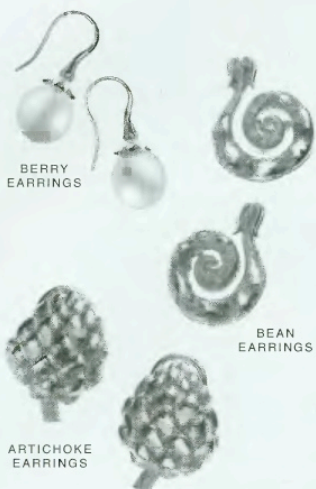


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ANNALS OF EPIDEMIOLOGY

JAKE LEG

How the blues diagnosed a medical mystery.

BY DAN BAUM

Dr. John Morgan, a professor at the City University of New York Medical School, likes to call himself a pharmaco-ethnomusicologist. His first love is early-American vernacular music, and his apartment, on the Upper West Side, is stacked with ancient records. Some years back, Morgan was listening to the Allen Brothers' "Jake Walk Blues," released in 1930. In a kazoo-backed Tennessee twang, the brothers sang, "I can't eat, I can't talk, drinking mean jake, Lord, I can't walk."

The lyrics pinballed through Morgan's memory and lit up twice. First was a lecture he'd heard in medical school, in 1961: a professor had mentioned a strange paralysis called "jake walk" that he had observed during his residency in Cincinnati in the thirties. Next was a face from Morgan's childhood in Ohio, that of a legless beggar called Nigger John. Nigger John had had the "jake leg," Morgan recalled his mother telling him. She had said it in a way that discouraged further inquiry.

Stout and bearded, Morgan, who is sixty-three, delicately set the arm of a turntable on a thick, spinning record, and after a moment's hiss we heard what sounded like pure despair. "Ishmon Bracey, one of the Mississippi greats," Morgan whispered. From seven decades back, Bracey wailed, "Jake leg, jake leg, what in the world you trying to do? Seems like everybody in the city's messed up on account of drinking you."

Morgan has collected a number of songs about the jake leg or the jake walk. "From them we learn that some new kind of paralysis appeared in 1930," he said. "No songs mention it before then." He began bending back blunt fingers. "The paralysis was brought on by drinking something called 'jake.' It afflicted enough souls to instigate an entire subset of folk music. Blacks and whites were affected. It rendered men impotent. And it was no longer inspiring musicians by 1934, which meant it was a cataclysmic but dis-

crete event." He sat back and spread his hands. "Behold the study, through folk music, of a substance-induced epidemic," he said. "Pharmaco-ethnomusicology."

Morgan has been researching the jake leg on and off for twenty-seven years. He has put together a CD collection of seventeen tunes mentioning it, including one by Gene Autry, and he has written half a dozen medical-journal articles on the subject. In the nineteen-seventies, he interviewed a number of the epidemic's surviving victims and collected his data, a teeming bazaar of anecdote and chemistry, in a huge manuscript that has been gathering dust for years. He also has a filthy carton full of clippings. With a little prodding, he agreed to turn all the material over to me. "I'm not giving up on the story myself," he said. "I just don't mind someone else telling it, too."

As far as we know, the outbreak was first detected in Oklahoma City, by Ephraim Goldfain, a thirty-four-year-old physician who had emigrated from Romania as a child and had put himself through medical school by operating a streetcar. He was bookishly handsome, with swept-back red hair, a cleft chin, and round horn-rimmed glasses. With a few partners, he ran a thirty-five-bed clinic called the Reconstruction Hospital. On February 27, 1930, a man whose name is lost to history staggered in off the street. The patient's feet dangled like a marionette's, so that walking involved swinging them forward and slapping them onto the floor. He told Goldfain that he had strained himself lifting an automobile, and a couple of days later his calves had begun to tingle. Then his legs went useless below the knee. He wasn't in any pain, he said, but he could barely get around.

Sudden paralysis in those days usually meant polio, but to Goldfain, who recounted the patient's history in a medical journal, this didn't look like polio. He didn't pay much attention to the story

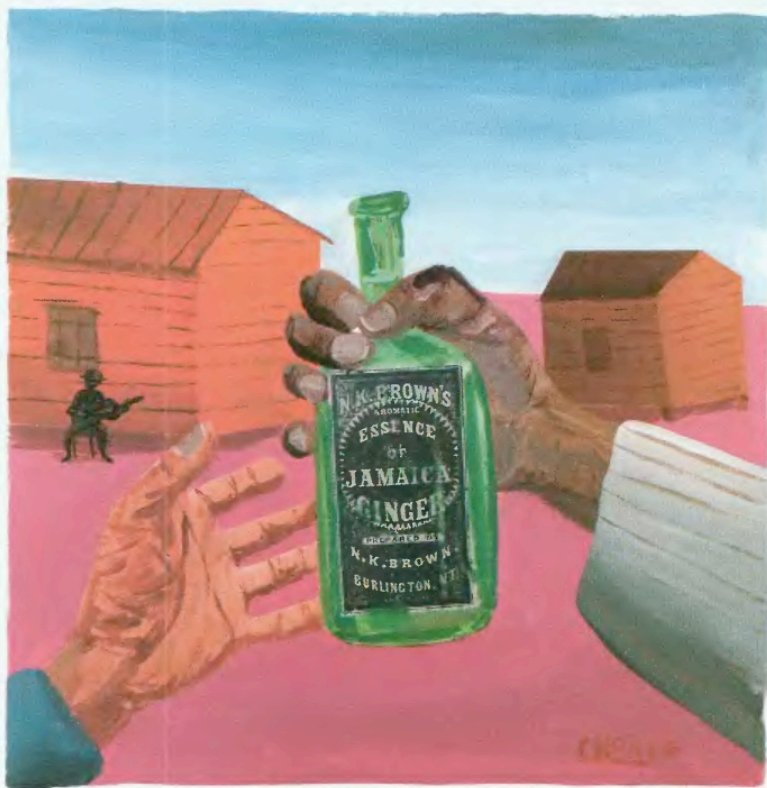
about lifting the car. Goldfain thought the man's symptoms suggested lead poisoning. He ordered blood and spinal-fluid tests. They came back negative.

Later that day, another man appeared, exhibiting the same bizarre palsy. And then another. By the end of the day, Goldfain's clinic had admitted five patients with the distinctive paralysis. One

other visits. The men's feet dangled, their legs hung dead below the knee. Some could get around on crutches, some couldn't make their legs move at all, some could use neither their legs nor their hands. Goldfain knew at once that this was no contagion. No children were sick, and hardly any women. The men Goldfain saw all lived in a seedy part of town known

in Worcester, Massachusetts. Five hundred practically overnight in Wichita. Six hundred and ninety in Topeka. A thousand in Mississippi. The mystery plague smote Johnson City, Tennessee, particularly hard. "A great many of the victims for the first three or four weeks were ashamed to come on the streets, but they finally came out," a Johnson City victim wrote in a letter to the Surgeon General's office. "You can go on the streets of Johnson City now, and in the run of a day, you can count three or four hundred people in the same condition that I am in."

In New England, as in the South, the typical victim was an alcoholic man living alone in a cheap rented room, unemployed or holding a menial job. Many were veterans of the Great War. A pair of Cincinnati doctors examined a hundred and seventeen victims and found their median age to be forty-seven; almost all of them were earning less than forty dollars a week. "A fair proportion led lonesome lives," the doctors wrote. "Indeed, it would be difficult to imagine anyone having less contact with the people about them than some of these patients."



Paralysis victims initially felt "foot-floppy," and walked with a rubber-legged gait.

of them, a podiatrist, claimed he had caught the illness from his own patients, and handed Goldfain a list of the ones who had gone foot-floppy in the past few days. The list had sixty-five names.

Oklahoma in 1930 was a hard-luck place. Thanks to price-killing oversupplies of wheat and cotton, its people had gotten a head start on the Depression. The same day that Goldfain saw his five patients, the American Hospital Association criticized Oklahoma City's medical preparedness, noting that it had fewer hospital beds per capita than any other city of its size. Now it was struggling with what looked like a full-blown epidemic.

In one frenetic day, Goldfain visited thirty men on the podiatrist's list, and in the succeeding weeks followed up with

for bootlegging. They struck him as being ashamed of their illness. He had only to look at them, and the grimy scratch houses they lived in, to know they were stew-burns, boozegobs, hooch histers, drunks.

Within a few days, in various locales in the East, the South, and the Midwest, men began folding up. Some found that they couldn't climb out of bed in the morning. Those who could still walk all had the same rubber-legged gait; one doctor in a Rhode Island hospital flooded with victims said that the men walked as if they were passing through "a field of wet grass." In Providence, a seventy-year-old hobo was stricken at 11 A.M. at the corner of Friendship and Plain Streets; he sat down and couldn't get up. The numbers were frightening: fifty-five cases

The economics of Prohibition, then in its eleventh year, painted a bull's-eye on the urban and small-town poor. City swells could buy bonded liquor from Canada; backwoods hillbillies often had access to stills. Low-income townfolk drank what they could get—rubbing alcohol, hair oil, Sterno, doctored antifreeze. What many of them preferred, though, was jake.

Jake was Jamaica ginger extract, one of the hundreds of dubious but harmless patent medicines that Americans had been relying on for a century. A pale-orange concoction packaged in a two-ounce glass bottle, it was supposed to treat catarrh, flatulence, and "late menstruation." Because it was as much as eighty-five-percent alcohol, it packed the kick of four jiggers of Scotch. And it was legal. Patent medicines had been providing an end run around temperance laws since Maine became the first state to go dry, in 1851. A bottle costing thirty-five cents was available in many pharmacies, groceries, and even dime stores. Preachers and schoolmarms could slip the flat, clear-glass bottle into a pocket for a discreet nip at home. Common rummies, though, often took a bottle into the store's back room, which many jake sellers kept as

low-rent speakeasies. There they could mix the jake with Coca-Cola and have their own furtive little party.

The Pure Food and Drug Act of 1906 had purified neither. It required only honest labelling. If a patent medicine contained alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, the label had to say so. Furthermore, if the medicine was listed in a compendium of drug standards such as the United States Pharmacopeia (U.S.P.), the medicine had to meet those standards and the bottle could carry the U.S.P. label. Jake, as a "fluid extract," fell under the U.S.P. requirement of four-per-cent solids (in this case, ginger) in a solution of alcohol and water. In 1919, the Volstead Act turned every state dry, but it banned only beverage liquor; jake and other alcoholic medicines remained legal. When the mysterious outbreak of paralysis occurred, eleven years later, there was no reason initially to suspect that jake had any role.

The first person to record a connection between jake and the paralysis may have been Ishmon Bracey, the black blues singer who cut "Jake Liquor Blues" in Grafton, Wisconsin, in March of 1930, only weeks after Goldfain saw his first case. Bracey was one of half a dozen Mississippi bluesmen—Son House, Willie Brown, and Charley Patton among them—whom Paramount Records had invited to Grafton that spring to make "race" records. (This was only ten years after the first black blues hit was recorded—Mamie Smith's "Crazy Blues," on Okeh Records—and Paramount had heard from furniture-store owners, who sold record-players, that they could move more stock if there were more black blues records available.) In addition to Bracey, Tommy Johnson, who had made a name for himself in 1928 by recording "Canned Heat Blues," about drinking Sterno, cut his "Alcohol and Jake Blues" at Grafton. He was, according to his biographer, David Evans, a hopeless alcoholic who in a drunken stupor became convinced that he had signed away his rights ever to record music again. Johnson's brother recalled for Evans, "See, when Tom get broke, he would sell anything to get a drink of whisky or a drink

of alcorub or anything that'd bring on drunk. He'd take this old black Three-in-One shoe polish and strain it through a powder muff. It would be just as clear as water." Though he lived and performed for another twenty-six years, after the Grafton session Johnson never recorded another song. Daddy Stovepipe, a singer who liked to perform in formal attire, and his wife, Mississippi Sarah, also apparently recorded a jake-leg song, though John Morgan has never found it.

Morgan believes that no other incident has inspired as much popular music as the jake-walk epidemic. Generally, one song comes out of a disaster, maybe two. "There is nothing to equal the jake walk," he told me. As a pharmaco-ethnomusicologist, Morgan pays particular attention to the portrayal of intoxicants. "Alcohol songs, like heroin songs, tend to be negative and warning, and the jake songs fit that pattern. Marijuana songs are almost always funny."

Newspaper writers came up with nicknames for the ailment: jake leg, jake walk, jakeitus, jakeralysis, gingerfoot. "The worst has happened," a one-paragraph story in the *Topeka Daily Capitol* said. "Emporia, the Athens of Kansas, has 'jake leg.'" In the country as a whole, as many as a hundred thousand people were affected, many ending up in the poorhouses, county farms, veterans' homes, and pogeys that constituted the social safety net in those days.

Right behind the stories of outbreaks came reports of miracle cures: "galvanic current," sodium thiosulfate (a cure for "heavy-metal" poisoning), and baths in cider vinegar. An Oklahoma City man said he recovered from the jake leg by being "bumped around on a long trip by automobile." An Alabama jake-legger told his doctor that corn whiskey was the "specific treatment" for his condition. A Texas woman told a judge that her doctor had recommended beer. Dr. Robert Kidd, of Columbus, Ohio, treated a hundred and twenty-five jake-leg cases by removing forty cc.'s of spinal fluid from each patient and replacing it with a product called Lille's horse serum. Aside from "terrific anaphylactic reaction," rise in temperature, severe headache, backache, nausea, and vomiting that required Adrenalin and morphine to combat, everything



went swimmingly. O. B. Van Fossen, a chemist at the Golden Rule oil refinery, in Wichita, looked out his window one day to see a dozen jake-leg victims bathing in the slush ponds of warm petroleum refuse and mud. The lime and sulfur of the slurry, they'd been told, might do them good.

Some victims, for whatever reason, did recover varying degrees of mobility; for others, the paralysis was permanent. John Morgan tracked down some severe jake-leg victims in 1977. By then, the muscle floppiness they'd experienced in the nineteen-thirties had evolved into a spastic rigidity, but they were still crippled. Autopsies of jake-leggers who died from other causes showed damage to the central nervous system, including the spinal cord's anterior horn cells—the same that go bad in cases of polio and amyotrophic lateral sclerosis (A.L.S., or Lou Gehrig's disease). But the spinal column's pyramidal tract cells also suffered from the jake, which gradually led to spasms and rigidity. Higher brain functions weren't affected, a team of University of Oklahoma researchers concluded, although their methodology raises questions. They dosed a chicken with enough jake to make its legs go limp and noted, "The expression in the eyes seemed to indicate that the mind was not impaired."

Once jake was established as the vector, there was no escaping the awkward truth that the victims had brought the affliction upon themselves. "God is hanging out a red flag as a danger sign to those who violate His law," thundered a Johnson City Baptist minister. Shame was an additional burden on the sufferers; the jake leg's distinctive limp betrayed everybody. Fear of disgrace made it hard for doctors to get a patient history. A paralyzed operator of a Georgia mill, for example, vigorously denied drinking jake until his doctor tricked him by offering a prescription that he said might help but could kill any patient who'd been drinking ginger extract. The patient declined the prescription.

Not all victims were poor or alcoholic. In the nineteen-seventies, Morgan interviewed "James Thomas," a highly respected white retiree who had served on the boards of several Tennessee banks. When he was seventeen, Thomas and his brother and some friends had bought some jake in Johnson City at a roadside store run by a man named Will Kite and

his daughter. Two weeks later, Thomas, who drove a truck for an oil company, noticed that something was wrong. He suddenly found it hard to depress the brake and clutch pedals. He began working indoors, but noticed that his hands were weak as well; soon he couldn't walk. "After months in bed," Morgan recalled, "he was able to struggle to his feet and walk with crutches, and began working on his parents' farm. He would hold tightly to the plow handles and drag his feet behind the horse, who initially supplied most of the locomotive power. His hands returned to normal, a process that took years, and he became a retail grocer. He never walked without crutches again."

According to another Johnson City resident, the Kites denied that their Jamaica ginger extract had caused the illness. "They pointed out that the bottles were all labelled 'United States Pharmacopeia 70% alco,'" Morgan explained. "Because it was labelled so and carried a governmental certificate, it couldn't be the cause of the illness, they argued. They backed up their beliefs by openly consuming the jake in the store. The Kites continued to operate the store for a time. This was accomplished with difficulty, because they both had to crawl on hands and knees from the back rooms of the store to the counter to wait on customers."

None of the contemporary news or medical accounts mentioned what appears to have been the disease's most embarrassing consequence. "It's the doggonest disease ever heard of since I been born," Bracey sang. "You get numb in front of your body, you can't carry any lovin' on." In the jake songs, "limber leg" or "limber trouble" seems to have been the bluesmen's code for impotence. "Mama cried out and said, 'Oh Lord, there's nothin' in the world poor daddy can do, 'cause he done drank so much jake, oh Lord, that he got the limber leg, too,'" moaned Willie Lofton. Bracey was the most explicit: "Aunt Jane, she came runnin' and screamin', tellin' everybody in the neighborhood, 'That man of mine got the limber trouble, and his lovin' can't do me any good.'"

Every song by a black singer mentions the limber leg. "If it hadn't made men impotent, there might not have been any music at all," Morgan said. In 1976, he tracked down a sixty-nine-year-old jake-leg victim named Gwin Davis. When the epidemic began, Davis had been a mill-



"We're a traditional gay couple—we don't have kids."

worker living in a boarding house in Elizabethton, Tennessee. He'd bought his jake at a roadside stand that also sold ice cream, sandwiches, and moonshine. He and all but one of the eight or nine other young men at the boarding house went limp at the same time. Initially, they made a game of it. "We thought it was fun, in a way. Slap our feet and fall down, this and that," Davis said. "We didn't know we was going to get to where we couldn't walk at all. Yeah, finally got to where we couldn't walk at all." When Morgan asked him if he'd ever thought of marrying, Davis looked at his feet and wept.

It is impossible to determine how many black people suffered from the jake leg; they weren't welcome at many hospitals, where they might have been counted. Only whites gathered statistics on the epidemic, and, again, the research methods were often questionable. The researchers at the University of Oklahoma asserted that they had not found "a single case of a Negro being affected" in their region, but they seem to have doubted their own observations. (Oklahoma was ten per cent black.) To see if African-Americans enjoyed a natural immunity to the jake leg, the researchers devised yet another experiment with chickens, this time dosing black and white chickens with known

paralytic ginger extract. Secure in the belief that black feathers in chickens were the genetic equivalent of African heritage in humans, they watched the black and white chickens fall ill indiscriminately and concluded that "color plays no part." An Ohio doctor noted that ten per cent of the cases he saw were Negroes, and felt compelled to report that, among the remainder, seventy-five per cent were "brunettes." The songs of Ishmon Bracey, Willie Lofton, and Tommy Johnson remain the best confirmation that the jake leg hit black communities hard.

The jake-leg epidemic broke out during the last golden moments of the Republican Elysium, before the full effect of the crash set in, when the country was feverishly denying how poor it was getting. Government was small, regulations were skimpy, enforcement was an afterthought, and mass product-liability suits were yet to be pioneered. The federal budget was less than four billion dollars, and the biggest items were defense spending and veterans' benefits. Drug standards were policed, to the limited extent allowed, by the Agriculture Department's tiny Bureau of Chemistry, which in 1927 changed its name to the Food, Drug, and Insecticide Administration. Its annual budget was little more

than a million dollars, a pittance even then. The very idea that the federal government should play a role in fighting the jake leg was controversial.

In any case, the government had no Centers for Disease Control from which to dispatch regiments of epidemiologists. As jake leg whipped across the land, plenty of theories circulated: that a batch of jake had been contaminated with lead, arsenic, nicotine, creosote, or carbolic acid; that an unscrupulous bootlegger had used toxic wood alcohol or petroleum alcohol instead of grain alcohol; that the jake-leggers suffered from "lathyrism, which results from the eating of certain species of beans"; that gatherers of wild ginger on the island of "Santo Domingo" in "Central America" had accidentally harvested a poisonous root called "deringue." One old jake victim in Elizabethton, Tennessee, told Morgan that, because the biggest local employer at the time of the outbreak was a German-owned rayon factory, a lot of people thought that the Germans were poisoning the jake

to soften up America for another war.

The only public-health watchdog was the federal Hygienic Laboratory, a miserably underfunded outgrowth of the Ellis Island clinic, which had been established in 1887 to screen immigrants. It was in the process of changing its name to the grander National Institute of Health, but it had a budget of less than a million dollars, and a staff of only twelve doctors. One of them was a bespectacled forty-two-year-old Russian immigrant named Maurice Isadore Smith, who, like Ephraim Goldfain, had come to the United States as a child and worked his way through medical school to become a pharmacologist. In early 1930, he decided that he needed to get his hands on a sample of poisoned jake.

It wasn't easy. As word of the epidemic spread, storekeepers, fearful of being prosecuted, removed jake from their shelves. Consumers smashed their bottles to keep family members from getting poisoned. More than once, Smith's investigators had to recover bottles from

cesspools and outhouse pits. They found their first sample in Findlay, Ohio, and rushed it back to Washington, where testing on animals revealed something odd. Though poisoned jake killed rabbits and paralyzed calves, it was relatively harmless to monkeys and dogs, animals commonly used to test for toxicity in humans.

Looming in the background of Smith's investigation was the Treasury Department's Bureau of Prohibition, which had jurisdiction over any incident involving alcohol and a budget roughly nine times that of either the F.D.I.A. or the N.I.H. It also had badges and tommy guns. Some health officials held the dry agents in contempt as power-hungry, moralistic cops. "It will do us no good to be identified with the Prohibition Unit," one F.D.I.A. official wrote his boss, reasoning that it would "hinder our work in the future if manufacturers think we are snoopers for the Prohibition outfit." But the Prohibition Bureau had the resources and labs for analyzing alcohol. Its chemists quickly identified a surprising chem-

{ *Leave no stone unturned. You might be surprised how many*



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ical in the suspect jake: tri-ortho-cresyl phosphate, or TOCP, a plasticizer formulated to keep synthetic materials from becoming brittle. Two companies made it: Eastman Kodak and the Celluloid Corporation of Newark, New Jersey, which used it for lacquers, resins, and rubber compounds. TOCP was not considered toxic.

Why would anyone add plasticizer to jake? The most persuasive theory was put forward by several investigators and chemists. From the start of Prohibition, the Treasury Department had sought to tackle the problem of people getting too much pleasure from patent-medicine tipping by ordering that the solids in fluid extracts be doubled. In the case of jake, this transformed a tasty pale-orange liqueur into a black syrup so bitter it could be endured only if heavily diluted.

To enforce compliance, government agents sometimes pulled jake off shelves, boiled off the alcohol, and weighed the solids. Agents didn't thoroughly test the solids, though, and this provided an opportunity for the clever chemists of a

multimillion-dollar industry devoted to subverting Prohibition. Bootleggers were already stripping methyl alcohol out of denatured "industrial" alcohol to make it drinkable and distilling potable hooch from aftershaves and perfumes. What they needed was a way to boost the solids in jake enough to satisfy the T-men without spoiling the taste.

They tried molasses and various herbs, but what worked best, at least until 1930, was castor oil. It had a higher boiling point than alcohol and so stayed behind, to be weighed with the ginger, when the alcohol was gone. Its drawback was its tendency to rise to the top of a bottle, tipping off the buyer that something other than ginger and alcohol lurked inside. The plasticizer TOCP solved that.

After testing Smith's samples, Prohibition Bureau chemists described TOCP in a letter to the Food, Drug, and Insecticide Administration as "a tasteless, odorless substance, viscous in character, soluble in alcohol, insoluble in water" which "behaves very much like oleoresin of gin-

ger." It was cheap, perhaps even cheaper than castor oil, and certainly cheaper than ginger. And the textbooks said it was safe. As Smith had seen, even if the bootleggers had scrupulously tried TOCP on dogs and monkeys—the most expensive and human-like of test animals—it would have seemed harmless. "Only a chemist of some ability could have thought of [using TOCP]," Smith wrote in the October, 1930, issue of the journal *Public Health Reports*. "And had there been anything known about the pharmacologic action of this substance and the possible dire consequences, it is probable that it would never have been used and the disaster would never have happened."

Some newspaper editorials blamed the epidemic on Prohibition's arcane rules—a view that was expressed more eloquently when the Mississippi Sheiks, a black string band, recorded "Jake Leg Blues," in June of 1930. "You thought the lively man would die when you made the country dry, when you made it so that he could not get not another drop of rye," the Sheiks

opportunities crawl out. }



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sang. "Well, I know that you will feel bad when you see what he has had . . . He's got those jake limber-leg blues."

The poisoned jake samples eventually led investigators to Harry Gross and Max Reisman, two Boston brothers-in-law who had undertaken various shady ventures together during the nineteen-twenties. They traded a big country house back and forth, and Reisman ran it briefly as a resort called Breezy Meadows. They dabbled in penny-ante food jobbing, handling canned goods, jams, and extracts. But they never used the same business name for very long, and constantly rearranged ownership of their enterprises in a complicated shell game, no doubt to conceal their dealings at the fringes of the illegal-liquor business. Gross wangled a valuable Prohibition Bureau permit in 1921 to handle various types of alcohol, but the Bureau revoked it two years later. Reisman was indicted at one point for shipping five gallons of pear extract to an Indian reservation, in violation of a federal law banning alcohol on reservations. By 1926, the Prohibition Bureau had the brothers-in-law pegged as likely bootleggers. A surveillance memo from the jake investigation describes "several well-dressed men of the bootlegger type . . . loafing about" their office, and one can almost see the fedoras and spats.

In 1927, police found a still on the grounds of the country house. Somehow, though, no one was arrested. In 1928, Gross and Reisman rented the third and fourth floors of a building at 65 Fulton Street in Boston, renamed themselves Hub Products, installed Goldie Sprinsky, a sister-in-law, as their secretary, and threw themselves into full-time production of Jamaica ginger extract. They shipped the jake around the country in big barrels, which they filled at night and labelled "liquid medicine in bulk." The brothers-in-law apparently cut corners from the start; now and then, customers would complain that the jake they received from Hub didn't conform to U.S.P. standards, and Gross would type firm, businesslike answers defending his product.

Like a lot of good bootleggers, Gross and Reisman were shade-tree chemists, and in the summer of 1929 they decided to supplement the castor oil in their jake with something cheaper and better. They ordered barrels of dibutyl phthalate, a plas-

IN THE READING ROOM

Alone in the library room, even when others
Are there in the room, alone, except for themselves:
There is the illusion of peace; the air in the room

Is stilled; there are reading lights on the tables,
Looking as if they're reading, looking as if
They're studying the text, and understanding,

Shedding light on what the words are saying;
But under their steady imbecile gaze the page
Is blank, patiently waiting not to be blank.

The page is blank until the mind that reads
Crosses the black river, seeking the Queen
Of the Underworld, Persephone, where she sits

By the side of the one who brought her there from Enna,
Hades the mute, the deaf, king of the dead letter;
She is clothed in the beautiful garment of our thousand

Misunderstandings of the sacred text.

—David Ferry

ticizer like TOCP, and three solvents: fusel oil, butyl Carbitol, and Cellosolve. All were clear, oily liquids with high boiling points. But the brothers-in-law wisely rejected all three; they're lethal. Instead, they asked one of their chemical suppliers, Martin Swanson, for some ethylene glycol, another odorless, oily chemical that was common in antifreeze and nontoxic to most people. Alas, the ethylene glycol boiled off too quickly. A few days later, Gross called Swanson and asked him to find something less volatile. Swanson was puzzled; volatility was not an issue when ethylene glycol was used as intended. Swanson sent Gross some diethylene glycol, which is similar but has a higher boiling point. That didn't please Gross, either. "Well, I don't know what on earth you are doing with this stuff and how you are handling it," Swanson told Gross. Apparently, Gross was mimicking the boiling trial that federal agents would use if they tested his jake, and was finding that diethylene glycol evaporated with the alcohol instead of staying behind with the ginger. That was lucky for jake hounds everywhere: it was as deadly as the other chemicals. Swanson told Gross that the only thing he had that was less volatile was Lindol, the Celluloid Corporation's

trade name for tri-ortho-cresyl phosphate.

Gross and Reisman twice asked Swanson if Lindol was toxic, and asked him to write Celluloid to make sure. On January 18, 1930, Swanson received confirmation from Celluloid that Lindol was harmless, and he told Gross. Hub bought a hundred and thirty-five gallons of it, enough to adulterate six hundred and forty thousand bottles of jake. Gross would load each shipment onto the elevator, take it alone to the fourth floor, and send down the empty barrels.

Somebody working for Gross and Reisman may have had second thoughts. On March 1st, a man identifying himself as an employee of the Dolan Drug Company, which was a shell operated by Gross and Reisman, called the warehouse that was storing the jake and said, "Those sixteen drums of ginger which you have stored in my name are poison. I don't want them." If an employee was having pangs of conscience, Gross and Reisman were not. On March 15th and 19th—more than a week after the first stories about the jake epidemic hit the papers and two weeks after the call from the Dolan Drug Company—Gross and Reisman shipped two last barrels of jake.

The F.D.I.A. and Prohibition cops found plenty of distributors who could finger Hub as the source of their bad jake. In December, Gross and Reisman were indicted by a federal grand jury.

Because Gross and Reisman had paralyzed tens of thousands of people, everybody involved in the prosecution wanted to hit them with Prohibition charges, which carried jail time, instead of merely the administrative fines that would likely be levied by the F.D.I.A. But patent medicines came under the jurisdiction of the Prohibition Bureau only if they were used as "beverages" rather than as medicine, a legal distinction almost impossible to prove, especially since jake labels often carried a warning: "This preparation must not be used for beverage purposes under penalty of law." Gross and Reisman eventually pleaded guilty to violating the Prohibition laws as well as the Pure Food and Drug Act. The hitch was that they insisted they were only middlemen. If the judge went easy on them and put them on probation, they would turn over the much more important criminal. The judge complied.

In reality, Gross and Reisman were the ones who not only had made the jake but had ignored early news reports indicating that their product was responsible for the outbreak of paralysis. They also neglected to mention, during plea bargaining, the two barrels shipped in March. When those showed up in Los Angeles the following year and paralyzed another two hundred people, the judge revoked Gross's probation. In April, 1932, he began serving a two-year prison sentence. Reisman never did time.

A few people tried to sue the distributors who sold them the bad jake, but nobody went after the one entity with deep pockets: the Celluloid Corporation. In May of 1931, some Oklahomans organized the United Victims of Jamaica Ginger Paralysis, which claimed to speak for thirty-five thousand stricken people across the country. Unfortunately, the Federal Rules of Civil Procedure, which effectively enabled class-action lawsuits, were seven years in the future, and product-liability law was in its infancy. "To have brought such suits would have been almost unthinkable," according to Andrew Popper, a torts professor at the Washington College of Law at American University. "They'd have thrown you

in bad-lawyer jail." All the victims could do, really, was petition government officials for relief. There wasn't much hope. When United Victims first formed, Oklahoma's governor, William (Alfalfa Bill) Murray, declared, "There are three kinds of people I haven't much use for. One is the man with 'jakeitis,' another is the investor on the stock exchange, and the other I won't mention." The victims persisted anyway. "I have a wife and two children dependent on me, and we have been kicked and cuffed about without any home just very little to eat ever since I got crippled," a thirty-year-old man named Joe Gordon wrote to his senator in a spidery hand from Hot Springs, Arkansas, in 1933. "And I'll tell the world Life looks almost hopeless for me and my little family, and God knows we have struggled so hard to Live since this awful injustice." Congress was lobbied for years, but it never passed a bill for victims' relief.

"The jake-leg story is almost completely about class," John Morgan says. "If someone had poisoned the Canadian source of bonded Scotch, something would have been done. But these men were mostly migrants. They came to the city, leaving their women, to get work. They were seen as poor, sloppy drunks." And so the jake-leg tragedy dropped down the national amnesia hole. With its unwelcome implications about Prohibition and poverty, and its falling thirty years before the era of class-action lawsuits, the epidemic would have probably remained forgotten but for the efforts of the Allen Brothers, Ishmon Bracey, Tommy Johnson, the Mississippi Sheiks, Willie Lofton, and Daddy Stovepipe and Mississippi Sarah.

Even Ephraim Goldfain, the first doctor to treat the illness, took little apparent pride in his role. He went on to make a name for himself locally, pioneering the use of gold in arthritis therapy. He was also celebrated in Oklahoma for a rheumatism serum he mixed himself, hand-blowing the glass vials that held the doses and fashioning, instead of the usual teardrop top, whimsical animal-head stoppers. With his granddaughter Suellen in the passenger seat, he would drive among the tiny farm communities surrounding Oklahoma City, injecting his patients. He died in 1983. Suellen Singer still enjoys telling family stories about him, but she says she knows nothing about the jake leg. He never mentioned it. ♦

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