition. But at first Cox was not certain. “The data on fluorine and its influence on teeth are not sufficiently convincing” he wrote in 1936. “The levels of the element which are effective are too near the minimum which may be achieved by rigorous elimination of fluorine from the diet. Fluorine is deposited in the bones and thus a reservoir is created.”⁴⁵

But a short time later, upon several suggestions from Francis Frary, the chief chemist at Alcoa, Cox started looking at the mysterious fluoride in a different way: “Fluorine may be such a substance or the active constituent of meat.” Cox claimed that he was the first researcher to suggest that municipal drinking water be fluoridated (but maybe someone at Alcoa gave him the idea).⁴⁶

Cox’s funding came to an end in 1940 and his annual fellowship grant of twelve thousand dollars per year was not renewed. Cox stated that his funding was discontinued because his proposal that drinking water be fluoridated, made at the September 29, 1939 meeting of the National Water Works in Johnstown, was rejected. At the end of Cox’s article in that organization’s journal, the editor castigated Cox for the article’s call for fluoridation of public water supplies.⁴⁷

FORCE FED FALSE FLUORIDE

In 1949 the medical community was still not sold on fluoride. An article that year by Dr. D. C. Badger in the *American Journal of the Diseases of Children*, supported by a press release by the American Medical Association, discussed the phenomenon of children with mottled teeth in various American communities with high fluoride levels in the water supply.⁷⁷ The article suggested that children receive distilled water until six years of age.

H. Trendley Dean, the father of fluoridation, also suggested the same a short time before he flip-flopped to promote water fluoridation.⁴⁸ Cox’s findings that fluoride given to mothers prevented cavities in the offspring were expanded to the concept of fluoride after birth. “If the children were given distilled water,” Cox warned, they “would be prone to cavities. . . . To minimize the mottling, and still prevent cavities, fluorine levels should be adjusted seasonally to provide an optimal amount of fluorine.” While Badger was concerned about the complications of dental fluorosis, there was no concern or scientific interest on the part of Cox or Dean about potential harm from

dental fluorosis.⁴⁸

By the way, as a professional chemist Cox erred continuously in referring to “fluorine” added to the water. Fluorine is a toxic gas which combines easily with other materials such as calcium, uranium, and most other metals; it is almost never found in its native state. It is the fluorides and their derivatives that are added to the public water supply.

HYDROFLUOROSILICIC ACID

The cheapest form of fluoride used in water supplies today, now imported from China, is hydrofluorosilicic acid, an industrial by-product which contains, in addition to fluoride, arsenic, cyanide and cadmium as well.⁴⁹

Hydrofluorosilicic acid is described by Solvay Chemicals as a hazardous material (Haz Mat Class 8 corrosive). “A corrosive material is a liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period of time.”⁵⁰ It is produced as a byproduct of aluminum smelting from spent pot lining (SPL). Alcoa Aluminum describes SPL as a “waste product from the smelting of aluminum, considered to be a hazardous waste in various countries because it contains significant quantities of absorbed fluorides along with traces of cyanide.”⁵¹

“OPTIMALLY FLUORIDATED WATER”

The CDC of the U.S. Department of Health and Human Services and the American Dental Association (ADA) support community water fluoridation as the “single most effective public health measure to prevent tooth decay”⁵² despite a growing body of evidence that fluoride is both ineffective and harmful. Despite more than two hundred fifty research articles documenting the harmful effects of fluoride on humans, published by institutions in China, Germany, Turkey, Poland, and England since 2005,⁵³ U.S. government health officials continue to fluoridate our water. The goal of the U.S. and Pennsylvania state government is to increase the number of communities that provide “optimally fluoridated water,” says the U.S. Surgeon General’s report, Healthy People 2010.⁵⁴

Things were different in 1939, when the USPHS (United States Public Health Service) regulations stated that “the presence of fluorides in excess of 1 ppm (part per million) shall constitute rejection of the water supply.” In 1943, the *Journal of the American Medical Association*, published “Chronic Fluorine Intoxication,” which stated that “fluorides are general protoplasmic poisons, changing the permeability of the cell membrane by inhibiting certain enzymes.”⁵⁵ After receiving funding from Kettering Laboratories, which produced the fluoride-based chemical freon and participated in the fluoride-dependent development of the atomic bomb, the AMA changed its position and supported water fluoridation in the 1950s.⁵⁶

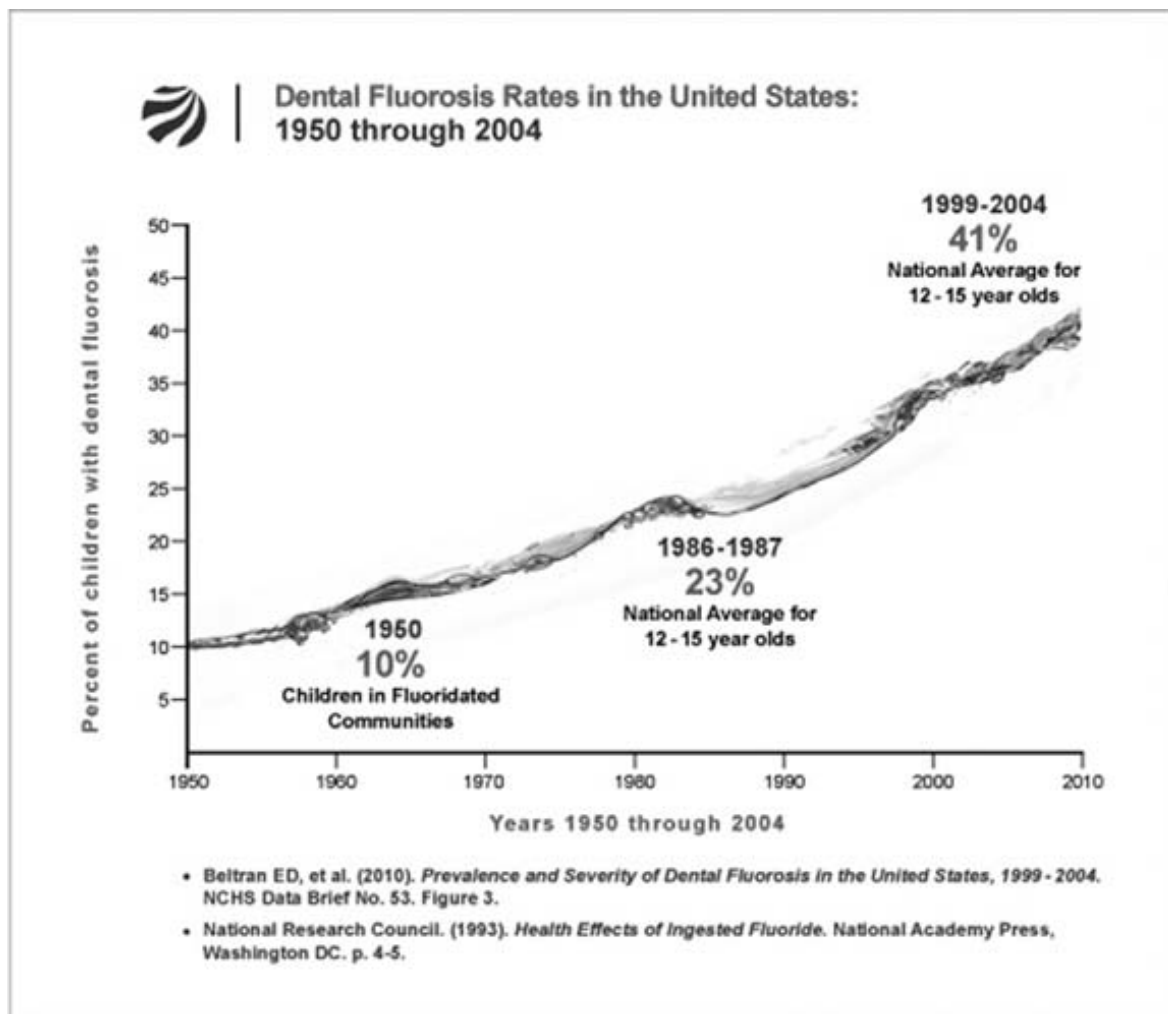
In 1986, the EPA Environmental Protection Agency established the maximum contaminant level goal (MCLG) for fluoride and maximum contaminant level (MCL) at a concentration of 4 mg/L (milligrams per liter) or 4 ppm (parts per million). The MCL is an enforceable standard. At the request of the EPA, the National Research Council considered the issue and reported its findings in 2006 in a five-hundred-page report, *Fluoride in Drinking Water*. The major conclusion was that “4.0 mg/L ppm was too high and should be lowered. . . . The potential health risks are skeletal fluorosis, bone fractures and severe enamel fluorosis, which may increase the risk of dental decay.”⁵⁷

FIRST DO NO HARM

While the CDC lists water fluoridation as one of the “ten greatest health achievements of the 20th century,” alongside vaccines, fluoride has been linked to autism and studies show that fluoride is a factor in many neurological conditions such as hyperactivity, dementia, brain damage, and lower IQ.⁶⁶

“Especially troubling are more than twenty human studies from China, Mexico, India, and Iran reporting IQ deficits among children exposed to excess fluoride, by four human studies indicating that fluoride can enter and damage the fetal brain; and by a growing number of animal studies finding damage to brain tissue (at levels as low as 1 ppm) and impairment of learning and memory among fluoride-treated groups. Fluoride’s ability to damage the

brain represents one of the most active areas of research on fluoride toxicity today.”⁶⁷



In 1995 Phyllis Mullenix, a prestigious toxicologist at Harvard's Forsythe Dental Research Institute, published her findings on the effect of fluoride on the rat brain which included hyperactivity in rat pups born to dams who were fed fluoridated water. She was summarily dismissed from Harvard shortly after publication.⁶⁸

In addition other fluoride studies have shown cell death, genetic damage, impaired thyroid function, impaired production of melatonin in the pineal gland, arthritis, back problems, muscle disorders, bone fractures and osteosarcoma, a bone cancer found in young boys. Fluoride inactivates some sixty-two enzymes, blocks the formation of antibodies, and damages sperm.⁶⁹ Fluoride damages body systems and the brain through its capacity to increase lead absorption.⁷⁰

The total body burden of fluoride is growing from an estimated 10 percent of children in fluoridated areas with mild dental fluorosis in 1950 to recent CDC data that show that the fluorosis rates have risen considerably, with 41 percent of American adolescents afflicted, a figure understated because it combines data from fluoridated and unfluoridated communities. Studies of fluoridated towns in the U.S. and Canada have rates as high as 70 to 80 percent. Fluorosis varies by race, with the highest rates found among black children,⁷¹ the very same children that water fluoridationists say they want to protect from cavities.

The CDC and other government agencies say that dental fluorosis is “just cosmetic,” but scientists know that it is an indication of excess fluoride exposure.⁷² A round 50 percent of fluoride is cleared through the kidneys—if the kidneys are in good working order—and the other 50 percent is stored in the bones and teeth and body organs. The body burden may be much higher in people with diabetes, kidney disease, and in children.⁷³

In November 2006, the American Dental Association began recommending to parents that infants from birth through 12 months of age should have their formula prepared with water that is fluoride-free or contains low levels

of fluoride to reduce the risk of fluorosis.⁷³ Fluoridated water contains two hundred fifty times more fluoride than mother's milk.⁷⁴

In 2010, a study showed increased fluorosis risk among infants who were fed infant formula reconstituted with fluoride-containing water, as well as for those using fluoridated toothpastes.⁷⁵

In 1979 Balfour D. Mattox made these comments at the presentation of the College of Dentistry's honorary fellowship to Cox: "The public should be doubly in his debt for the legacy he has bequeathed to those who have had the benefit of fluorides and the millions yet unborn who will reap the harvest of his multi-faceted research."⁷⁶

It is ironic that the comments made by Mattox in 1979 have come full circle. It is now those unborn who "reap the harvest" of dental fluorosis, infertility, diabetes, autism, neurodevelopmental, and neurodegenerative diseases, all alarmingly on the rise. Is this indeed the legacy of Gerald D. Cox?

SIDEBARS

FINDINGS FROM COX'S NUTRITION FELLOWSHIP

Even though Cox quickly turned to fluoride research in 1936, research during his sugar fellowship and at the beginning of his nutritional fellowship established the following:

- The parents of pups with immunity to dental caries were fed during the mating, pregnancy and lactation with the following: yeast, alfalfa, haliver oil, fresh liver, certified milk and whey concentrate.
- "Approximately 80 per cent of the dental caries in the young have been prevented by the diet of the mother during pregnancy and lactation."
- Rat pup resistance and "immunity to dental caries...resulted from feeding increased amounts of haliver oil (halibut oil) to mothers of the experimental rats during the periods of pregnancy and lactation." Presumably the effect is attributable to an increase of vitamin D. He later went on to observe that vitamin D was not a factor but used another unsuitable source of vitamin D.
- "A diet high in butter fat likewise has added to caries resistance."
- "Mothers with a 100 percent meat diet have pups with caries resistance. The best results of the Fellowship to date have been those obtained with the meat diet with added calcium carbonate."
- "Positive results with whole milk were due to a more favorable level of calcium and phosphorus or possibly to the fat content" and "milk contains an anti-caries substance."⁴⁵

TRADITIONAL FOOD BANISHES CAVITIES

Any decline in cavities independent of fluoride is attributed to refrigeration, better overall nutrition, and increased consumption of cheeses.³⁵ A 2014 CBS News report describes a study in which the researchers found that eating cheese increased dental plaque pH, which in turn decreased the odds of developing cavities. Cheese, a time-honored traditional food, contains healthy amounts of calcium, saturated fats, and vitamins A and K₂. But in the discussion, the sadly misguided researchers attributed the lower pH to pyrophosphates, "which are commonly found in fluorides and toothpaste which can re-mineralize a tooth that has been surrounded by acid." And in keeping with the low-fat paradigm they advised eating low fat cheese "so people can snack on a healthier option while still getting the same benefits."³⁶

MAZOLA CORN OIL AND GERALD COX

Cox's fellowship days were over in 1940 and he had a young son and wife to support. He returned to his home state of Illinois to work for the Corn Products Refining Company, the world's largest corn refinery, in Argo, Illinois from 1944-1948. In 1948 he went to the University of Pittsburgh as director of dental research.¹ The company supplied the materials for Argo cornstarch and Mazola corn oil. Mazola was first made in 1911. The brand is now owned by the ACH Food Companies. ACH is a subsidiary of Associated British Foods. Brands include Argo cornstarch, Fleischman's yeast, Karo corn syrup, Kingmill bread, Mazola corn oil, Patak's Ryvita, Spice Islands,

Twinings and others.²

What his job involved at Corn Products is unclear, but he may have been working on corn oil. He kept cases of the stuff in his Pittsburgh basement and in his old age, spent time writing and advising that people take corn oil for dandruff, dry skin, warts, nails, acne, psoriasis, osteoporosis, lowering cholesterol, loss of voice, poor hearing, gastric ulcers, hemorrhoids, arthritis, stiffness, the common cold and even body odor. He says that he provided cases of Mazola to the Pittsburgh Pirates with the recommendation that it would prevent stiffness after games. The team physician told him that Mazola increased their stamina.³

A 2013 study found on the Mazola website concludes that Mazola “lowers cholesterol more than extra virgin olive oil and has more cholesterol-blocking plant sterols than other cooking oils.” The study was presented at the American Society for Nutrition in 2013 funded by ACH Food Companies and PepsiCo.⁴ Cox kept detailed records of his and his wife’s cholesterol levels from 1957 to 1963, and pointed out Mazola’s effectiveness.^{1,3} Lower cholesterol in aging individuals is a strong indicator of mortality, frailty and subclinical disease.⁵ The myth that cholesterol causes heart disease has been thoroughly debunked.⁶

Corn oil is high in omega-6s and contains little or no omega-3s. It’s created with high-heat processing, causing the polyunsaturated fats to become rancid.⁷ Today Mazola’s “Pure Corn Oil” is made from GMO corn. A 2009 study of the Giles Seralini laboratories linked GMO corn to organ breakdown of the liver, kidneys and heart in lab animals. Researchers discovered that the longer rats were exposed to GMOs, the greater the toxicity of GMO corn and the higher the incidence of disease.⁸

Today, various experiments, also with lab rats, find that corn oil ingestion blocks cancer-fighting enzymes related to the growth of colon and prostate cancer cells. Omega-6s promote the growth of prostate cancer cells that have a greater chance of metastasizing to bone.⁹⁻¹¹ In the Dawson study at the University of California, corn oil caused obesity, insulin resistance, and inflammation of the pancreas which could lead to pancreatic cancer. Headlines from the study, “High-fat/calorie diet accelerates development of pancreatic cancer” went viral on the World Wide Web. However, the conclusions of the Dawson study state “that a diet high in fats and calories leads to obesity and metabolic disturbances similar to humans and accelerates early pancreatic neoplasia in the conditional Kras G12D mouse model,” and in the abstract¹² researchers failed to note that the “high-fat, high-calorie” component in the diet was corn oil. The only way a reader would know that corn oil was involved was to purchase and read the entire text. However, one report from the American Association for Cancer Research described the diet as one high in corn oil.¹³

Gerald Cox struck out again. First, by ignoring findings that foods could prevent dental caries, and helping Big Industry to unleash a toxin without thought of future damage; and second, by promoting a cancer-causing agent without thought of future damage. For Cox it was better living through chemistry; for Price, it was better living by obeying Nature’s laws.

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LEGACY OF THE TWO CONTEMPORARIES

Two professionals who dedicated their careers to the field of dental health could not have anticipated the influence of their work on future generations. Cox promoted the agenda of big industry first and foremost, while Price practiced honest science focused on health and good nutrition. His work takes on new relevance with the emerging field of epigenetics. Meanwhile the dangers of fluoridation, which in scientific circles has become a religion and a sacred cow, have become ever more clear.

A Google search for "Weston A. Price" turns up hundreds of "hits" while a search of Gerald J. Cox and variations turns up a handful of titles devoted to fluoridation.

Two organizations are devoted to preserving the work of Weston A. Price and interpreting his message for the modern audience. The Price-Pottenger Nutrition Foundation (PPNF), a nonprofit organization established in 1952, maintains an archive of Price's manuscripts and photographs and carries the mandate to keep his masterpiece *Nutrition and Physical Degeneration* always in print.⁵⁸ The Weston A. Price Foundation with a current membership of over sixteen thousand, founded in 1999, actively promotes the principles of a nutrient-dense diet through research, education and activism. The Foundation has over six hundred chapters established throughout the U.S. and globally, which help people find nutrient-dense foods such as raw milk and pasture-raised animal products. Many bloggers have adopted his message and publish regularly based on themes from his work.⁵⁹ Price's work is discussed in many books and journal articles while Cox's work is forgotten. Several books that discuss the fluoride debacle, such as *The Fluoride Deception*, cast Cox's role as one of duplicity and conspiracy. He did what Alcoa wanted and gave a happy smile to fluoride, a toxic waste product that was becoming a serious national problem.⁶⁰ Although he wasn't a dentist, for his work with fluoride he was rewarded with a professorship for life at the University of Pittsburgh, teaching biochemistry and promoting research; he was also the recipient of grants from various government agencies.

Drinking fluoridated water did not work well for Cox. In a personal letter written in 1969, Cox says that he "was in the dental chair eleven times from February to May of that year getting fillings." Yet he never seemed to question the efficacy of the poison he helped set upon the world and continued to work for fluoridation until the end of his life. In the same letter he says that he was a member of the Drug, Device and Cosmetic Board of Pennsylvania and was working toward mandatory fluoridation in Pennsylvania.⁶¹ Cox died in Pittsburgh in 1989.⁶²

To date, despite their many efforts, fluoride proponents have yet to impose mandatory fluoridation in Pennsylvania. A query about Cox at the University of Pittsburgh Dental School, alumni office, archives, Falk Library and Hillman Library turned up only one reference to Cox. He is mentioned in the history of the dental school. At Mellon University, where he was a fellow for almost a decade, there was no information. But an extensive collection of the files covering his work as a fellow funded by the Buhl Foundation are preserved at the Heinz Memorial Library Archive in Pittsburgh, Pennsylvania. During this time, from 1936 to 1940, he published several articles about fluoridation, which are available.⁶³ An inquiry at the University of Illinois, where he obtained his BS, MA, and PhD in chemistry, turned up some few lines on the name of his wife and son.

Among the handful of references to Cox on the Internet, one reference refers to his removal from a township meeting where he became a little too excited about the refusal of the municipality to fluoridate the water there. He

was removed by police after he repeatedly yelled at a local priest who opposed fluoridation.⁶⁴

Cox's professional papers have not been preserved in any archive. In a 1969 letter he says that he has to "get rid of the many papers" from his office. A few papers are in the possession of his family.⁶⁵

Did Gerald J. Cox truly believe that fluoridating public water would bring better dental health to all who drank it based on his rat studies, or was he a scientist for sale? He acknowledged that nutrition "partly shaped the structure of the tooth" and knew that too much fluoride caused cavities and dental fluorosis, but still dedicated himself to putting this highly toxic chemical in the water.

FURTHER READING

A free e-copy of Chris Bryson's book, *The Fluoride Deception*, published in 2004. can be downloaded from Sheep Pee Free E-Book: <http://sheeppee.wordpress.com/2011/07/19/free-e-book-the-fluoride-deception-by-christopher-bryson/>

The Case Against Fluoride, by Paul Connett, director of the Fluoride Action Network, was published in 2006. The book is a great read and well documented. Chapter four, "The Evidence of Harm," contains information on fluoride effect's on the brain, and endocrine system.

The Fluoride Action Network is an international coalition seeking to broaden public awareness about the toxicity of fluoride compounds and the health impacts of current fluoride exposures. Most journal articles about fluoride, including some not indexed on the National Library of Medicine, can be accessed at their website:

www.flouridealert.org.

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