THE NEW YORKER

THE END OF FOOD

Has a tech entrepreneur come up with a product to replace our meals?

By Lizzie Widdicombe

In December of 2012, three young men were living in a claustrophobic apartment in San Francisco's Tenderloin district, working on a technology startup. They had received a hundred and seventy thousand dollars from the incubator Y Combinator, but their project—a plan to make inexpensive cell-phone towers—had failed. Down to their last seventy thousand dollars, they resolved to keep trying out new software ideas until they ran out of money. But how to make the funds last? Rent was a sunk cost. Since they were working frantically, they already had no social life. As they examined their budget, one big problem remained: food.

They had been living mostly on ramen, corn dogs, and Costco frozen quesadillas—supplemented by Vitamin C tablets, to stave off scurvy—but the grocery bills were still adding up. Rob Rhinehart, one of the entrepreneurs, began to resent the fact that he had to eat at all. "Food was such a large burden," he told me recently. "It was also the time and the hassle. We had a very small kitchen, and no dishwasher." He tried out his own version of "Super Size Me," living on McDonald's dollar meals and five-dollar pizzas from Little Caesars. But after a week, he said, "I felt like I was going to die." Kale was all the rage—and cheap—so next he tried an all-kale diet. But that didn't work, either. "I was starving," he said.

Rhinehart, who is twenty-five, studied electrical engineering at Georgia Tech, and he began to consider food as an engineering problem. "You need amino acids and lipids, not milk itself," he said. "You need carbohydrates, not bread." Fruits and vegetables provide essential vitamins and minerals, but they're "mostly water." He began to think that food was an inefficient way of getting what he needed to survive. "It just seemed like a system that's too complex and too expensive and too fragile," he told me.

What if he went straight to the raw chemical components? He took a break from experimenting with software and studied textbooks on nutritional biochemistry and the

Web sites of the F.D.A., the U.S.D.A., and the Institute of Medicine. Eventually, Rhinehart compiled a list of thirty-five nutrients required for survival. Then, instead of heading to the grocery store, he ordered them off the Internet—mostly in powder or pill form—and poured everything into a blender, with some water. The result, a slurry of chemicals, looked like gooey lemonade. Then, he told me, "I started living on it." Rhinehart called his potion Soylent, which, for most people, evokes the 1973 science-fiction film "Soylent Green," starring Charlton Heston. The movie is set in a dystopian future where, because of overpopulation and pollution, people live on mysterious wafers called Soylent Green. The film ends with the ghastly revelation that Soylent Green is made from human flesh.

Rhinehart's roommates were skeptical. One told me, "It seemed pretty weird." They kept shopping at Costco. After a month, Rhinehart published the results of his experiment in a blog post, titled "How I Stopped Eating Food." The post has a "Eureka!" tone. The chemical potion, Rhinehart reported, was "delicious! I felt like I'd just had the best breakfast of my life." Drinking Soylent was saving him time and money: his food costs had dropped from four hundred and seventy dollars a month to fifty. And physically, he wrote, "I feel like the six million dollar man. My physique has noticeably improved, my skin is clearer, my teeth whiter, my hair thicker and my dandruff gone." He concluded, "I haven't eaten a bite of food in thirty days, and it's changed my life." In a few weeks, his blog post was at the top of Hacker News—a water cooler for the tech industry. Reactions were polarized. "RIP Rob," a comment on Rhinehart's blog read. But other people asked for his formula, which, in the spirit of the "open source" movement, he posted online.

One of Silicon Valley's cultural exports in the past ten years has been the concept of "lifehacking": devising tricks to streamline the obligations of daily life, thereby freeing yourself up for whatever you'd rather be doing. Rhinehart's "future food" seemed a clever work-around. Lifehackers everywhere began to test it out, and then to make their own versions. Soon commenters on Reddit were sparring about the appropriate dose of calcium-magnesium powder. After three months, Rhinehart said, he realized that his mixture had the makings of a company: "It provided more value to my life than any app." He and his roommates put aside their software ideas, and got into the synthetic-food business.

To attract funding, Rhinehart and his roommates turned to the Internet: they set up a crowd-funding campaign in which people could receive a week's supply of manufactured Soylent for sixty-five dollars. They started with a fund-raising goal of a hundred thousand dollars, which they hoped to raise in a month. But when they opened up to donations, Rhinehart says, "we got that in two hours." Last week, the first thirty thousand units of commercially made Soylent were shipped out to customers across America. In addition to the crowd-funding money, its production was financed by Silicon Valley venture capitalists, including Y Combinator and the blue-chip investment firm Andreessen Horowitz, which contributed a million dollars.

Soylent has been heralded by the press as "the end of food," which is a somewhat bleak prospect. It conjures up visions of a world devoid of pizza parlors and taco stands—our kitchens stocked with beige powder instead of banana bread, our spaghetti nights and ice-cream socials replaced by evenings sipping sludge. But, Rhinehart says, that's not exactly his vision. "Most of people's meals are forgotten," he told me. He imagines that, in the future, "we'll see a separation between our meals for utility and function, and our meals for experience and socialization." Soylent isn't coming for our Sunday potlucks. It's coming for our frozen quesadillas.

Last month, not long before the first batch of Soylent was shipped, I visited Rhinehart and his team at their new headquarters, a large house in the Studio City neighborhood of Los Angeles. (They moved from San Francisco six months ago, in search of cheaper rents.) Rhinehart met me at the door, dressed in jeans, a black V-necked T-shirt, and black tennis shoes. He was healthy-looking, which was encouraging—for the past year and a half, he's been living almost exclusively on Soylent, drinking it for "ninety per cent" of his meals.

Rhinehart can seem like a young missionary: he has sharp features, a gentle voice, and an upright, stiff gait. Though he is a millennial, he has a slightly ageless quality—which makes sense, since Soylent upends many of the behavioral trends of the generation that invented the lunch shared on Instagram. Topics such as pop culture and gossip don't come up much with him, and he seems unmoved by consumer culture in any form: I spent one long afternoon sitting in on a "journal club" meeting, where he and some friends asked one another questions like "Do you think microfluidics might have applications outside diagnostics?" But he has a bone-dry sense of humor. On his blog, he writes comedy sketches pitching imaginary inventions. (Genetically modified kittens: "The future is meow.")

Before driving to the Soylent headquarters, I had stopped at an expensive California juice bar, and I was carrying a nine-dollar cold-pressed juice, served in a glass milk bottle. Rhinehart examined the drink as if it were a flint arrowhead. "It's kind of archaic," he said, and pointed out that it was mostly sugar. "Look at the design. It's meant to be rustic and natural and comfortable. . . . In fact, it's pretty bad for you."

The notion that we can nourish ourselves with something purer and more effective than food has long been part of our collective fantasy life. The ancient Greeks wrote about ambrosia, the food of the gods, which conferred immortality on whoever consumed it. The dawn of the space age had people dreaming about "meal pills": in Ray Bradbury's "The Martian Chronicles," a character keeps several weeks' worth of food pills in a matchbox; on "The Jetsons," food pills produce delicious taste sensations but can cause indigestion. Rhinehart says that, in fact, he took the name Soylent from the science-fiction novel that inspired "Soylent Green"—"Make Room! Make Room!" (1966), in which a combination of soybeans and lentils becomes a solution to the depredations of overpopulation. Food dreams can easily turn into nightmares: there's Willy Wonka's disastrous three-course-dinner chewing gum, and, in "The Matrix," humans are grown synthetically, in pods, where they are fed the liquefied remains of other humans, pumped in through umbilical cords.

Today, technological advances have created a new wave of anxiety about our edible present, and a growing nostalgia for a time before corporate food lobbies, genetically modified vegetables, industrial farming, and the weed killer Roundup. Soylent's birthplace, in San Francisco, is across the bay from Alice Waters's Chez Panisse, the seasonal mecca that has come to define bourgeois eating in this country. California's farm-to-table restaurants serve diners ingredients out of fashion since our days as Bronze Age farmers. (I briefly considered buying a millet salad to go with my juice.)

But the farm-to-table ethos has essentially bypassed the working class, which is left, instead, to live with the fallout of the low-cost food industry—obesity, diabetes, and, ironically, malnutrition. A recent U.N. report warned that climate change is threatening the global food supply, and that its impact will worsen in ways that aren't confined to the poor. (The restaurant chain Chipotle recently announced that, owing to climate change, it may have to phase out guacamole.) Tim Gore, the head of food policy and climate change for Oxfam, has noted, "The main way that most people will experience

climate change is through the impact on food: the food they eat, the price they pay for it, and the availability and choice that they have." And food is a major part of the problem: livestock cause almost fifteen per cent of all greenhouse-gas emissions. In California, which is suffering from its worst drought in a generation, about eighty per cent of all water goes toward agriculture.

Rhinehart is not a fan of farms, which he refers to as "very inefficient factories." He believes that farming should become more industrialized, not less. "It's really the labor that gets me," he said. "Agriculture's one of the most dangerous and dirty jobs out there, and it's traditionally done by the underclass. There's so much walking and manual labor, counting and measuring. Surely it should be automated."

Rhinehart took me on a tour of the Soylent headquarters, which doubles as the men's living space and resembles the slightly dated home of a drug kingpin on "Miami Vice": shiny black floors, white sectional couches, immense windows, and a back-yard pool. But the huge bags of white powder being measured on scales in the basement were full not of cocaine but of nutrients—protein, potassium—and xanthan gum (a thickener). The kitchen was bare, except for a blender. Rhinehart opened the fridge and announced, "The college-student fridge of the future." It contained Miller Lite, condiments, and a pitcher of Soylent. I noticed a bag of baby carrots: food! Rhinehart, who refers to food that is not Soylent as "recreational food," explained that one of his roommates had bought them as a fun snack.

Rhinehart removed the Soylent. In the formula that he and his teammates have settled on, the major food groups are all accounted for: the lipids come from canola oil; the carbohydrates from maltodextrin and oat flour; and the protein from rice. To that, they've added fish oil (for omega-3s; vegans can substitute flaxseed oil), and doses of various vitamins and minerals: magnesium, calcium, electrolytes. Rhinehart is reluctant to associate Soylent with any flavor, so for now it just contains a small amount of sucralose, to mask the taste of the vitamins. That seems to fit his belief that Soylent should be a utility. "I think the best technology is the one that disappears," he said. "Water doesn't have a lot of taste or flavor, and it's the world's most popular beverage." He hoisted the pitcher of yellowish-beige liquid. "Everything your body needs," he said. "Do you want to try some?"

People tend to find the taste of Soylent to be familiar: the predominant sensation is one of doughiness. The liquid is smooth but grainy in your mouth, and it has a yeasty, comforting blandness about it. I've heard tasters compare it to Cream of Wheat, and "my grandpa's Metamucil." I slurped a bit, and had the not unpleasant sensation that I was taking sips from a bowl of watered-down pancake batter. Not bad. I slurped a little more—and then, all of a sudden, had to stop. I felt way too full. "How much did I just drink?" Rhinehart studied the glass. "A hundred and fifty or two hundred calories," he said. "About the equivalent of a granola bar."

Rhinehart's bedroom is sparsely decorated, except for books on science and techno-utopianism: Steven Pinker, Isaac Asimov, R. Buckminster Fuller, the futurist and creator of the geodesic dome, whom Rhinehart admires for combining wild creativity with pragmatism. (He refers to him by his nickname, Bucky.) He pointed to a poster on the wall, showing the metabolic pathways in the human body. "This is life—a walking chemical reaction," he said. "Bucky thinks of the body as a hydroelectric machine." Politically, Rhinehart said, he's a "fallen libertarian." He believes in maximizing freedom, but he hates the waste of capitalism. "Things are worthless," he told me. In an effort to optimize the dressing process, he alternates between two pairs of jeans, and orders nylon or polyester T-shirts from Amazon, wearing them for a few weeks before donating them. When the clothes get smelly, he puts them in the freezer, to get rid of the odor. "Sometimes, during the day, a couple of hours will do it," he told me. "I'll wear a towel."

In what used to be the master bedroom, the rest of the Soylent team were working on laptops. They resembled a nerdy boy band: Matt Cauble has a surfer look; Dave Renteln, a onetime president of the Harvard rugby team, has big muscles; John Coogan is lanky and sweet; Julio Miles wears a Civil War-era beard. Like Rhinehart, the young men were all thriving examples of the Soylent life style. Renteln had lost some graduate-school weight ("I was experimenting with calorie restriction," he said), and Coogan said that he'd experienced "healthy weight gain" since he started living on Soylent. He's six feet eight and, back in the ramen days, found it hard to consume enough calories.

"I think we look handsome," Rhinehart said.

I asked if they really planned to call their product Soylent—which, in my unofficial field research, had evoked, at best, unpleasant associations with "soy" and "soil," and, at worst, alarmed recitations of the movie catchphrase "Soylent Green is people!"

"Everybody has suggested changing the name," Rhinehart said. "Investors, media people, my mom."

"My mom, too," Renteln said.

Rhinehart said that he liked the self-deprecating nature of the name, and the way it poked fun at foodie sensibilities: "The general ethos of natural, fresh, organic, bright—this is the opposite."

Anyway, he said, a lot of young people never got the memo about Soylent Green's being people. "If you Google 'Soylent,' we're in front of the movie." He added, "Remember, Starbucks was the guy from 'Moby-Dick.' "

Liquid food has been given to patients in hospital settings for decades. Fifty years ago, when a patient was too sick to eat, doctors ground up regular food and put it into feeding tubes. Eventually, companies like Abbott Nutrition, the maker of Ensure, got into the game. Food replacements became more standardized and scientific. In the early nineteen-sixties, NASA made powdered drinks famous by using Tang in its space flights; according to Bruce Bistrian, the chief of clinical nutrition at Beth Israel Deaconess Medical Center, in Boston, "the whole field exploded." From the sixties to the nineties, liquid meal replacements became popular with the diet crowd, because they made it easy to quantify how many calories you consume. It was the era of Metrecal, Slimfast, and "a shake for breakfast, a shake for lunch, then a sensible dinner!" Today, aspiring bodybuilders drink Muscle Milk, a protein shake designed to add brawn. Bistrian, noting that the idea behind Soylent is "not rocket science," said, "Any good nutritionist could put these ingredients in the proper amounts and make such a formula."

Perhaps the main difference between Soylent and drinks like Ensure and Muscle Milk lies in the marketing: the product—and the balance of nutrients—is aimed at cubicle workers craving efficiency rather than at men in the gym or the elderly. From the perspective of its investors, this strategy might be sufficient for success. Sam Altman, of

Y Combinator, mentioned Google and Facebook, and pointed out that search engines and social networks existed before both were created. "Most ideas, you can claim, are not new," he said. "Often, they just haven't been executed or marketed right." Rhinehart tends to emphasize something else about his product: the idea that you could live on Soylent alone. Chris Running, a former C.E.O. of Muscle Milk, and an adviser to Soylent, called this suggestion "riskier." He told me, "I don't think it's a position that people have ever taken before."

The doctors I spoke to agreed that you *could* subsist on Soylent. But would it be a good idea? The debate, for the most part, revolves around substances found in real food, especially phytochemicals, which come from plants. Such compounds are not known to be essential for survival, but, in epidemiological studies, they appear to provide important health benefits. Lycopene, which makes tomatoes red, has been linked to lower rates of prostate cancer; flavonoid compounds, which make blueberries blue (and can be found in chocolate), have been associated with lower rates of diabetes. The science behind how our bodies use these chemicals isn't precisely understood. But Walter Willett, the chair of the nutrition department at the Harvard School of Public Health, said that it would be unwise to miss out on them. "It's a little bit presumptuous to think that we actually know everything that goes into an optimally healthy diet," he told me. You can live without plant chemicals. "But you may not live maximally, and you may not have optimal function. We're concerned about much more than just surviving."

Rhinehart, naturally, is doubtful about this line of thinking. "How many humans in history were even getting broccoli and tomatoes?" he asked. As part of his research into Soylent's formula, he told me, he considered adding some phytochemicals, but after reading dozens of inconclusive and contradictory studies, he said, it didn't seem like an efficient use of resources.

The Silicon Valley disrupter pose can seem contrived, but Rhinehart comes by it honestly: before he could blow up diet dogma, he had to shake off organized religion. He grew up in suburban Atlanta, with four older sisters. His father was a stockbroker at Merrill Lynch, and his mother stayed at home. His parents are both devout Christians, and, until he was eighteen, Rhinehart was, too. The trouble started in science class, at his small high school, Whitefield Academy. Rhinehart, who built

computers in his spare time, had grown interested in astrophysics. Like everything at his school, science was taught according to creationist principles, which hold that the world is less than ten thousand years old. Rhinehart decided to write his senior thesis proving creationism from a scientific point of view. He began delving into Dawkins and Hitchens, and searching the Internet; he thought that he'd write, "'I've been through this quest and found all this evidence for Christianity and now I don't doubt anymore.' But the opposite happened." His paper, titled "Bad Religion," was about "why I was no longer a Christian, why I no longer believed in God." He got an F on it. And he was "ostracized" from the community, he says. His parents now accept that he holds different views. "They compartmentalize," Rhinehart said.

Rhinehart's background makes it easier to understand some of his guilelessness, as well as his devotion to evidence-based thinking. Organic-food nuts remind him of himself as a believer. "Everyone's like, 'The natural, organic way is the best.' And it sounded a lot like fundamentalist Christianity," he told me. When I asked how his loss of faith had changed him, he said, "I guess after that I've always been a skeptic."

It was a hot day, and we were on the highway, a water bottle full of Soylent between us. Rhinehart had invited me to accompany him on a trip to El Segundo, to meet another food technologist: Ethan Brown, the C.E.O. of Beyond Meat, a company that uses the protein found in peas and soy to make chicken and beef substitutes. Brown had stationed a food truck outside a Whole Foods, where he was giving away tacos. The food truck had a party atmosphere: soul music played from speakers, and venders called out, "Free tacos!" Whole Foods shoppers stopped to stare. The truck had a sign on it: "REAL MEAT. 100% Plant Based Protein." Rhinehart was wearing jeans, his black V-necked T-shirt, and a thin leather jacket. He put his bottle of Soylent in a messenger bag and we joined Brown, the aspiring fake-meat magnate.

Brown is a tall man in his forties, and he wore gym shorts and a baseball cap. He and Rhinehart traded tips about protein separation, and then Brown grabbed a taco and tore open a piece of "chicken." The white substance was remarkably meatlike: it tasted slightly fatty, and the texture resembled muscle fibre. "See how this pulls?" Brown said. "This is really what sets us apart."

Why go to so much trouble to make it meaty? Brown explained that the main challenge with food tech is cultural. "People have been eating meat for two million

years," he said. "They're hardwired to love meat, and they love the trappings of meat—Thanksgiving, Christmas, ballgames." The food truck was there to show that plant-based chicken and beef could be part of an all-American life style.

I asked Rhinehart if he had ever considered sponsoring a food truck. He seemed not to understand the question. "We thought about doing Soylent drone delivery," he said, dreamily. "Where you just hit a button on your phone and a drone comes and drops a bottle of Soylent, and you refuel."

A Whole Foods shopper, a middle-aged woman, stopped by to try a taco. Brown made his pitch. "You can enjoy everything you enjoy beef with," he said.

She seemed receptive. "How's it packaged?" she asked.

Rhinehart hung back a bit. He still had the Soylent in his messenger bag, but he didn't seem ready to make a pitch. Finally, a bearded man in a sleeveless shirt and a camouflage hunting hat approached the taco truck. His name was Perry Gillotti. He tried the taco that Brown offered him, and announced, after a minute of chewing, "It tastes good!"

Rhinehart joined the conversation. Timidly, he asked Gillotti if he'd like to try some Soylent.

"Soylent?"

"It's a meal replacement," Brown said.

"It's a little different from a meal replacement," Rhinehart corrected him. "It's kind of an over-all food substitute. In theory, you could live on this entirely. In fact, you'd be pretty healthy."

Gillotti raised his eyebrows. "You could jettison me into space, and I could live on this stuff?"

"That's the plan," Rhinehart said. Adopting a slightly strained pitchman's voice, he presented the water bottle. "It's cheap, it's easy. . . . You just add water; you don't even

need a blender." He poured some into a plastic cup, and Gillotti tasted it. He seemed surprised.

"It's pleasant; it's not too gritty."

"What do you do?" Rhinehart asked. Gillotti said that he was a construction worker in El Segundo. On the weekends, he paints nature scenes.

"Yeah," Rhinehart said. "So you could have this during the day while you're working."

Gillotti pulled out an iPhone in a camouflage case and made a note. "I'm going to pick some of this up," he said. He added that he was especially interested in Soylent because he's a "prepper"—he keeps a six-month food and water supply at home, in case of apocalyptic disaster. Rhinehart seemed pleased. He held up the bottle of Soylent: "Under ideal storage conditions, this could last much longer."

As I followed Rhinehart around, I started to worry about a possible flaw in his business proposal: how does he expect to make money from Soylent, when his formula is posted on the Internet? It's difficult to imagine Coca-Cola doing that. But Alexis Ohanian, a founder of the Web site Reddit and an investor in Soylent, described it as "the most brilliant marketing strategy ever, even though they didn't think of it that way." The legions of people tinkering with their own Soylent formulas at home—called D.I.Y.ers—have become a fan base, improving the product and spreading awareness of it. "That's the dream," Ohanian said. Rhinehart has a more philosophical take: "If someone else figures out a better way to make it, that's still a win for humanity."

Given the enthusiasm for D.I.Y. Soylent, I knew that at some point I was going to have to make it myself. Manufactured Soylent arrives in powder form: a day's supply comes in a plastic pouch containing fifteen hundred calories of beige dust. The oil, which amounts to about five hundred calories, comes in a separate bottle. The packaging is space age, with minimalist black-and-white lettering, reminiscent of Paul Mitchell shampoo. Two accessories are included: a metal scoop and a plastic pitcher with an airtight lid. To prepare your meal, you scoop powder into the pitcher, add water, oil, and (optionally) ice, and shake it up. Instructions on the pouch advise, unsentimentally, "Immediately dispose of any Soylent that you suspect to be rancid."

D.I.Y. Soylent is a little more daunting. I enjoy cooking, but, as Rhinehart says, "We're not making pie here." You can't throw in a dash of iron or potassium and hope it works out. (In the early days, Rhinehart experimented with underdosing and overdosing on nutrients. Too little sodium made him feel "foggy." Overdosing on magnesium "was probably the worst. I just felt sharp pains throughout my entire body and couldn't really move.") I logged on to DIY.Soylent.me, a Web site created by Nick Poulden, a computer programmer in the Bay Area. To get started, you plug your height, weight, age, and activity level into the site and pick a nutrient profile based on various official and unofficial recommendations—"Fat Guy in his 30s," for example.

Then you assemble a recipe. If manufactured Soylent is a one-size-fits-all approach to nutrition, the D.I.Y. version is picky-eater heaven. On the Web site, I scrolled through more than fourteen hundred variations on Rhinehart's recipe, a cornucopia of dietary tastes, allergies, hangups, and obsessions: Soccer Soylent, Cuckoo for CocoCocoa Soy Hemp, Cinnamon Manly Food Bar, Scrawny White Boy Mix, Eggman's Sizzurp, Almonds and Hemp, Super Food, the Gorilla, Brian's Brain Booster, Canadian People Chow, Food?, Standing Desk Diet, Soylent in Paris. Finally, I decided to go with Bachelorette Chow, a masa-based recipe that I chose because of its popularity—it's a derivative of Bachelor Chow, one of the best-known recipes—and because it features chocolate. Accounting for my nutritional profile ("Female Sedentary"), I ended up with a target of fifteen hundred and thirty-one calories a day.

Nutrients are "like a puzzle," Rhinehart told me. "You can put the pieces together in many ways." A useful function of the D.I.Y. Web site is that it does the math for you. Once you know your nutritional needs, you can find many different ways to meet them. If you enter an ingredient—for example, twenty grams of chia seeds—the Web site fills in its nutrition profile. Then it shows you how close you are to meeting your daily requirements—calories, carbohydrates, protein, fibre, unsaturated fats, and vitamins—so that you can tweak your recipe accordingly. My ingredients included whey protein, oat flour, pre-cooked masa, soybean oil, brown sugar, and iodized salt. Weirder stuff came in the form of powdered minerals and vitamins—choline bitartrate, potassium gluconate—which I ordered from the Web site iHerb.com. I bought the cocoa powder at my local grocery store, and, like many people, I decided to take a daily multivitamin instead of grinding it into my formula.

It was time to "cook." One night, at dinnertime, I measured my powders and oil, dumped them into a blender, and added water. The Bachelorette Chow turned out to be a thick, brown liquid that tasted and smelled overwhelmingly chocolaty, and just a bit sour. It was sippable—colleagues described it as "crappy brownie mix" and "Carnation Instant Breakfast"—but the idea of living on it was nauseating.

I was relieved when factory-made Soylent arrived in the mail. It was basically Rhinehart's formula, which I'd tasted in L.A.: a thick, tan liquid that is yeasty, grainy, and faintly sweet. Compared with the taste of my chocolate version, regular Soylent was pleasant. (Office taste-test results: "Naked protein shakes that are made of husks"; "One step better than what you drink before getting a colonoscopy.")

I lived on the mixture, more or less, for a three-day weekend. Many of the tips I'd heard proved true. Soylent tastes better when it's been in the fridge overnight. (A D.I.Y. user told me that this is "because the ingredients have been able to congeal.") It's more appealing after physical activity—when you're hungry, you find that you actually crave it. The smell is a downside. On Friday, after a few hours, the doughy fragrance seemed to be everywhere—in my mouth, on my breath, my fingers, and my face. And the stomach takes a while to adjust to liquid food: by the afternoon, I felt like a walking water balloon.

Living on Soylent has its benefits, though. As Rhinehart puts it, you "cruise" through the day. If you're in a groove at your computer, and feel a hunger pang, you don't have to stop for lunch. Your energy levels stay consistent: "There's no afternoon crash, no post-burrito coma." Afternoons can be just as productive as mornings.

But that is Soylent's downside, too. You begin to realize how much of your day revolves around food. Meals provide punctuation to our lives: we're constantly recovering from them, anticipating them, riding the emotional ups and downs of a good or a bad sandwich. With a bottle of Soylent on your desk, time stretches before you, featureless and a little sad. On Saturday, I woke up and sipped a glass of Soylent. What to do? Breakfast wasn't an issue. Neither was lunch. I had work to do, but I didn't want to do it, so I went out for coffee. On the way there, I passed my neighborhood bagel place, where I saw someone ordering my usual breakfast: a bagel with butter. I watched with envy. I wasn't hungry, and I knew that I was better off than the bagel eater: the Soylent was cheaper, and it had provided me with fewer empty calories and much better

nutrition. Buttered bagels aren't even that great; I shouldn't be eating them. But Soylent makes you realize how many daily indulgences we allow ourselves in the name of sustenance.

Rhinehart spends a lot of time in Soylent discussion forums, discovering how people have tweaked his formula. He told me that he relishes criticism, as long as it's evidence-based, rather than "emotional": "Putting a lot of eyeballs on the problem is only going to help." In L.A., after our stop at the taco truck, I accompanied him to meet some D.I.Y.ers: a group of students in Ricketts House, a dorm at Caltech, who he'd heard were subsisting on Soylent.

It was the end of the day, and neither Rhinehart nor I had eaten any solid food all day, except for the fake-chicken taco. But we didn't feel hungry: we'd been taking sips from the bottle of Soylent in Rhinehart's messenger bag. We pulled up at Caltech in early evening and were met by Rachel Galimidi, a Ph.D. candidate in biology, who is the resident adviser for Ricketts dorm. Galimidi said that the dorm is home to "a lot of very busy engineering and physics students" who "don't have time to do anything"—including eat. (The students who live there are called Skurves, a pun on "scurvy.") Since Rhinehart's formula was posted online, Galimidi said, the Skurves had talked of nothing else.

Rhinehart and I followed Galimidi into a Spanish-style courtyard, where music was blasting; there were bikes in a heap, and a student asleep on a couch, recovering from an all-nighter. In a dining area, most Skurves were laying out dishes and getting ready for dinner. Nearby, about ten students sat around a table surrounded by laptops and problem sets, ignoring the dinnertime commotion: Soylent drinkers. Several of them clutched water bottles filled with beige goo.

The students recognized Rhinehart, who seemed to be getting used to his nerd-celebrity status. They raved about his invention. "It fills you up for five hours," Alex, a computer-science major, said. "It's good for studying."

They'd been experimenting with D.I.Y. Soylent since the beginning of the semester. "It's a serious iterative process," a student named Eugene said. "I bought a fifty-pound bag of corn flour on the first day and was, like, now I can't back out."

Nick, a math major, said that if you were a non-Soylent drinker it was hard to live in Ricketts. "I remember we'd go and hang out and people'd just be talking about their recipes," he told us.

Each had his own signature formula. Erin, a mechanical-engineering major, is known for her green Soylent. (She uses spinach: "I was having a hard time fitting in three different nutrients. I looked up what spinach had, and was, like, Oh my God, this fits perfectly!") Eugene is allergic to soy, so he uses a non-soy variant of Bachelor Chow. Alex likes to eat his Soylent as a porridge. His recipe is "pretty normal," he said. "Maltodextrine, oat flour, olive oil." Rhinehart nodded with approval.

I wondered if their parents were bothered by the fact that their children were living on synthetic food. Erin said, "I think about how shitty I eat when I'm not eating Soylent. There've been weeks when I've eaten nothing but cheesy pasta."

I asked the Skurves if there had been any social repercussions from their use of Soylent. They looked at one another. Erin said, "So the first week can be pretty bad, because you fart pretty bad."

"It's a big issue," JohnO, a computer-science major, said.

Eugene added, "There was, like, a week when I stopped going to class."

(In my experimentation with the Soylent life style, I found this to be a major issue, too.)

The problem was worse, Rhinehart noted, when he first posted the Soylent formula online: he overestimated the amount of sulfur. For weeks, he and his acolytes emitted clouds of sulfurous gas. "I cleared out a jazz theatre once," he recalled, nostalgically.

After a week or so, the students said, their bodies adjusted, and the problem subsided. Rhinehart said that they'd also removed the extra sulfur from the formula. "Upon further review, we found we were getting enough sulfur from the amino acids," he said. "It was a bug. But we fixed it."

During the next two months, Soylent plans to ship its product to all of its twenty-five thousand initial backers. The company has ten thousand dollars in new

orders coming in every day, and has started to become profitable. U.S. military and space programs have asked to run trials on Soylent. Rhinehart's real goal, however, is more ambitious: the company has been testing an omega-3 oil that comes from algae instead of from fish oil. Eventually, Rhinehart hopes, he will figure out how to source all of Soylent's ingredients that way—carbohydrates, protein, lipids. "Then we won't need farms" to make Soylent, he said. Better yet, he added, would be to design a Soylent-producing "superorganism": a single strain of alga that pumps out Soylent all day. Then we won't need factories.

Rhinehart brought up Buckminster Fuller again: "Bucky has a very important idea of ephemeralization, which is something almost as a ghost—as pure energy or information." Soylent-producing algae would make food a little like that: there would be no more wars over farmland, much less resource competition. To help a village full of malnourished people, "you could just drop in a shipping container" full of Soylent-producing algae. "It would take in the sun's energy and water and air, and produce food." Mankind's oldest problem would be solved. Then, he added, all we'd have to do is fix the world's housing problem, "and people could be free."

The Soylent dream is a strange one: a place where our food-related hopes mingle with our nightmares. If you spend enough time with Rhinehart, though, it can start to take hold. Perhaps its appeal depends on how you feel about the dreamer.

At Ricketts, Rhinehart asked the students if there were any more questions. Nick asked, "How do you feel about the fact that, after a lot of people eat Soylent, Soylent *becomes* people?"

Rhinehart smiled. "It's pretty awesome," he said. "I think about this a lot, actually." He held out his arms, displaying his healthy torso. "I've been on it for a year now, and pretty much everything you see is built out of Soylent." ♦

Lizzie Widdicombe is an editor of The Talk of the Town. *Read more »*