

Exploding The Phone

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Title Captain Crunch: Super Phone Phreak

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Abstract History of John Draper and phone phreaking.

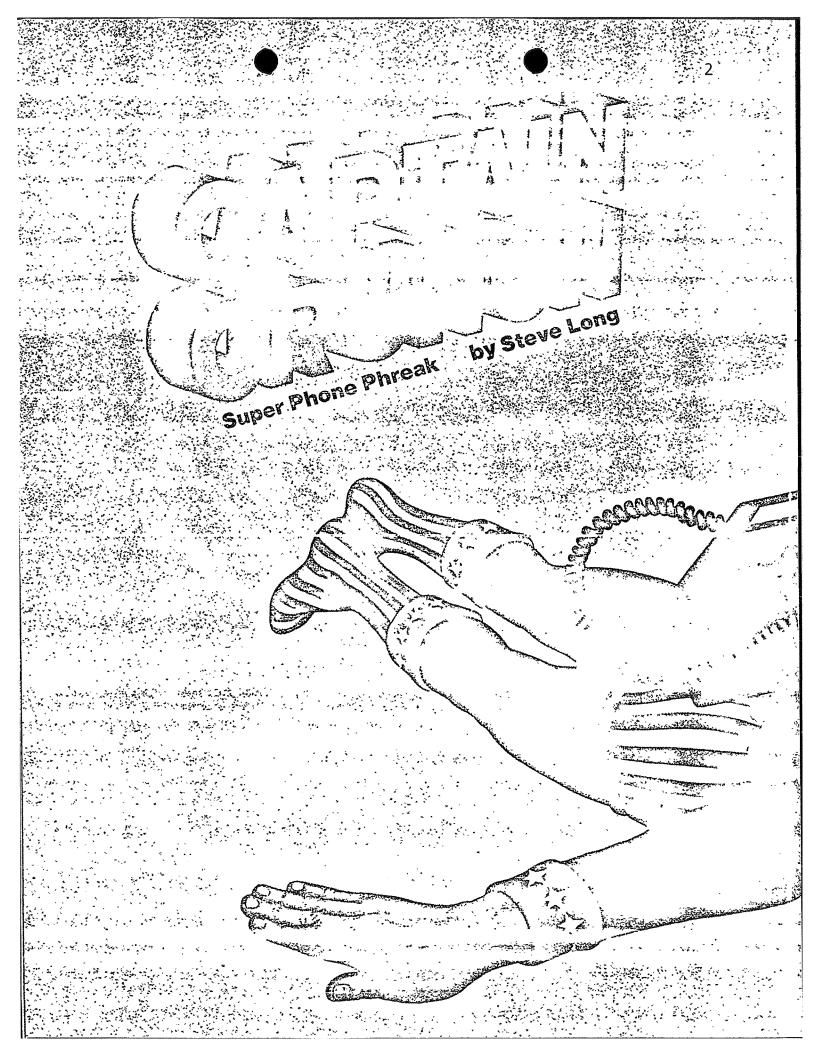
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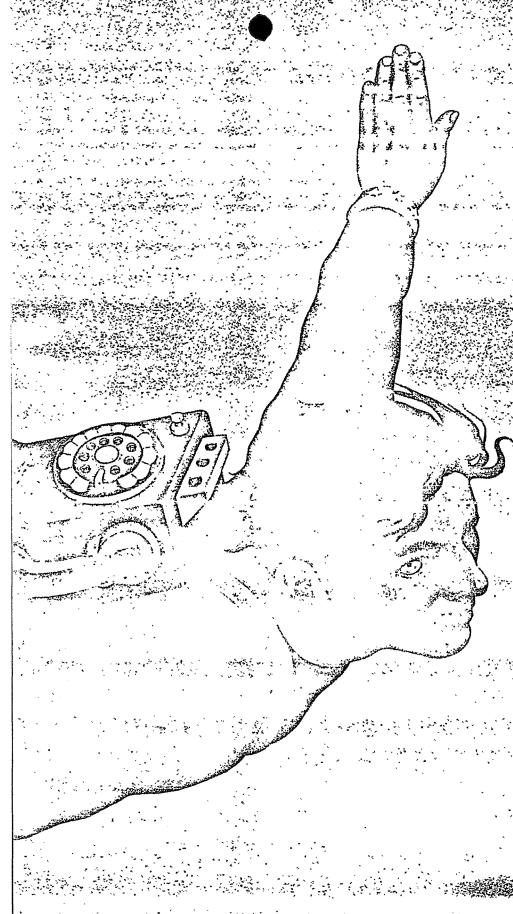
Notes Lots of good background material on Draper's youth, but also many

inaccuracies. Article is part of db367 and db899, i.e., we obtained

it as part of an FBI file.

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n 1973 a couple of phone phreaks discovered the toll-free 800 number at the White House. The number was 800 424-9337. White House staffers used it for what the phreaks describe as "casual, semi-official, chit-chat." The phreaks used their expertise with the phone system to tap this line and listen for hours to the buzz of conversations going in and out of the White House. The Secret Service always answered the phone with "9337." If the caller didn't respond with a code word, the Secret Service agents would say, "I'm sorry. you must have dialed an incorrect number." The phreaks discovered that the code word "Olympus" stood for President Nixon, who was then embroiled in the Watergate scandal.

"One day in the spring of 1974, at about three in the morning, the phone phreaks dialed the White House number, using an untraceable line. A Secret Service man answered: "9337"

"Olympus, please. It's urgent!" one phreak said.

"One moment," came the reply.

Three minutes later they heard a fatigued voice say, "Yes?" It didn't sound like Nixon, but they decided to go ahead.

"Sir," the phreak exclaimed, "we have a crisis on our hands!"

"Yes, what's the nature of the crisis? As if I didn't know aiready." It was Nixon! The phone phreak gulped.

"Sir," he said, "we are out of toilet paper!"
There was a long pause; then Nixon cursed and began yelling, "Who the hell are you? What's the meaning of this?"

Another voice came on the line. "Who are you? How did you get this number?"

The phreak mumbled, "Sucker!"

Then there was another pause, lasting maybe a minute, followed by a muffled voice in the background: "Getting a trace?" A few seconds later there was a ker-chunk sound and the line was dead.

Later that year two southern California phreaks tied up every long-distance trunk line coming into Santa Barbara, telling all callers that a mysterious explosion had wiped out the city. They'd managed to gain control of all incoming long-distance calls by using two side-by-side phone booths on the beach and some very simple phone-phreaking equipment.

The first call was from a mother to her son, a student at the University of California, Santa Barbara campus. The two phreaks told the woman that they were with the National Guard Emergency Communications Center and that there was not longer any University of California at Santa Barbara. In breathless tones they said the campus and, in fact, the entire city of Santa

Barbara had been wiped out in a freakish nuclear accident—a "nuclear mellown," they told her. She was politely bed to hang up in order to clear the line for emergency phone calls.

A few minutes later the horrified moth-. er called back, this time with operator assistance. The phreaks calmly repeated their story to the operator, asked her not to place calls to Santa Barbara and told her not to worry. Within minutes the phreaks had newspaper and television reporters, FBI agents and police officers calling from all over the country. Hundreds of anxious people who had heard about the "melt down" phoned to check on relatives and friends. The phreaks told the callers that they had reached a National Guard base 50 miles from the disaster site and that they were tied into emergency circuits. After about an hour the two became frightened by the chaos they were causing and restored the phone system to normal. They were never caught.

eady stuff. And it's tempting to think of these phone phreaks as purveyors of electronic guerrilla warfare. It's of these phone phreaks as purveyors tempting to think of them as McLuhanist anarchists infiltrating the all-seeing, allknowing government-by-data-bank that rules our lives. Some phone phreaks even think of themselves that way. It's a tempting point of view, but it's probably all wrong. Phone phreaks are something much more American than that. They're classic Yankee basement tinkerers, backyard inventors, the Eli Whitneys, Orville Wrights and Henry Fords of our age. Only instead of tinkering with mechanical or even electrical stuff, phone phreaks are tinkering with vast computerized networks of information. And the difference between them and their folk-hero predecessors is that you can't build a worldwide electronic data matrix out of buggy parts in the barn.

The phone phreaks' brand of tinkering requires equipment so extensive that no one person or even one corporation could put it together singlehandedly. They need the cooperation of the entire industrialized world to do their puttering around. And since that kind of cooperation is rarely forthcoming to pimply sixteen-year-olds on the upstairs extension, they go out and get cooperation whether anyone wants to give it to them or not. Naturally some mischief takes place along the way.

Almost ten years ago strange electronic wizards began to emerge in various corners of the United States. They called themselves "phone phreaks," and they had figured out how to re-create the sound signals that trigger the phone company's switching equipment, allowing them to place calls to any place in the world for free. Eventually they were able to master all the circuit systems of AT&T and its affiliates. They learned how to tap phones internally through the phone company's own wires, how to retrieve information

from phone-relayed computer terminals, including the FBI's National Crime Information data bank and even how to petrate AUTOVON (Automatic Voice Network), the top-secret red-alert military phone network. But that's not really what phone phreaking is all about. Witness, for example, the life of John Draper, better known as Captain Crunch.

aptain Crunch, an ex-Air Force radar technician, was, for years, the most famous of the phone phreaks and their de facto spokesman. He was even profiled by Ron Rosenbaum in Esquire. He may also have a better working knowledge of the world's phone systems than anyone else alive.

In 1976 the Captain was entrapped by a phone phreak turned FBI informer and was incarcerated, appropriately, in the

They called themselves
"phone phreaks" and they
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What other country has
16-year-old blind kids that
know more than the
president of AT&T?

Lompoc Federal Prison Camp—one of the first Americans to go to jail for phone phreaking. These days, though he's not yet 30, Crunch is retired. He's a sloppy-looking guy who dresses in nondescript, unpressed clothing. And his stringy black hair and horn-rimmed glasses would make him look like a mad scientist, except that his hobby is weightlifting.

The Captain's career as King of the Circuits began with a 16-year-old blind friend, Denny, who gave the Captain his name. In 1968, at a southern California camp for the blind, Denny and some fellow campers discovered they had a shared interest in the Bell System. For the first time information was passed from one phone phreak to another. The blind kids started their own organization, Phone Phreaks International, which today has members all over the country. Phone phreaking was a way out of their loneliness, a special way to make contact with another human voice. Even today nearly half of the top phone phreaks are blind.

In February 1970, Denny discovered that the small plastic whistle then found in every box of Captain Crunch breakfast cereal had a certain miraculous quality—the whistle produced, exactly, the 2,600-cycle-per-second tone that "tells" the phone company's long-distance switching equipment that a line is not in use, even

though that line is being held open by the caller. Using the 2,600-cycle signal you could call long distance anywhere and not be charged. Denny told John Draper, who was skeptical. But after a quick trip to a pay phone Draper was converted, and Captain Crunch was born.

Denny and the Captain began using their whistles to call friends throughout the country. As the only sighted phone phreak, it was Crunch's task to make "whistle trips" with Denny and his blinc friends. Every Saturday the Captain would drop off Denny and two other 16-year-old blind kids at a pay booth, then go to a friend's house. A few hours later the kids would phone him and say, "You can come back now. We're cold and tired," and the Captain would pick them up.

Captain Crunch and his friends learned to do a lot with the whistles. They would call pay phones in London's Waterloo Station just to talk to strangers about the weather. Or call South Africa to hear the time. And they could "mute" incoming long-distance calls so that no one would be charged. But by 1972, when he was arrested for whistling calls to Australia. the Captain had graduated to more sophisticated toys.

Next to a Captain Crunch whistle, the simplest phone phreak device is a Black Box, which provides an "on hook" signal to the phone company while a call is being made, thereby stopping the operation of the billing equipment. A 3,000-ohm resistor drops the level of current going through the phone to below the level that activates the billing equipment. But a Black Box can be easily detected, so Captain Crunch seldom used it.

There are also Red Boxes, small handheld devices that simulate the sound of coins dropping into a pay phone. They are usually used for short calls and are also easily detected. The Captain says that most phone phreaks don't bother with Red Boxes because they aren't useful in obtaining information—and the pure joy of obtaining and trading information is the heart of phone phreaking.

The most sophisticated way to gain entrance to the Bell System is with a Blue Box, which provides access to special operators and routing codes. Blue Boxes are electronic, multifrequency sound devices that resemble pocket calculators. They can reproduce the complete range of tones that the phone company uses, in various combinations, to give instructions to its computer network. Blue Boxes "speak" directly into the mouthpiece of a phone. They have touch-tone buttons that substitute for the regular telephone dial, and they provide a phone phreak with the same dialing privileges that a long distance operator has. The phreak can then direct-dial special test-board, route and overseas operators.

"A Blue Box allows the phone phreak to direct-dial into any foreign country that is set up to handle overseas calls," says Cap-

(continued on page 88)

Captain Crunch

(continued from page 52')
tain Crunch. "For the first time, it opens that country up to the prying and probing of American phone hacks."

The Captain says he's accomplished many elaborate feats with Blue Boxes and similar devices. He used to have a switch-board with computerized Blue Box equipment in the back of his Volkswagen bus. He would drive into the country, pull up beside a remote pay booth, hook into the phone and spend hours sending calls all over the globe. He routed one call around the world clockwise several times, from San Francisco to London to Sydney, Aus-

tralia, and back to San Francisco. Then he sent it around the world counterclockwise a few times. In all, the call covered the equivalent of half the distance to the moon. During one exceptionally busy week, he reportedly made thousands of long-distance calls.

On another occasion he phoned himself from completely around the world. Using two adjacent pay phones, he routed his call from the first phone through Tokyo, New Delhi, Athens, Pretoria, São Paulo, London, New York and finally to a California operator who rang the second phone. He yelled "Hello!" into the first phone and 20 seconds later he heard his own voice dimly through the worldwide electronic maze, a dozen tremulous echoes of "Hello!" ringing in his ear. He recalls that the echo was "far out,"

but he could barely hear himself talking.

fostered an underground network of phone phreaks with names like Peter Perpendicular Pimple, Al Bell and Tom Edison. In the rigid social stratification of the phone phreak community, the elite are referred to simply as "the top ten phone phreaks."

"We can tell, just by dialing into an exchange, the kinds of equipment being used," says the Captain. "The top ten phone phreaks have techniques they've developed over a long period of time of obtaining information continuously." They are after codes, numbers that go into WATS lines when dialed and give toll-free

access anywhere in the country, or numbers that plug the phreak into a computer system. One dialed code might product busy signal. But if several phone phreak dial the same busy signal using this code, they can talk over it and, in effect, have a conference call.

"It's a crude way of communicating," the Captain claims. "You hear the obnoxious busy tones beeping every two seconds. But it's a way of communicating, and that's what phone phreaks are trying to do: develop techniques of communicating by using circuits the phone company doesn't.

"Nobody is bothered by this. The top ten phreaks have a strong moral code—they never hurt anybody. They constantly supply oodles and oodles of information down number and another phreak (who may be thousands of miles away) dials the second number.

"Loophounds just sit on loops," Captain Crunch says in a disgusted tone. "They are handicapped kids or high school kids, and they're either excessively fat or excessively skinny. They're social rejects who just sit on loops to meet people. I feel sorry for them. But I've met a lot of people through loops. I get on them just to find out who's on them. I was on a loop in the New York City area, and I ran across several mentally retarded people, including a guy who is 28 but has the mentality of a 6-year-old kid."

The phone phreak elite uses three basic methods to obtain the all-important code

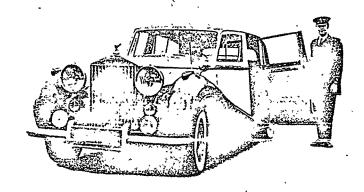
information. In the first method, called "Scanning" after a famous British phone phreak the phreak painstakingly scans all possible number combinations, determining which combinations are codes and what those codes do. Using this technique Captain Crunch found out that the phone company's routing codes always begin with 0 or 1 in combinations from 000 to 199. He also discovered the code route to the autoverify circuits that are used by operators to see if a line is busy and can be used by phone phreaks to tan a phone. "Scanning is a thorough technique." the Captain explains. "It leaves no stone unturned, and it's virtually undetectable. It s slow and cumbersome. but it reveals an incredible amount of information."

Crunch refers to the second method of find-

ing codes as "social engineering." which means bullshitting: "Say you need a code to reach a central office. You phone a test board and say you're with a test board in another city and you need a certain code. The phone company guy thinks you're also with the phone company and he'll give you the code."

The third way to get codes is through an inside source, usually an operator. "An inside source," says the Captain, "can determine whether or not your line is being tapped, inform you if the phone company is onto your game and supply you with endless information. Of course the source could also be an informer, paid to give you information to trip you up." The Captain has gotten most of his information from

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Directly below the top ten in the phone phreak pecking-order are the pseudo-phreaks. They know how to make Blue Boxes but lack the sophistication of the top ten. Below the pseudo-phreaks is the proletariat of phone phreaks who use Blue Boxes only to make free calls. The Captain becomes agitated when he talks about them: "These are the lowest scum in the whole phone phreak community. These are people who build Blue Boxes to sell to

The lumpen proletariat of phone phreaks the Captain calls "loophounds." A loop is a pair of numbers that connect two phreaks when one phreak calls the first

scanning or social engineering, but much of the information passed around by the phone phreak network does come from inside sources. For instance, TAP, a phone phreak newsletter put out by the New York phreak known as Al Bell, publishes the new credit card codes at the beginning of each year—information that could only come from inside.

aptain Crunch grew up in the bucolic setting of Petaluma, a small northern California town noted for its chicken farms. He's always been fascinated by electronics. His favorite childhood toy was a remote-control electric car; his favorite subjects in school were science and mathematics.

His father, who was in the Air Force, was very strict: "I never was allowed to do what most kids did, like have a BB gun or a slingshot," he says. When he was 12, his father was transferred to England. The Captain hated the strict British schools. After he almost flunked out, his parents sent him to a school for American nationals where he was encouraged to experiment with electric motors and generators. He promptly modified his bicycle generator by stepping it up to 10,000 volts.

When his father was transferred to Travis Air Force Base in California, Crunch entered his freshman year of high school in nearby Vacaville, which he remembers as a farming town "that reeked of onions you could smell 5,000 feet above the town." During his first month of high school, he was constantly harassed by bullies, getting into half a dozen fights each day. He took up weightlifting to improve his skinny physique, and he remains a physical culturist. In 1963, his family moved to San Jose, where he spent his senior year in high school building a 20-watt pirate radio transmitter. He was suspected of being the person who cut into the Santa Clara County sheriff's radio network to play rock songs, including one song called "Little Piggies." The transmitter was shut down after the Captain received a visit from a Federal Communications Commission (FCC) agent.

In 1964, the Captain followed in his father's footsteps and joined the Air Force. He was stationed in Alaska, where he worked on "radar systems and other classified stuff." In his free time, he built and operated a 200-watt radio station that broadcast over a 450-mile radius, including parts of Siberia. But "up there, nobody cares," he recalls. "I got a call from the FCC monitoring station saying they enjoyed my show and asking me not to use profanities."

While in the Air Force, Captain Crunch learned about AUTOVON, which is run by RCA and is a supposedly secure military phone system separate from the commercial Bell network. An AT&T spokesman said, in 1973, that it was impossible for phone phreaks to penetrate AUTOVON, but the Captain has known how to gain access to the system since 1970.

There are actually two AUTOVON netorks-SAGE AUTOVON is the commucations network for the Air Force tactical command. General Purpose AUTOVON is used for administrative calls. There are five levels of priority usage within each AU-TOVON network: Routine, Priority, Immediate, Flash and Flash Override. Each higher level bumps off calls on lower levels. The Flash priority is used only for national emergencies. "Any calls that are this high cause many heads to roll fast," the Captain says. Flash Override is used only by the Air Force chief of staff or the regional commands, such as the North American Air Defense (NORAD).

"Never, ever, use a high priority such as Flash," the Captain warns. "Since you are on a high level access, and the military doesn't know who you are, all kinds of alarms are set off. Never stay on more than a few minutes. Those fuckers don't fool around on a trace."

Crunch routed
his call through
Tokyo, New Delhi,
Athens, Pretoria, São
Paulo, London, New York
and finally to California,
yelled "Hello!" into the
first phone and 20 seconds
later heard his own voice.

After he left the Air Force in 1970, Captain Crunch moved to Mountain View, California, a sunny town between Palo Alto and San Jose. There are so many electronics factories in the area that it's known locally as Silicon Gulch. There are as many advanced-technology companies in Silicon Gulch as in all of Great Britain and West Germany. The Captain worked for a company that manufactures advanced radar systems.

But the Captain's real love was phone phreaking. As his fame grew, it became more and more likely that he'd get caught. And in May 1972, the King of Circuits was turned in by some pseudo-phreaks who snitched to the FBI. Bob Scott, a Los Angeles phreak, told the FBI that the Captain was using a Blue Box in his Mountain View home. At about the same time, Don Erickson, a Riverside, California, phreak, supplied the FBI with three pages of information on Crunch. Yet the only way the FBI could detect the Captain's Blue Box was by putting an audio tap on his line. They did, and then they recorded his calls. One morning when the Captain was driving home from an engineering class, the FBI moved in, an event he remembers well.

"Something went wrong with my car, so I pulled off to the side of the freeway. Just

then, two cars pulled in front and in back of me, and two cars screeched to a halt on eith ide of my car. Ten or twelve FBI age. Jumped out of the cars and said, 'You're under arrest.' I was later charged with violation of Title 18, Section 1343, of the U.S. Code, fraud by wire, a felony. The agents interrogated me for three hours in the back seat of an FBI car.

"At the same time, they had broken into my house and were taking photos of everything in sight. They confiscated a cassette recorder with tapes of Blue Box tones, my address book, which I never got back, and a broken Blue Box. They asked me who I knew, and how long I had been a phone phreak. All I said was that I wanted to call an attorney. Eventually, they took me to the county jail, where I was finally released on my own recognizance. A few months later, I copped a plea, pleaded nolo contendere and got five years probation and a \$1,000 fine."

n the summer of 1972 the Captain went to Miami, Florida, to raise money for his legal expenses. His Yippie phone phreak pal, the Al Bell who publishes TAP, got the Yippies to fly Crunch to Miami to meet Abbie Hoffman, who was planning demonstrations for the upcoming Democratic National Convention. But the connection never worked out.

"Abbie was too tied up with the convention, and he never got to help me. Miami was a hot hellhole. Things were hot in more ways than one—the FBI was tailing everyone. I thought I'd better not stay there. I headed back to California via New York City, where I saw a phone phreak friend. That's when the FBI found out I'd been in Miami. My attorney had told me it was O.K. to leave California, but it wasn't. A bench warrant for my arrest was issued, and they held me in jail for a week before they let me depart for California. I was charged with unlawful flight, but they dropped the charges after they found out it was a mix-up."

On probation for five years, Crunch intended to stay out of trouble. But in 1975 he discovered the autoverify circuits that can be used for phone tapping. He claims that phone phreaks have since used the autoverify circuits to tap the FBI office in San Francisco, the FCC, the San Francisco police and the CIA. None of these agencies will comment on the allegations, but the FBI soon found out that the Captain knew how to use an autoverify circuit, and he was again arrested with the help of an informer. The informer was Adam Bauman, a Los Angeles phone phreak who Crunch describes as having "a trickster personality." In fact, it was Bauman who called Nixon about the toilet paper "crisis" in 1973.

In mid-1975, Bauman began to "pull pranks on me," the Captain recalls. "He kept calling me up and enticing me into exchanging techniques with him by throwing out tasty bits of information. He

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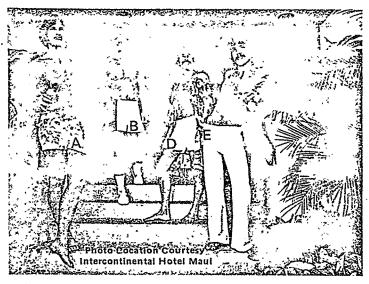
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was doing things that real phone phreaks consider to be uncool, like charging calls to other people's numbers and using corporation credit cards."

The corporations being billed for Bauman's credit card calls notified the telephone company, which in turn contacted the FBI, which soon arrested Bauman and pressured him into telling everything he knew about Captain Crunch. Bauman agreed to become an undercover phone provocateur. He bought his way into the Captain's confidence by giving him technical "inside" information that had been fed to him by AT&T's security agents at the behest of the FBI. He unsuccessfully tried to get the Captain to build him a Blue Box.

Finally, the Captain claims, the FBI provided Bauman with a small portable Blue Box with which to frame him. On February 20, 1976, Bauman visited the Captain at his Mountain View apartment. The two went together to a nearby phone booth on a busy street, where Bauman allegedly placed a Blue Box call to a mutual friend in Pennsylvania. The Captain says he didn't hear the Blue Box tones because of heavy street noise, and so didn't know it was an illegal call. As Crunch tells it, Bauman told him their mutual friend wanted to talk with him. "When I picked up the phone, it was still ringing. I talked to my friend when he answered. The FBI taped the Blue Box tones, the my voice and presto! Instant probation revoke,"

The FBI was interested in busting Captain Crunch not only because he knew the secrets of autoverify and AUTOVON, but also because Bauman had told them the Captain was tapping their own lines and had a copy of the operating manual for the National Crime Information Center (NCIC) computer. The NCIC is the FBI's national data bank containing computerized information on every individual who has ever been arrested or investigated by local, state or federal law enforcement agencies.

Captain Crunch denies having ever gained access to the NCIC computer. He explains that he didn't have any reason to use it and that he assumed it was secure. That is, he figured that any penetration of the NCIC system would leave traces, and the FBI would naturally assume that he had been the culprit. But the intense interrogation by anxious FBI agents after his arrest made him change his mind: "It wasn't until the FBI revealed their extreme paranoia while questioning me that I realized the system must have some serious holes in it which make it accessible to nonofficial intrusions." As for the charge that he was tapping the FBI, Captain Crunch claims it was actually Bauman who was doing it, and furthermore, "in the last six months, every phone phreak was doing it. It was a fad."

What Captain Crunch knew. whenever he knew it, is pretty simple. As he explains it, all you have to do is locate a terminal input to the FBI computer. If inside sources fail, then use a "dedicated data line," which is a sort of giant extension cord that runs from one computer to another. If a phone phreak were to make a physical connection to the dedicated data line, he would be able to receive the information transmitted over it. The information would be in the form of electronic data, and he would have to decide what "format" it is in. This is done by recording the data and taking it to an electronics laboratory for analysis.

But there is an even simpler way of gaining access to the NCIC computer, pride of the FBI. The phone phreak simply hooks into the phone lines used by the computer of any small town's police department. Think of the famous cartoon of a large fish swallowing a medium-sized fish, which, in turn, swallows a smaller fish and so on. The principle is the same, but in reverse order. The phone phreak "fish" hooks into the police department's computer, which goes into the NCIC computer, thereby allowing the "fish" to electronically "swim" undetected into the NCIC computer. Not, mind you, that Captain Crunch recommends that a law-abiding citizen do any such thing.

prison sentence, Captain Crunch made a deal with the government. In return for telling the FBI how phreaks tapped into their private lines and how the military's AUTOVON network could be penetrated, the government reduced his sentence to four months. His FBI interrogators were especially interested in any links Captain Crunch might have had with Bay Area underground guerrilla groups such as the New World Liberation Front. The Captain emphatically denied any knowledge of the revolutionary underground.

In all, Crunch and his attorneys held six long meetings with Justice Department officials, who he says were "freaked out" by revelations of his electronic surveillance wizardry. FBI agents admitted to the Captain they had noticed strange clicking and beeping noises on their private lines, but they said they had been baffled as to who might have been listening.

The Captain assumes the government used the information he provided to correct the gaps in the FBI and military communications networks. He is especially proud that his cooperation with the FBI was achieved without having to reveal a single name or point the finger at any of his fellow phone phreaks. The FBI was satisfied merely to learn his electronic techniques. "I sat on a lot of this information for years because it was highly explosive. I didn't want to be responsible for people geiting in trouble because of it, but I've already told the FBI everything, so now I want to spread my knowledge around as much as possible," he says.

John Draper, Captain Crunch, served four months in federal prison in southern

California in the winter of 1976. He spent his time weightlifting, playing tennis and riting a book.

No more diddling with the dials for the Captain. The government and the phone company can rest a little easier—one future Alexander Graham Bell II has been safely squelched. However, we know there are at least nine more still out there tinkering and puttering and trying to make a ... Make a what?

Well, it's hard to say exactly what will come of the phone phreaks' inventiveness. It's even hard to envision, because the end product will be some weird system of cybernetic interrelationships and not a cotton gin. But whatever they come up with will still be a product of that essential American high—that feverish burst of activity in the toolshed, banging something together for the sheer love of doing and making.

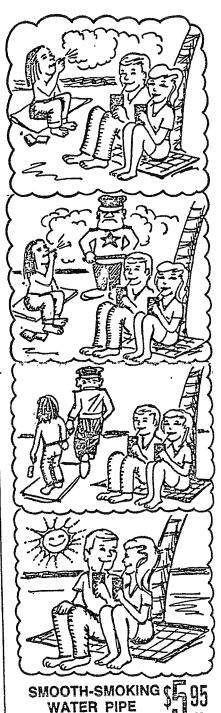
Americans have always been able to generate euphoria in themselves by rearranging the bits and pieces of the material world—creating odd yoga postures in the entire web of maya, if you will. What other country has 10,000 high school dropouts who can turn an ordinary Chevrolet into a fire-breathing, nitromethane-fueled juggernaut capable of 200 mph in less than ten seconds? What other country would turn a change in the national speed limit into a radar detection/CB radio/VASCAR/ Sonar war of electronic surveillance? What other country has 16-year-old blind kids that know more than the president of AT&T?

It's no accident that America is the richest country on earth. It's no accident that we have more cars than China has toilets. There are more sophisticated electronics-technicians involved in the live recording of a Pink Floyd concert than manning the secret military weapons systems of any of our allies or enemies. And remember when our Apollo space station linked up with the Soviet's Soyuz II? That told the story if anything ever did. Their spaceship was a lump, the work of conscript peasant labor. It seemed to be made of cast iron, with lumpy round boltheads dotting the interior and a tangle of extension cords all over the floor. Outside it looked like an old steamboat boiler. Our ship, on the other hand, was a paean to modern technology, a beautiful construct of miniaturized circuitry and brushfinished chrome. It looked as good as a

We're still a nation of makers and doers. A nation of builders. And the phone phreaks are builders, too. They're building knowledge. Building the knowledge of how to use an enormous artificial nervous system the way a toddler builds knowledge of his organic nervous system so that he can make his body do things. Right now the phone phreaks are just learning to talk. But when these electronic toddlers get to First Grade, watch out! Captain Crunch is Captain America.

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