

Milk is not a Superfood

Published 4 September 2023, with Anne Mendelson.

Anne Mendelson's new book *Spoiled* is subtitled *The Myth of Milk as Superfood*, and at its core argues that while there's nothing wrong with fresh milk, at least for those who can digest it as adults, the belief that you cannot have enough of a good thing has created a monstrous industry. How did that get going?

Anne Mendelson: The point at which I see it gaining publicity as a health drink among urban consumers is in England shortly after 1700, when it became possible for celebrity doctors with celebrity patients to become the talk of the town. So the celebrity doctor who I think got the buzz going was George Cheyne. He was one of a kind character. There's a marvellous biography of him titled *Obesity and Depression in the Enlightenment*, and he suffered rather spectacularly from both conditions. During one of his mind and body crises, he was told about a miracle diet that consisted of nothing but milk. And of course, nothing could look purer or milder or more natural than new milk fresh from the cow. It became the cornerstone of the diets that Cheyne devised for patients with nervous complaints. So he became a specialist in "light diets that would soothe and calm the nerves". And the light foods in his diets, well, they would include tender, pale colored new vegetables, maybe a small amount of some pale colored meat like veal, and the miracle cure: milk. And the ideas behind his fad diet kind of faded after a couple of generations where adults were concerned. But by about the start of the 19th century, Cheyne's ideas about nerves and milk and proper diets got picked up by doctors specialising in child care. And there the image of fresh cow's milk as a vital necessity, a superfood for kids, acquired a staying power that has lasted to this day.

Jeremy: How bad was it in big cities? I don't know whether to call it liquid milk or fresh milk because it was dubiously fresh. So what what kind of impact did it have?

Anne: Fresh milk, real fresh milk, unfermented milk for drinking, drinking as a commercial product, it was a terrible fit with any urban consumer base. The big stumbling block was thinking that drinking milk was nutritionally superior to sour milk. For about a hundred years, starting maybe the late 18th century, leading medical experts warned mothers that sour milk was spoiled milk because they didn't know that souring actually offered at least some bacteriological protection against several common pathogens that were inhibited by the increased acidity. And that fact about the extra protection of soured milk wasn't discovered until about 1900. So meanwhile, the belief that unfermented fluid milk, so-called fresh milk, was a miracle food for children, this got started in upper class medical practices and it kind of percolated down to other strata of society starting at about 1800.

The only stratagem for getting milk in a so-called fresh state to an urban clientele on a large commercial scale was setting up what were called swill dairies or slop dairies, using brewery waste or distillery waste. But it was perfectly obvious to city dwellers that the stable conditions killed a lot of cows and the milk killed a lot of children. Mortality rates were highest in the summer months. The hot weather months when thousands of small children, every year they would contract gastrointestinal ailments, loosely called summer complaint, marked by severe vomiting and diarrhoea.

Cities were just starting to compile mortality statistics. But in 1842, a man named Hartley, Robert Milham Hartley, in a remarkable book titled *An Historical, Scientific and Practical Essay on Milk*, asserted that while in European and English cities, child and infant deaths had been declining as a percentage of total mortality since the beginning of the 19th century, deaths of children under the age of five at the same time had been growing by leaps and bounds in several American cities, to the point where in New York and Philadelphia — this is a quotation from Hartley — “More than one half the total deaths occur under the age of five years”. And he laid the blame squarely on filthy milk produced by greedy opportunists to satisfy growing urban demand.

Jeremy: So what was the response? I mean, did people begin to take notice of the fact that disease and infant mortality might be associated with milk? And if so, what were their proposed solutions?

Anne: The earliest proposed solution was to suggest legally closing down swill dairies. But it took a while for this to get any kind of political momentum. Robert Hartley himself, he suggested drawing on new advances in long distance transportation, meaning steamboats and railroads, to get milk from healthy cows on real farms moving from country to city. This helped to a certain degree, but not all that much until the first advances in bacteriology. They started filtering into public awareness maybe after 1860, 1870, and the research of people like Louis Pasteur in France and Robert Koch in Germany helped to energise civic authorities in the United States and large cities to start founding public health bureaucracies that were charged, among other responsibilities with ensuring that the food sold and consumed in the city limits was safe.

Milk was the the biggest problem here. The greatest object of concern. And I have to bring in another complicating factor. Between about 1880 and 1910, there was a steep decline in the number of women nursing their own babies. The reasons are still debated, but paediatrics was just emerging as a specialty with a name of its own. So all these new fledged paediatricians now had the job of not just getting large amounts of cow's milk into young children, but working out formulas for adapting it to be a substitute for breast milk, which has a radically different composition. So this new development ratcheted up the pressure to keep cow's milk from spreading infectious diseases to humans, and two competing approaches emerged in the 1890s. One was to get individual dairy farmers to agree to follow a checklist of rigorous sanitary protocols and submit to periodic inspection of their premises, as well as bacterial counts of their raw milk. The other approach was to apply some kind of heat treatment, much build on Pasteur's experiments with wine and beer.

So the two men who became identified with these two approaches starting in the 1890s were a paediatrician named Henry Leber Coit, who worked out the protocols for certified raw milk and the philanthropist Nathan Straus. He was the part owner of Macy's department store, who started distributing clean milk to the poor at nominal cost in 1893. After a couple of years, he decided that heat treatment, which by now was labeled pasteurisation, was the way to go. And at first pasteurisation had to overcome a lot of resistance, both by the general public and by most paediatricians. It had kind of sleazy associations thanks to some fly-by-night operators who acquired machinery to carry out a very fast, very slipshod method of

heating the milk instead of carefully processing it in batches by a slower, more painstaking methods.

But within 10 or 15 years or so, the economics of the thing were clear. Certified raw milk was much, much more expensive to get from cow to consumer. In effect, it priced itself out of the mainstream market before about 1920. And meanwhile, Nathan Straus made himself into the public face of the pasteurisation movement. He was able to show impressive declines in infant mortality whenever he was able to get pasteurised milk to families. So by the mid nineteen-teens, he had won over most paediatricians, as well as the public health bureaucracies of most major American cities. And the news media reliably switched to his side. And in effect, he had managed to give pasteurisation the honour of a scientific triumph over the bad old days of rampant child mortality.

Jeremy: This idea of declining child mortality, I mean, a lot of campaigning was based on the number of lives that would be saved by pasteurisation. I don't want to get into the back and forth of whether certified clean milk or pasteurised milk is better or worse. But I'm intrigued by your point that those lives wouldn't have needed to be saved if milk hadn't been promoted as this essential superfood.

Anne: Yes. Starting with people like George Cheyne and then continuing when the first precursors of paediatrics decided milk was a superfood for young children, the demand for milk was just sent up into the stratosphere, almost unprecedentedly rapidly, increasingly high demand. If the demand hadn't been kind of unjustifiably (or not too justifiably) jacked up by all this publicity, a lot of people would just not have been feeding their children the milk that killed so many.

Jeremy: Right. But now, that demand, looking at the economics of production, it seems that right from the outset farmers were getting the short end of the stick. I mean, it was the middlemen, if you like, the people to whom the farmers sold, who seemed to be making making the most money out of all this.

Anne: I would point to one huge economic fact of life that has been there from the start. Commercial production of fresh, or fresh in quotation marks, fluid drinking milk can never, never be a seller's market. It will always be a buyer's market. Buyer meaning not the retail customer who makes the final purchase, but the processor or middleman or distributor whom the producer needs absolutely needs

to take this super bulky, super perishable stuff off his hands at the earliest possible moment after it leaves the cows. Fresh milk is not a product the dairy farmer can store. It's a biological secretion that you have to keep freshly harvested every day. A hundred years ago, farmers decanted it into milk cans and put it out by the side of the road for a local dairy to pick up, or they hauled it to the railroad station and left it for the milk train. Today, if the farmer cannot have this ultra fragile, ultra perishable product taken off their hands, they have to dump it. It always has to be moved to make room for the next day's milking. And the next. And tomorrow, and tomorrow and tomorrow. So intrinsically from the start, dairy farmers supplying the mainstream fluid milk market were handicapped in their ability to bargain with distributors.

Jeremy: The fact that the farmer has to get it off his hands to the distributor. Is that why dairy farms got so big? Because basically it was cheaper per pound of milk, as you measure it in America, or per gallon or per litre or whatever, the bigger your operation, the better it was in terms of profitability.

Anne: The first crop of advisors at the United States Department of Agriculture. Well, from the 1890s on, they kept preaching the economy of scale argument. Your production costs will be proportionally reduced by upsizing. But the catch here, catch 22 or catch 20 something, the nature of the product itself always meant that to get bigger and better, you had to invest in bigger and better technology. But at no point did it ever work out to the farmer's advantage. At no point have dairy farmers been able to save production costs through economies of scale enough to call the shots on the prices they receive for their milk.

Jeremy: Yeah, we keep keep reading about smaller farms going out of business and bigger farms getting bigger and bigger. I wonder, is that is that sustainable in any way?

Anne: I think not. In 1910, the ten cow farm was a respectable size, and the experts were saying, Hey, look, you'd get more bang for the buck with 50 cow farm. In 1950, 50 cows was a pretty good size. And the experts were telling the farmers think bigger, think bigger. And today, a 500 cow dairy farm is pretty modest. And the operations that are hailed as the wave of the future, many of them have 30,000, 300,000 or 500,000 cows. It's not sustainable. It's led to relentless

pressure to get more milk out of every cow. That means stressing the animals to the very end of their biological limits. It's led to depletion of local groundwater resources and other environmental problems, like water contamination from farm runoff or methane emissions. In districts close to mega mega dairy farms, the methane pollution can be bad enough to make the air almost unbreathable for nearby residents. I think the mainstream dairy farming enterprise in the US is on the verge of collapsing under its own weight.

Jeremy: The liquid milk supply industry. I mean, the distributors and companies that are responsible for getting it from the farmers to the supermarkets. They've they've changed too. That industry is concentrated in fewer hands and is much more manipulative of the substance itself. I think that was a bit of an eye-opener in your book, that these different kinds of milk that you see in the supermarket chill cabinets. Tell me how that that works out. How do there come to be all these different categories of milk?

Anne: Well in many food industries — milk is far from the only one — the mantra of increasing profits through the 20th century has been continually expanding consumer choices. The more choices you can put before somebody standing there in the supermarket saying, Now what can I buy?, the greater your opportunity to reap profits from one or another of these alternatives.

So milk as it comes from the cow, if you know anything about milk, you know that it can have many kinds of variations, but these natural variations didn't have enough marketing potential to matter to the milk processors. So they came to rely on methods of technologically disassembling and reassembling the milk as it comes to the processing plant, altering the original chemical structure and creating a zillion new variations, each of which has its own sales appeal. So the process begins by centrifuging the milk to separate the cream from the skim part. Then you recombine the cream and the skim milk in different designed proportions.

Now completely skimmed milk, completely nonfat milk is very thin and watery, so it's commonly beefed up with a dose of nonfat dry milk to give it more body. Then there are the other milk gradations with different standardised percentages of milk fat from less than 1% through 1%, 2%, and what is called whole milk, which often, well, most often, is 3.25% milk fat. And in all cases, the skim milk and cream are

recombined by homogenisation, which breaks down the milk fat globules into mini globules, small enough not to separate into a cream layer by gravity, as natural milk does when it's left to stand. And by the time all this is done, any visual evidence of the cream content, meaning the cream line marking the separation of the cream layer from the skim milk layer is obliterated. Another category that I haven't mentioned here is lactose free or lactose reduced milk, also in these different possible milk fat gradations.

So you end up with a choice of man made pigeonholes targeted to consumers who care in different degrees or don't care about, having been told by several generations of nutritionists that whole milk is a ticket to an early grave, you better look for alternatives. Well, since no such thing as genuinely whole milk, meaning unhomogenised whole milk in its original proportions, exists in the mainstream drinking market, I would say that these alternatives are mostly spurious.

Jeremy: So, when you when you buy a carton that is labeled whole milk, yes, it's homogenised, but it's not whole in the sense of as it comes out of the homogeniser, it's been reconstituted in some way.

Anne: Yes. When the cream is separated from the skim milk by centrifuge, the processor then recombines the cream and the skim in different proportions through homogenisation.

Jeremy: Huh? I did not ... I had no idea, I must say, though, I believe the same thing is true of of commodity whole wheat, that the bran is added back in. But I didn't know that was true of milk.

What about plant milks? I mean, I don't really have a problem with the name Milk. I think people should be able to ... You know, this fuss over whether plant milk should be called milks or not. I don't have a strong view on that. But it's a bit like the argument about saving lives. The whole business of needing or wanting plant milks seems to be predicated on this idea that milk is a some kind of superfood, that if you don't eat milk, you won't be well nourished. Do you think there's something to that, that if it hadn't been for real milk creating this belief that milk was an essential superfood, there wouldn't be a market for plant milks.

Anne: Yes, I agree. Nutrition advisers at around 1915 or 1920, they prematurely arrived at the idea that there could be no such thing as too much drinking milk. My own belief is, if you like, if you really like

some form of commercial cows milk or one of the vegetable milks, if you like drinking it, fine. Excellent. I would not demonise cow's milk consumption or plant milk consumption. What I think we really need to correct is the automatic assumption that it's necessary for everybody to always have milk in the house because it's a superfood, that it has to be poured into every child, a quart a day. And also that people who cannot digest it because they can't digest lactose need to buy some product, those dosed with the enzyme lactase, because they'll miss out on vital nutrients if they don't consume it every day. Buying it because you like it is one thing. Buying it because you attribute miracle health properties to it is another. Most of the plant milks are even more highly processed and manipulated than cow's milk. Look at the lists of ingredients, especially the flavoured ones. Overall, the plant milks are for people who think they need some bland white liquid called milk in the refrigerator at all times.

Jeremy: But how much do you think this idea of nutritionists and paediatricians promoting milk, how much of it can we lay at the fact that most of them were able to digest lactose as adults?

Anne: Oh, just about 100%. The research that was done to establish that most human beings cannot digest lactose after they're weaned from their mother's milk, the research was not done until 1965, and it was a great shock to nutrition experts, paediatricians, people who thought they knew something about milk. And it was a great shock to the dairy industry, which always managed to keep up the pressure on mothers to pump so much cows milk into their children because the child would be malnourished otherwise. The dairy industry was able to just carry on business as usual without taking notice of this, even as the research accumulated and it became more and more clear that somewhere between 60 and 70% of the human race is what they call adult lactase nonpersistent, in other words, lactose intolerant.

Jeremy: So, what do you think about the rise of liquid milk consumption in China and elsewhere in Asia?

Anne: It's a perfect example of the delusion being exported from one nation to another. The Chinese agricultural and nutrition authorities have swallowed the belief that you need to drink a lot of milk, that the calcium and other nutrients in cow's milk will make you grow up to be as tall as Americans. It's just a disastrous misconception. And there are Chinese researchers trying to breed

and clone cows that will give milk with no lactose. Now to think of trying to create a cow giving milk that would kill a newborn calf is surreal.

Jeremy: Yeah. We have to really talk about the raw versus pasteurised debate today. I mean, there is an element of kind of religious fervour about both sides. But you've looked in detail, is raw milk the public health threat that many government authorities seem to think it is?

Anne: I think raw milk certainly can be a public health threat. And anybody who argues otherwise doesn't know what they're talking about. But does raw milk always inevitably have to be a public health threat at all times under all conditions? I believe that that is an irrational position. I think that especially nowadays, as methods of testing milk become more sophisticated, more precise, it is increasingly possible to do tests on raw milk that will show ... in which contamination by pathogens will be more easily detected. Now, as to whether raw milk is nutritionally superior to pasteurised milk; I think there's very little evidence to show that.

Jeremy: I've been looking around and you mention in your book there is a kind of a tiny stream of fresh liquid milk that isn't supplied by Big Milk, and it's not necessarily raw milk. So, is there a future for what we might call small milk?

Anne: I think there should be a very bright future. And I would give credit to the raw milk champions for having gotten the idea going that a dairy farmer can actually sell milk directly to a certain clientele on a small scale, obviously without having to depend on the craziness of the mainstream cows milk fluid milk market. Now, the raw milk pioneers have shown that this is possible and there is an increasing number of people who have profited by their example. They can see that there is a real demand, at least in the American public, for milk that is not some featureless stuff produced on a gigantic super humongous scale with no flavor, no real culinary qualities of its own, sold in the supermarket dairy cases the way you would sell gasoline and pump it into the car. There is a market for real contact, direct contact between people who buy milk and the people who produce it. And I think this small market can only keep growing.

Transcripts are possible thanks to the generosity of Eat This Podcast supporters. If you find the transcript useful, please [consider joining them](#).