

Raw milk – history, health benefits and distortions

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Abstract

Cows had a pervasive influence on colonial America, literally saving the Jamestown colony and sustaining the early settlers and the movement West. But by 1900, America's cities had a "milk problem" caused by contaminated raw milk from "distillery dairies." One solution was pasteurization; the other was the certification by medical doctors of carefully produced raw milk. A large body of scientific research and clinical experience clearly established the health benefits of raw milk from grassfed animals, but a pervasive campaign of deliberate lies and innuendo about raw milk contributed to the loss of millions of small farms and led to the general unavailability of raw milk today.

Francis Pottenger's life and work serves as an example of the outstanding research that demonstrated beyond any doubt the superior nutritional value of raw milk as compared to pasteurized. Pottenger's work was viciously attacked in an article published in 1984 by the *Journal of the American Medical Association (JAMA)*; the authors used logical tricks to completely distort Pottenger's findings.

The demise of small farms and raw milk is the result of a concentration of wealth and power that began in colonial times, when an untitled aristocracy was granted control of America's land and economy. Today, a corporate and government elite has extended control to the nation's food supply (and medical system). The reversal of this situation is a political problem. Widespread availability of raw milk from grassfed animals could help solve many of the problems the nation faces, including the health care crisis.

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1. Milk, civilization and the ancient world

"And the Lord said, I am come down to deliver my people out of the hand of the Egyptians and unto a good land, a land flowing with milk and honey [1]." – Exodus 3:8

Human consumption of animal milk is usually linked to the beginnings of grain farming some 6,000 years ago [1,2]. Most treatises on the history of the human diet assume that animal husbandry began with the dawn of agriculture, making dairy products a relatively recent human food. But archeological evidence indicates that from the dawn of civilization people in the High Sinai Peninsula at the north end of the Red Sea used fences to aid in confining and breeding antelope for their milk [1,2:1]. They likely were one of many cultures that used milk long before the beginnings of agriculture.

Physically, civilization rests on the soil, because the soil produces the nutrients for the grasses that feed the animals that feed the people. Fertile soil ultimately provided the milk upon which civilization was quite literally built.

In the whole range of organic matter, milk is the only thing purposely designed and prepared by nature as food. Early humans did not hesitate to appropriate this gift of nature for their own use. No state of civilization has ever been attained without the subjugation of animals and the subsequent use of their milk; from the infancy of human society, distinction has been assigned to the bovine species in history. Those species include the bison, buffalo, yak and domestic animals of the genus *Bos*, like cows and bulls. Where people have gone, the ox and his kind have followed. In every country, bovines are either in-

digenous or naturalized. In most, their milk has at one time or another been used as an essential article of human sustenance – in many, as the chief [3].

The earliest Hebrew scriptures contain abundant evidence of the widespread use of milk from very early times. The Old Testament refers to a "land which *floweth with milk and honey*" some twenty times. The phrase describes Palestine as a land of extraordinary fertility, providing all the comforts and necessities of life. In all, there are some fifty references in the Bible to milk and milk products [4:58–9]. *Milk* is often used metaphorically to signify privileges and spiritual blessings.

2. Cows come to America

"A young fellow wantin' a start in life just needs three things:
a piece of land, a cow and a wife.

And he don't strictly need that last [2:13]." – Old Saying

The Jamestown colony was established in 1606, and times were very tough for a number of years. Despite several infusions of hundreds of new settlers, by 1610 a pitiful remnant of 60 was all that remained. It was Sir Thomas Dale's arrival with a hundred cows the following year that marked the beginning of dairying in America, and the beginning of some prosperity for the Jamestown settlers.

An old saying refers to the fact that the cow had a pervasive influence on America's history and culture, and no one has written of this more eloquently than Joann S. Grohman in her wonderful book *The Family Cow*:

“The cow is a primary producer of wealth. She can support a family. She not only turns grass into milk in quantities sufficient to feed a family but also provides extra to sell *and* she contributes a yearly calf to rear or fatten. The family that takes good care of its cow is well off.

“Cattle are the original stock in stockmarket. Ownership of cattle has always been a mark of wealth. This is not just because the cow is a primary producer of wealth, adding enormous value to grass. In a ‘which came first, chicken or egg’ sort of way, it’s also because only families possessed of a hardworking, cooperative spirit are able to keep a cow, let alone build a herd.

“The dairy cow doesn’t ask for much but she asks every day. People who are creating wealth with a cow either are hard working and reliable or they get that way in a hurry. The need to milk the cow twice a day determined the location of churches; people had to be able to walk there and back without disruption to the schedules of cows. It is certainly no coincidence that such a large number of our finest American statesmen were born on farms. Important virtues are nurtured on the farm, including a graphic understanding of the relationship between working and eating. I have come to understand and accept the words of that great 19th Century agricultural essayist, William Cobbett: ‘When you have a cow, you have it all [4:4–5].’”

3. Distillery dairies, pasteurization, certified raw milk and the milk cure

“Raw milk cures many diseases [5].” – J.E. Crewe, MD,
The Mayo Foundation, January, 1929

The War of 1812 with England resulted in the permanent cutting off of the whiskey supply America procured from the British West Indies. As a result, the domestic liquor industry was born, and by 1814, grain distilleries began to spring up in the cities as well as the country. Distillery owners then began housing cows next to the distilleries and feeding hot slop, the waste product of whiskey making, directly to the animals as it poured off the stills. Thus was born the slop or swill milk system.

Slop is of little value in fattening cattle; it is unnatural food for them, and makes them diseased and emaciated. But when slop was plentifully supplied, cows yielded an abundance of milk. Diseased cows were milked in an unsanitary manner. The individuals doing the milking were often dirty, sick or both. Milk pails and other equipment were usually dirty. Such milk sometimes led to disease. By the last decade of the nineteenth century, a growing number of influential people throughout the country believed that American cities had a milk problem.

Pasteurization, begun around 1900, was a solution of sorts. The other was the certified raw milk movement, which insisted on clean, fresh milk from healthy, grassfed animals. Henry Coit, a medical doctor, was the founder of the first Medical Milk Commission and the certified milk movement. Physicians in cities throughout the country considered raw milk essential in the treatment of their patients; they worked together to certify dairies for the production of clean raw milk. This resulted in the availability of safe raw milk from regulated dairies. Initially, from around 1890 to 1910, the movements for certified

raw milk and pasteurization coexisted and in many ways even complemented one another. From about 1910 until the 1940s, an uneasy truce existed. Certified raw milk was available for those who wanted it, while the influence of the pasteurization lobby saw to it that most states and municipalities adopted regulations that required all milk other than certified milk be pasteurized. The end of this truce (detailed below) has led to the subsequent outlawing of all retail sales of raw milk in most states and even of on-farm sales in many.

Many people today find it surprising that support of raw milk among physicians was widespread in the first half of the twentieth century. The use of raw milk as a treatment of chronic disease has a rich and well-documented history. In 1929, J. E. Crewe, MD, one of the founders of the Mayo Foundation, the forerunner of the Mayo Clinic in Rochester, Minnesota, published an article entitled “Raw Milk Cures Many Diseases.” Here are excerpts from Dr. Crewe’s account of his experience with raw milk:

“For fifteen years the writer has employed the certified milk treatment in various diseases and during the past ten he had a small sanitarium devoted principally to this treatment. The results obtained in various types of disease have been so uniformly excellent that one’s conception of disease and its alleviation is necessarily changed [5].”

4. The health benefits of raw milk

“It is very difficult to get a man to understand something when his salary depends on not understanding it.” – Upton Sinclair

During the early days of pasteurization, researchers showed that scurvy often resulted when pasteurized milk replaced raw milk in the diet of infants. “Pasteurized milk gradually induces infantile scurvy, unless antiscorbutic diet is given in addition,” Alfred Hess wrote in the *American Journal of Diseases of Children* in 1916. “This disorder quickly yielded to the substitution of raw for pasteurized milk [6].”

Thus from the earliest days of pasteurization scientists demonstrated that heat treatment had a profound effect on the health-giving properties of milk. A loss of nutrients other than vitamin C was demonstrated in subsequent studies. One article, “The effect of heat on the solubility of the calcium and phosphorus compounds in milk,” was published in 1925 in the *Journal of Biological Chemistry*. The author’s conclusion was unequivocal: “There is a loss in the soluble calcium and phosphorus contents of the milk due to heat and the amount of the loss depends upon the temperature to which the milk has been heated [7].” Other studies showed that pasteurization caused the loss of significant percentages of many of the B vitamins and nearly all of the enzymes in milk [8].

Further compelling evidence of the superiority of raw milk appeared in *The Lancet* in 1937, in a report on the work of the medical officer to a group of orphanages. The physician gave pasteurized milk for five years to one group of 750 boys, while giving raw milk to another group of 750. All other conditions were alike except for this one item. During that period, 14 cases of tuberculosis occurred in the boys fed pasteurized milk, while only one occurred in those fed raw milk. The article also discusses the dental health of the children brought up on raw milk:

“Dr. Evelyn Sprawson of the London Hospital has recently stated that in certain institutions children who were brought up on raw milk (as opposed to pasteurized milk) had perfect teeth and no decay. The result is so striking and unusual that it will undoubtedly be made the subject of further inquiry [9,10].” Instead, the report has been conveniently forgotten.

Very little research was done after about 1950 on the relative nutrient content of raw versus pasteurized milk. The move toward universal pasteurization was in full swing and interest in raw milk was waning in agricultural colleges increasingly supported by dairy industry and agribusiness funding. One study, however, published in the *Journal of Dairy Research* in 1967, confirms much of the earlier research. The authors were interested in finding ways to preserve more of the vitamin content of milk during processing and they made a number of interesting comments.

“On leaving the udder, milk quickly takes up oxygen from the air,” they wrote. “During subsequent processing and distribution, this dissolved oxygen promotes oxidative changes that degrade several important nutrients in the milk. Thus, though potentially milk could supply an important fraction of the daily dietary requirement for vitamin C, average market milk supplies relatively little. Similarly with vitamin B12, much of which may be destroyed during heat processing. Fresh milk is also in fact a rich source of a form of folic acid. Like vitamin B12 and ascorbic acid, the folic acid in milk is unstable to heating.” How ironic to see these statements in an industry publication some 50 years after pasteurization had been presented by the milk industry as a purely beneficial process that did not substantially alter the nutritional value of milk.

In the second part of her three-part series “Why Milk Pasteurization?” in *The Rural New Yorker* in 1947, Jean Darlington documented the destruction by pasteurization of a number of other nutrients in raw milk, including:

- The “anti-stiffness” factor in raw cream, described in a 1941 *American Journal of Physiology* article by Rosland Wulzun [11].

- The “anti-anemia” factor present in milk from specially fed cows, whose milk was sufficient to prevent anemia in infants, whereas commercially pasteurized milk was insufficient. This was detailed in a bulletin of the Ohio Agricultural Experimental Station [12].

- “Factor X,” described in a report from the chief of the Bureau of Dairy Industry to the U.S. Secretary of Agriculture in 1942 as an “important unidentified growth-promoting material in milk [13].”

- The factors responsible for the germicidal property of raw milk, as described in the 1935 textbook *Fundamentals of Dairy Science* [14].

The published reports Darlington refers to represent only a fraction of the many scientific studies that demonstrated the superior nutritional value of raw versus pasteurized milk. As she points out, the industry has found nothing that challenges these findings. The US Public Health Service and the medical, veterinary, pharmaceutical and processed food establishments have brushed aside this evidence, admitting only to a small loss of vitamin C from pasteurization. Even this is said to be unimportant because other foods provide vitamin C.

Many researchers have reported on the actual effects of raw versus pasteurized milk in both human beings and animals. A study of the growth of Scottish school children was published in *Nutrition Abstracts and Reviews* in 1931 [15]. Children drinking raw milk had a significantly greater increase in height and weight compared to those drinking pasteurized milk. “. . . pasteurized milk was only 66 percent as effective as the raw milk in the case of boys and 91 percent as effective in the case of girls in inducing increases in weight; and 50 percent as effective in boys and 70 percent as effective in girls in bringing about increases in height.” The authors gave the following explanation for the results, referring to another study that had recently appeared in the *Journal of Biological Chemistry*:

“Kramer, Latzke and Shaw obtained less favorable calcium balances in adults with pasteurized milk than with ‘fresh milk’ and made the further observation that milk from cows kept in the barn for five months gave less favorable calcium balances than did ‘fresh milk’ (herd milk from a college dairy) [16].”

To this evidence I will add that for over 25 years I have prescribed raw milk from grassfed animals to hundreds of my patients, with outstanding results and never a problem. Raw milk may be the mainstay of a diet that reverses chronic diseases of every nature.

5. Truth and lies about raw milk

“The health of the people is really the foundation upon which all their happiness and all their powers as a state depend.”

– Benjamin Disraeli, English statesman and social reformer

At the end of World War II, 3.7 million of America’s 5.4 million farms had milk cows. Most still sold raw milk directly to neighbors and through local distribution channels, a situation that would change drastically under relentless official pressure for compulsory pasteurization of all milk. A series of articles in popular magazines in 1944, 1945 and 1946 served to frighten the public into support of these efforts. A side effect of this movement was the demise of America’s small farms.

Ladies’ Home Journal began the campaign with the article “Undulant Fever,” claiming – without any accurate documentation – that tens of thousands of people in the US suffered from fever and illness because of exposure to raw milk [17]. The next year, *Coronet* magazine followed up with “Raw Milk Can Kill You,” by Robert Harris, MD [18]. The outright lies in this article were then repeated in similar articles that appeared in *The Progressive* [19] and *The Reader’s Digest* [20] the following year.

The author of the *Coronet* article represented as fact a town and an epidemic that was entirely fictitious:

“Crossroads, U.S.A., is in one of those states in the Midwest area called the bread basket and milk bowl of America. . . . What happened to Crossroads might happen to your town – to your city – might happen almost anywhere in America.” The author then gives a lurid account of a frightful epidemic of undulant fever allegedly caused by raw milk, an epidemic which “spread rapidly. . . it struck one out of every four persons in Crossroads. Despite the efforts of the two doctors and the State health department, one out of every four patients died.”

But there was no Crossroads, and no epidemic! Author Harris admitted this in a subsequent interview with J. Howard Brown of Johns Hopkins University [21]. The outbreak was fictitious and represented no actual occurrence. Harris' own public statements both before and after the *Coronet* article show that not only was the article a complete fiction, but that he knew that such a thing could not possibly happen. In an article he wrote in 1941, Harris stated: "Mortality in acute cases of undulant fever was formerly about two percent, but this has been greatly lowered by modern methods [22]." In a 1946 paper he read before the Maine Veterinary Medical Association in Portland in 1946, he stated, "The small proportion of deaths from acute illness, varying from two to three percent, rarely higher, can be made almost, if not quite zero [23]."

Official statistics of the US Public Health Service, which compiles such information on a nationwide basis, show the possible extent of any undulant fever problems associated with raw milk in the years prior to the Harris article. In the years from 1923 through 1944, there were recorded in the entire United States 32 outbreaks of undulant fever attributed to milk, with 256 cases and a total of three deaths [24,25]. It is clear that Harris' synthetic epidemic had no counterpart in reality. The claim that "what happened to Crossroads might happen to your town – to your city – might happen almost anywhere in America" was not only completely false but indeed malicious.

These claims and many others like them were repeated in subsequent magazine articles read by tens of millions of people, as well as in countless newspaper articles in the ensuing years. Writing in *The Rural New Yorker* in 1947, Jean Bullitt Darlington made a particularly fine effort to set the record straight with an article titled "Why Milk Pasteurization? Sowing the Seeds of Fear [21]." Darlington exposes the lies and distortions in the magazine articles referred to above.

Present day claims against raw milk are often more subtle but no less vicious. This is best exemplified in the story of Francis Pottenger.

6. Francis Pottenger MD, raw milk and "the hazards of a health fetish"

"Pasteurized homogenized milk? Might as well drink water with chalk in it." – Dan Logue, Dairy Farmer, Woodbury, Connecticut for over 50 years

"People need this milk. They want it real bad. You should hear the stories they tell me." – Anonymous raw dairy farmer in a state that outlaws all sales of raw milk

The impact of quoted work is often influenced by the reputation of the person quoted. But what makes a reputation, in particular that of a person who died many years ago? Certainly in part the accuracy and importance of the written work left behind. But when a person's life and work is ignored by most of society, much less maligned by prestigious segments, reputation suffers. What yardstick may we use then to evaluate the import of the life? We may be left with only our judgment of the work itself. If the work is complex and perhaps not readily available, as is Dr. Pottenger's, making that judgment may be difficult.

Thomas Hotchkiss knew Francis M. Pottenger from the time Thomas was eleven years old in 1912. His "Personal Memoir" of Francis, written after the doctor's death in 1967, is the source for many of the following details about Pottenger's life [26].

6.1 Genius and service

Two years before his death, Francis received the Distinguished Alumnus Award at Otterbein College in Ohio. In presenting the citation, the Chairman of the Board of Trustees praised Francis's distinguished career in medicine and public service.

Service indeed. By the time he received that award, Francis M. Pottenger, MD, had published over fifty peer-reviewed articles in the scientific literature, mainly in the fields of medicine, chronic disease and nutrition. He had served as president of the Los Angeles County Medical Association, the American Therapeutic Society and the American Academy of Applied Nutrition. "Francis was among the first in his profession to recognize the hazard to health caused by air pollution in Los Angeles County," Hotchkiss wrote. "He worked indefatigably over a period of many years to mitigate its deleterious effects upon human health. His efforts were widely recognized and as a result he became a member of the Los Angeles County Air Pollution Control District's Scientific Committee on Air Pollution."

Pottenger received a rather unusual accolade for a medical doctor. In 1951, the Texas State Dental Association honored him with an award for the Advancement of the Science of Dentistry in Texas. He had written a number of brilliant articles on the effect of raw versus cooked foods, including pasteurized milk, on the dental and facial structures of animals and humans. The articles had a powerful and lasting impact on the many American physicians and dentists who were actively interested in the effect of nutrition on human health and disease.

In 1940, Francis founded the Francis M. Pottenger, Jr. Hospital at Monrovia, California for the treatment of asthma and other nontubercular diseases of the respiratory system. And beginning in 1945, he was Assistant Clinical Professor of Experimental Medicine at the University of Southern California.

Dr. Pottenger also served as a volunteer as Medical Service Chief for the Civil Defense Area surrounding his home during World War II. Japanese invasion of the West Coast of America was considered a real threat in the dark days just after the 1941 attack on Pearl Harbor. The project to set up the first portable hospital in Los Angeles County under simulated disaster conditions was directed by Pottenger.

In 1940 he began what became known as the "Pottenger Cat Study," the work that brought him fame. There's no money these days in making famous a man who proves the value of raw foods; in the last forty years or so, Pottenger's fame in the conventional medical and nutritional establishment has faded as surely as the stocks of processed food companies have risen. Yet he remains an icon to those who understand his work and its importance, particularly in relationship to the work of Weston Price. Let's look now at what Pottenger had to say in one of his many professional papers, and an example of how his work

has not only been misunderstood, but indeed sometimes deliberately misrepresented.

6.2 A fetish

For many years, advocates for raw milk have pointed to Pottenger's research as perhaps the most important proof of raw milk's benefits. Those who would outlaw all sales of raw milk have meanwhile disparaged and distorted his work. An example of the latter is found in an article titled "Unpasteurized Milk—The Hazards of a Health Fetish" that appeared in the *Journal of the American Medical Association (JAMA)* on October 19, 1984 [27]. The choice of the word *fetish* is interesting; one meaning of the word is "a thing evoking irrational devotion or respect." Let us see whether Pottenger's respect for unpasteurized milk is indeed irrational.

The *JAMA* authors refer to a 1946 Pottenger article from the *American Journal of Orthodontics and Oral Surgery*, "The Effect of Heat-Processed and Metabolized Vitamin D Milk on the Dentofacial Structures of Experimental Animals [28]." The authors of the "Health Fetish" article state:

"Numerous studies of the relative nutritional merits of raw and pasteurized milk have been conducted in animals and humans, and no differences were detectable. One animal study deserves particular attention because a misrepresentation of the results has become prominent in the raw milk folklore. In 1946, Pottenger published a report about his observations on cats fed varying combinations of raw and heat-treated milk and raw and cooked meat. In his first and largest series of experiments, Pottenger observed many diseases in cats fed raw milk and cooked meat. Raw milk advocates have erroneously cited this article as having reported that disease occurred in cats fed *pasteurized* milk. Smaller experiments in the same article showed that a diet of one-third raw meat and two-thirds milk (pasteurized or not) did not provide adequate nutrition for the cats."

Based on this quote, one might reasonably think that perhaps the diseases Pottenger observed in the first series of experiments were caused by raw milk, and that the smaller experiments showed that raw milk was not superior nutritionally to pasteurized milk. Publication in so prestigious a journal by two medical doctors and two veterinarians lends further weight to the pronouncements.

6.3 The cat study

Let us examine what Pottenger actually had to say in his article.

"In the first series of experiments, one group of cats was fed a diet of two-thirds raw meat, one-third raw milk and cod-liver oil. The second group was fed a diet of two-thirds cooked meat, one-third raw milk, and cod-liver oil. Within the ten-year period, approximately nine hundred cats were studied. The amount of data accumulated is large.

"The cats receiving raw meat and raw milk reproduced in homogeneity from one generation to the next. Abortion was uncommon and the mother cats nursed their young in a normal manner. The cats had good resistance to vermin, infections and parasites. They behaved in a predictable manner. Their organic development was complete and functioned normally.

"Cats receiving the cooked-meat scraps reproduced a heterogeneous strain of kittens, each kitten of the litter being different in skeletal pattern. Abortion in these cats was common, running about 25 per cent in the first generation to about 70 per cent in the second generation. Deliveries were in general difficult, many cats dying in labor. Mortality rates of the kittens were high, frequently due to the failure of the mother to lactate. The kittens were often too frail to nurse."

Based on this quote, one might reasonably conclude that the problems observed were due to differences in the nutrition provided by raw versus cooked meats. We see here how a true statement in the "Health Fetish" article ("Pottenger observed many diseases in cats fed raw milk and cooked meat") may be placed in a context designed to lead the reader into making false conclusions.

The next half-truth is even more subtle: "Smaller experiments in the same article showed that a diet of one-third raw meat and two-thirds milk (pasteurized or not) did not provide adequate nutrition for the cats". Further examination of Pottenger's article is required to understand the subterfuge involved.

Again quoting Pottenger: "We did three other series of feeding experiments. In these series we used the following kinds of milk: raw milk, raw metabolized vitamin D milk, pasteurized milk, evaporated milk, and sweetened condensed milk. Roughly, our results corresponded with those of the previous experiments; animals on raw milk and raw meat reproduced a homogenous strain, the usual causes of natural death being old age or injuries from fighting.

"The male cats fed on [raw] metabolized vitamin D milk (from cattle fed irradiated yeast) and raw meat showed osseous disturbances very like those on pasteurized milk... Young males did not live beyond the second month, and adult males died within ten months... The cats fed pasteurized milk as their principal item of diet, and raw meat as a partial diet, showed lessened reproductive efficiency in the females, and some skeletal changes, while the kittens presented deficiencies in development... Later, we made a comparative study of several types of milk on white rats, the general results of which coincided with those found in the cats."

6.4 Word games

We see that Pottenger's own words describe clearly the superior value of raw versus pasteurized milk for the animals. Yet the "Health Fetish" author's statement, "a diet of one-third raw meat and two-thirds milk (pasteurized or not) did not provide adequate nutrition for the cats" is strictly speaking true, because of the use of the phrase "pasteurized or not." One experiment used raw metabolized vitamin D milk, and like the pasteurized, evaporated, and sweetened condensed milks, this resulted in diseased animals. The metabolized vitamin D (a synthetic form of the vitamin present in the milk because the cows had been fed irradiated yeast) proved to be so toxic that it overrode the benefits of the otherwise optimal all-raw diet that were obtained in the animals fed plain raw milk. Thus one type of milk that was *not* pasteurized had indeed not provided adequate nutrition. Had the "Health Fetish" authors used the phrase "pasteurized or raw," the statement would have been false, because the word

raw would be referring to *both* raw milks tested – the raw metabolized-vitamin-D milk that did not provide adequate nutrition, and the plain raw milk that did. The choice of the word “not” makes the distortion possible without actually making a false statement. Very clever indeed. There is no discussion of the toxicity of the synthetic vitamin D in the “Health Fetish” article, and no mention of the sparkling health seen in generation after generation of cats fed raw meat and raw milk free of synthetic vitamin D.

The “Health Fetish” authors make one other statement that may not be called an untruth, yet is obviously designed to lead one to false conclusions: “Raw milk advocates have erroneously cited this article as having reported that disease occurred in cats fed *pasteurized* milk.” I’ll repeat what Pottenger reported: “The cats fed pasteurized milk as their principal item of diet, and raw meat as a partial diet, showed lessened reproductive efficiency in the females, and some skeletal changes, while the kittens presented deficiencies in development.” Pottenger indeed does not use the word “disease” here or anywhere else in this article in reference to animals fed pasteurized milk (the article is about effects on the dental and facial structures of the animals). Yet his finding of the superiority of raw versus pasteurized milk is clearly presented. In fact, in one experiment described briefly, 13 cats fed pasteurized milk all died within several months.

The “Health Fetish” authors make no mention of a number of other relevant findings published in the Pottenger article. For example, an autopsy photograph shows the internal organs of a cat that had been fed a diet of one-third raw meat and two-thirds pasteurized milk for eight months before being sacrificed. The caption reads, “Note poor tone of skin and inferior quality of fur. Fair heart. Slight fatty atrophy of the liver. Lack of intestinal tone: moderated distension of uterus. Note the disturbance of the skin with a shift from the creamy color of the raw-milk fed cat to the purplish discoloration of congestion.”

In contrast, another photograph shows the internal organs of a cat fed a diet of one-third raw meat and two-thirds raw milk all of its life. The caption reads, “Note excellent condition of fur and creamy yellow subcutaneous tissue with high vascularity. Moderate heart size. Good liver, firm intestines, and resting uterus. Note the muscle of the raw-milk-fed animal has a deeper red color and appears more vascular than that of the animals receiving the heat-processed milks.”

Another experiment began with 13 cats in excellent health that had been raised on raw meat and raw milk. A table is used to show how long these cats lived after being placed on a diet of one-third raw meat and two-thirds pasteurized milk. The average length of life for the males is 4 months 11 days, for the females 3 months 27 days. The calcium to phosphorous ratio of each cat’s femur (thighbone) is shown, and all are abnormal.

Two X-ray photographs depict the results of another experiment that used two rats, one fed raw milk (rat A) and the other pasteurized (rat B). The caption for the raw-milk animal reads, “Note advanced maturity, greater diameter and length of the olecranon process [part of the elbow] of the ulna [the long bone in the foreleg].” The caption for the pasteurized milk animal reads, “Note smaller olecranon process and delayed maturity when compared with rat A.”

Another photograph shows a number of bones from one of the cats, previously healthy, that died four months after being placed on the one-third-raw-meat and two-thirds-pasteurized-milk diet. The caption reads, “Note missing teeth, chalky appearance of bone, squaring of the bases of teeth and marked root resorption. Osteoporosis. Lack of completion of orbital arches [the orbit is the eye socket]. Malar bones [the cheek bones] have become separated at suture lines [where the bones come together].”

An X-ray of the jaw of a living cat fed the raw-meat/raw-milk diet all of its life is presented. The caption reads, “Normal jaw structure, good distribution of trabeculae [part of the bony structure], well developed condyle [a knob at the end of the bone], and well developed pterygoid process [a little outgrowth of bone] of the mandible [jaw bone]. Alveolar crest [the alveolus is the bony socket for the root of a tooth] of normal height; even distribution of teeth.”

6.5 Logically true but misleading

My object here is not to give a lesson in anatomy, but rather to make accessible to the reader some of the details of Pottenger’s findings. In this article he focused primarily on the effects of heat-processed foods, including pasteurized milk, on the bones and jaws of his experimental animals because the article was written for a dental journal. In many other articles published over the course of some fifteen years, he emphasizes the diseases that result in cats and other animals when fed diets that include pasteurized milk.

Another statement by the “Health Fetish” authors deserves further comment: “Numerous studies of the relative nutritional merits of raw and pasteurized milk have been conducted in animals and humans, and no differences were detectable.” This appears to be a simple statement of fact. Since in reality numerous studies of the relative nutritional merits of raw and pasteurized milk conducted in animals and humans *have* shown clearly the nutritional superiority of raw milk, one is tempted to declare the “Health Fetish” statement to be untrue. But in fact it is a true statement! Now how can that be? To answer this question, we must do a little exercise in logic.

Examine these two statements:

1. “Numerous studies of the relative nutritional merits of raw and pasteurized milk have been conducted in animals and humans, and *no* differences were detectable.”
2. “Numerous studies of the relative nutritional merits of raw and pasteurized milk have been conducted in animals and humans, and *vast* differences were detectable.”

It appears that if one statement is true, the other must be false, right? Wrong! *Both* statements may be true – it all depends on what “numerous studies” the writer is referring to, and when he doesn’t tell us, he isn’t pinned down. Even if the writer is aware of numerous studies that favor both sides of the argument, statements 1 and 2 may both be defended as true statements (in a court of law, for example, or in a subsequent article). Understanding this element of logic is necessary when

writers employ logical tricks. Young people who go on to medical school usually study logic as undergraduates.

Notice that although the authors refer to Pottenger's animal study in the very next sentence, they carefully do not say it is one of the "numerous studies" to which they have just referred. We get the impression that it is, of course. But they do not say this, for to do so would be false; as we have seen, Pottenger's study undeniably shows the nutritional superiority of raw milk as compared to pasteurized.

But it is almost as though someone played a game of perverse (dare I say fetishistic?) logic, devising technically true statements which would disguise Pottenger's findings, distort the meaning of his words and trick the reader into false conclusions. I've studied Pottenger's work for over twenty years, and it took me hours to untangle the web I've described.

It is indeed a fact that a number of researchers supported by grants from the dairy industry have published research that claimed to find no significant differences in the relative nutritional merits of raw and pasteurized milk. In other parts of this manuscript I detail reasons to question the validity of research funded by corporate money or conducted by individuals funded by corporations. No references are given for the "numerous studies" mentioned above, so it is not possible to examine them.

The "Health Fetish" authors carefully avoided any simple, straightforward statement to the effect of, "None of the reasonable studies in animals or humans of which we are aware have shown that there is a significant difference in the relative nutritional merits of raw and pasteurized milk." They also avoided words to the effect of "The Pottenger study under discussion showed no significant difference in the relative nutritional merits of raw and pasteurized milk." Either statement would have been patently false, because scores of reasonable studies, obviously including this Pottenger study, and many others available, demonstrate the nutritional superiority of raw versus pasteurized milk.

We've seen that the "Health Fetish" authors used technically (logically) true statements to completely distort Dr. Pottenger's findings. Only careful study of Pottenger's article would allow the choice of precisely the right words to accomplish this while avoiding making false statements. We may hope that the authors gained considerable understanding of Pottenger's work and its implications for the health of people everywhere. Perhaps they may someday use that knowledge in the way Dr. Pottenger intended.

6.6 Raw milk is best

Pottenger concludes his article with possible explanations for his findings, referencing his words to physiology textbooks and articles by other scientists: "What vital elements were destroyed in the heat processing of the foods fed the cats? The precise factors are not known. Ordinary cooking precipitates proteins, rendering them less easily digested. All tissue enzymes are heat labile and would be materially reduced or destroyed. Vitamin C and some members of the B complex are injured by the process of cooking. Minerals are rendered less soluble by altering their physiochemical state. It is possible that the alteration of the physiochemical state of the foods may be

all that is necessary to render them imperfect foods for the maintenance of health. *It is our impression that the denaturing of proteins by heat is one factor responsible.* The principles of growth and development are easily altered by heat and oxidation, which kill living cells at every stage of the life process, from the soil through the plant, and through the animal."

Dr. Pottenger's work leaves us with clear indications that there is no better food than raw milk from grass-fed animals. The clear and present danger is that "experts" such as the health fetish article authors wield unjustified influence with physicians and public health authorities – influence based largely on false representations. Understanding the truth about Pottenger's work and the value of raw milk is an important step in regaining our health.

7. Wealth, power and raw milk

Raw milk sales had been outlawed or severely restricted in virtually every state, and the total number of farms has shrunk to less than 2 million; less than 100,000 have milk cows. Most of those cows spend most of their time in confinement facilities. According to the textbook *Dairy Cattle Science*, "Nearly 40 percent of all dairy cows have some form of mastitis." (Mastitis is inflammation of the mammary glands; these are not healthy cows.)

The story of what's happened to quality milk is same as the story of what's happened to America's farmers. Both have been mostly eliminated, marginalized by a culture that has allowed corporations to promote the big lie that the processing of natural foods has nothing to do with the epidemic of disease that cripples our society. Corporate spokespersons for the food, drug and medical industries have used billions of dollars – a drop in the bucket compared to their profits – to convince most of us that this rape has been carried out for our own good. "Food safety," cry the corporations and their media and government lackeys. Farmers who would sell fresh raw milk and meat raised and slaughtered on the farm would endanger the public. Meanwhile, as Eric Schlosser has so elegantly written of the nation's commercial food supply in *Fast Food Nation*, "There's shit in the meat." The Centers for Disease Control and Prevention (CDC) estimates that over a quarter of all Americans come down with food poisoning each year.

Meanwhile all foods rich in cholesterol are maligned as dangerous. Cholesterol is a red herring. The best foods in the world come from healthy animals. Civilization was built on meat and raw milk. The studies that purport to show that cholesterol in foods is dangerous have been manipulated, misinterpreted and propagandized by the drug industry to dupe doctors and the public into buying billions of dollars worth of dangerous drugs. Every year, corporations and a wealthy few grow richer, while many Americans struggle and many more just get by. Thirty-five million people now live below the government's admittedly low poverty line. We can only guess how many millions would love to have a small family farm if it could support even a modest lifestyle.

It's never been easy for farmers, and the rich getting richer and the poor getting poorer is nothing new. Class lines grew throughout colonial times; by 1700 fifty rich families in Virginia lived off the labor of slaves and servants, owned the plan-

tations, sat on the governor's council, and served as magistrates. In Maryland, the English king had granted total control over the colony to a proprietor who ruled the settlers. In the Carolinas, a constitution was written in the 1600s by John Locke, often considered the philosophical father of the Founding Fathers and the American system. Locke's constitution set up a feudal-type aristocracy, in which eight barons would own 40 percent of the colony's land, and only a baron could be governor. In New York, the Dutch set up a patroonship system along the Hudson River, with enormous landed estates, where the barons controlled completely the lives of their tenants. By 1770, the top one percent of property owners in the Massachusetts colony owned 44 percent of the wealth. "The country therefore was not 'born free' but born slave and free, servant and master, tenant and landlord, poor and rich," as Howard Zinn wrote in *A People's History of the United States*. For all that has changed in the last 200-plus years, in America today, the richest one percent still own thirty percent of the wealth.

What has all this to do with raw milk? Just this: the same repressive, reactionary forces that have concentrated power and wealth into the hands of a few have outlawed raw milk and destroyed the ability of small farms to survive and thrive – and ushered in the epidemic of heart disease, cancer and other chronic problems plaguing the modern world.

Raw milk is the key to the health crisis, the farm crisis, the economic crisis, the small town crisis, even the environmental crisis, the political crisis and the educational crisis. Farmers who could freely advertise and sell raw milk and its products, and fresh quality meats, free of government intervention and hassles, could prosper, and their communities could blossom. The restoration of our individual and national health could become reality.

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