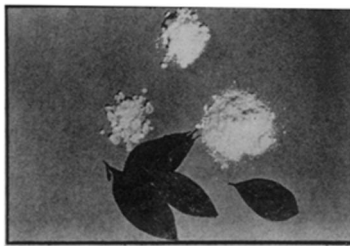


# The Lore of



# Cocaine

A tale of "snow lights," "bugs" and "herringbones." But what makes coke so desirable?

BY JOEL GREENBERG

Perhaps the only eyebrows raised over Peter Bourne's alleged cocaine use were those within the Carter administration. As an indication of the growing acceptance of coke use, the Bourne episode — during which the deposed White House drug advisor reportedly snorted cocaine through a rolled up currency bill of undisclosed value — was witnessed by one or more Washington Post reporters who apparently didn't even think it was worth a story at the time. The item was publicized only when Bourne resigned after admitting he falsified a patient's name on a Quaalude prescription.

If there is any illegal substance that has enjoyed "good press" and comparative public tolerance over the years, it is cocaine. Heroin and other narcotics are seen as killers that at best reduce human beings to needle-pocked addicts. Marijuana has settled into an era of benign acceptance and in the process appears to have lost some of its mystique. And alcohol, the staple of chemical mind-alterers, is still widely consumed by all classes of people despite its long-acknowledged role as destroyer of livers and exterminator of brain cells.

Cocaine, on the other hand, seems to carry a type of respectability, sophistication and even desirability among drug takers and observers of the "drug scene." Much of the mystique stems from coke's limited supply and high price. The current street price ranges from \$60 to \$100 a gram. But at least an equal contributor to cocaine's lure is its lore: "...the exotic properties attributed to it have contrib-



Photos: U.S. Drug Enforcement Agency

uted to cocaine's street reputation as *the* status drug," says the National Institute on Drug Abuse's Robert C. Peterson in NIDA's recent research report on the drug.

Among the first to articulate a sense of the cocaine high was Paolo Mantegazza. In his 1859 "The Coca Leaf and Cocaine Papers," Mantegazza reported a rush of "phantasmagoric images" after chewing a quantity of coca leaves. In addition to a doubling of his pulse rate, the scientist described a state of delirium that produced a sensation of flying through colorful visions.

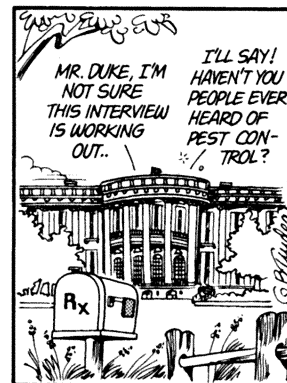
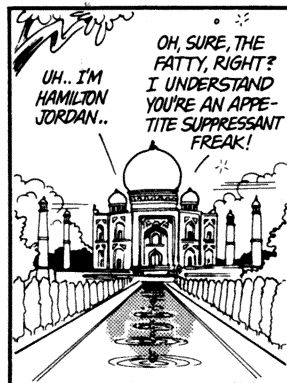
Sigmund Freud was one of many to describe "cocaine bugs," or "the hallucination of small animals moving in the skin." Such visions have been sufficiently realistic in some cases that users have been known to injure their skin in futile attempts to remove the offending coke critters. French researchers have published accounts of one patient who, "scraping his tongue, imagines that he sees small worms coming out of it. ... The (second patient)

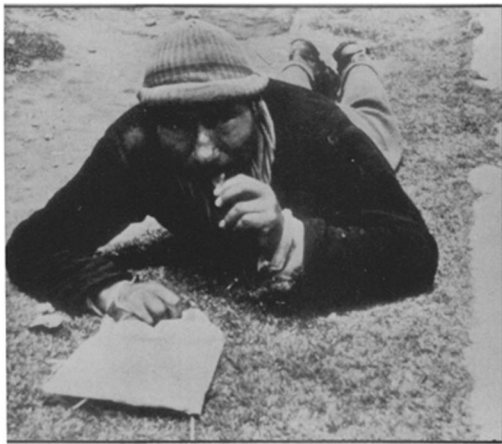
tears off his skin and again, looking in the bottom of the wound, pulls out the microbes with his fingernails or with the point of a pin. The third ... occupies himself with looking for crystals of cocaine under the skin."

Aside from such isolated reports, however, the bulk of cocaine research has yielded little evidence that the drug is dangerous when taken in moderate doses. In the NIDA report—a four-year, \$4 million undertaking — Peterson states that "serious adverse effects of use may be quite rare." One reason might be that because coke is so expensive and hard to get relatively few Americans use the drug — and when they do it is in small quantities. Data from several nationwide surveys show that among persons 12 years of age and older, 3 to 4 percent say they have tried cocaine and fewer than 1 percent said they had taken the drug within the month prior to the survey. In the 18- to 25-year-old group, the peak age group for all illicit drug use, 13.4 percent say they have tried

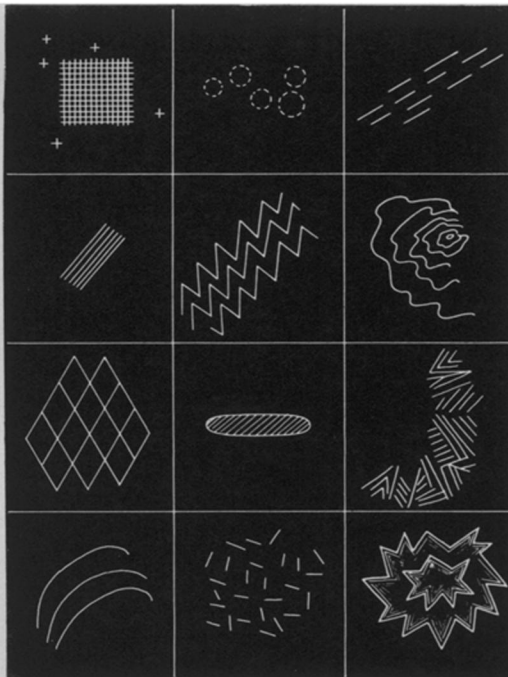
## DOONESBURY

by Garry Trudeau





*A Thailand native practices the art of cocaine snorting; visual hallucinations described by "recreational cocaine users" during intoxication.*



UCLA/American Journal of Psychiatry

cocaine, 2 percent within a month of the survey. Cocaine figures rarely—less than 1 percent of the time — in drug-related emergency room episodes. And in a recent five-year study of drug-related deaths in 27 U.S. and Canadian cities, just 26 involved cocaine alone.

Many of the suspected properties of cocaine—a white, translucent crystalline powder extracted from the coca leaf—remain somewhat of a mystery to scientific investigators. Medically, cocaine has been used as a local anesthetic for many years. And when taken in moderate doses (10 to 25 milligrams intravenously or 100 milligrams intranasally), cocaine appears to significantly increase both heart rate and blood pressure. The NIDA report documents heart rate increases of from 30 to 50 percent and blood pressure jumps of from 10 to 15 percent. A blood vessel constrictor, cocaine when snorted may cause chronic inflammation of the nasal membranes, ulceration and local tissue death. But while perforation of the nasal septum is often mentioned in anecdotal accounts, "in the United States, at least, this consequence appears to be rare," according to the NIDA study.

Many of the psychic effects of the drug have yet to be confirmed through systematic scientific study. Freud himself, however, has been among those to provide personal, detailed accounts of cocaine's effects on thought and perception. He and others have reported a sense of intense stimulation, psychic and physical well-being and reduced fatigue. Other users have told of tremors, paranoia and a variety of hallucinations.

In addition to the perceived presence of bugs or vermin, reported incidences of hallucination have included seeing things or people that are not present, experiencing vertigo and a "flickering" before the

eyes, a general loss of tactile feeling and a sensation of floating on a cushion of air. Some of these hallucinations resulted from chronic use, others only from injection and others from snorting or from chewing a coca leaf.

One of the first systematic attempts to study cocaine-induced hallucinations was published in the March AMERICAN JOURNAL OF PSYCHIATRY. University of California at Los Angeles scientist Ronald K. Siegel examined and tested 85 "recreational users" of cocaine who had used at least one gram a month (intranasally) for 12 months. Of those subjects, each of whom underwent visual imagery and a variety of other tests at UCLA's Neuropsychiatric Institute, 37 experienced some perceptual phenomena—consisting mainly of increased sensitivity to light, halos around bright lights and difficulty in focusing the eyes.

In most cases, the phenomena may have resulted from cocaine-induced mydriasis, or extreme pupil dilation, which afflicted most of the 37 subjects, Siegel says. The dilation occurs when the cocaine triggers overproduction of norepinephrine released from nerve fibers of the radial muscle of the iris, he suggests. All of the 37 also reported lapses in attention, difficulty in thinking while conversing, ignoring traffic signals while driving and "general preoccupation with personal problems."

The most intriguing aspects of the study, however, were discovered among the 15 who reported hallucinatory experiences. The hallucinations—first noticed after six months of recreational use—involved the senses of touch, smell, hearing and taste. But in 13 of the cases, aberrations in those senses all followed intense and consistent visual hallucinations, the most prominent of which were dubbed "snow lights."

When their eyes were open, the subjects

reported the sensation of objects moving in the periphery of the visual field. First-hand accounts included statements such as: "Something just went by the corner of my eye," "Something just flew by" and "I feel like something or someone just moved over there (in the corner of the room)." At first, some of the test subjects reacted to the visions by trying to swat or evade the imagined objects, but later recognized them as "tricks," Siegel says.

In dim light or with eyes closed, these visions often appeared as flashes of light, precipitating the name "snow lights." These were described as "similar but less intense than the twinkling of sunlight reflected from frozen snow crystals," according to Siegel. "They were also viewed as similar to the sparkling of cocaine (snow) crystals. The snow lights appeared to have their own locus in visual space and were interposed with real physical stimuli."

In the later stages of use, the subjects also reported seeing geometric patterns, usually seen with open eyes in the periphery of the visual field. The black and white patterns, seen about two feet in front of the eyes, were composed of straight lines, points and curves. The images, lasting from a fraction of a second to several seconds, "appeared to pulsate or vibrate," say the users. Although Siegel's subjects reported no "complex" hallucinations involving fully formed recognizable objects or scenes, other research in 1973 reported that "small persons... may appear to climb out of shoes or out of coffee cups. Automobiles or airplanes may seem to pass under chairs and tables."

However, several of the UCLA subjects did experience multiple vision—one claimed to see a telephone dial with hundreds of holes. Some saw real objects pulsate or move and walls vibrate or "become fluid and melt." One person who had injected cocaine saw an ashtray change into a frying pan and then into a chicken. Olfactory hallucinations included smells of smoke, gasoline, feces, urine and garbage. Three of the subjects reported hearing things, primarily whispers. And three said they lost their ability to taste certain foods and drinks.

"Taken together, the results of this phenomenological inquiry suggest an orderly progression of hallucinations from simple snow lights through geometric forms to tactile sensations," Siegel says. Though the underlying mechanisms of production of such patterns remain unknown, Siegel notes an "uncanny parallel" between cocaine hallucinations and those accompanying migraine headaches. Of the 12 patterns depicted by cocaine users in this study, "eight are virtually identical to those seen in migraine," he says, including "herringbone" and "zigzag" illusions.

Siegel suggests that the administration of cocaine and the onset of a migraine each triggers "the electrical output of or-

*Continued on page 191*

## ... Cocaine

ganized groups of cells in the visual cortex. It is well known that cocaine's stimulant effects include seizure-type electrical discharges in the temporal lobe and increased activity in the reticular activating system," he says. "Such effects, coupled with the possible selective depression of inhibitory areas of the brain, would allow for the release of perceptions [hallucinations] that were previously suppressed." Siegel hypothesizes that cocaine, migraines, hallucinogens, photostimulation and electrical current all produce the same type of "excitation" of the central nervous system. "... at the very least the similarity of cocaine hallucinations to those of other CNS excitatory states suggests common mechanisms of action," he says.

While Siegel's work may represent a significant advance in detailing the hallucinatory effects of cocaine, the question of whether the drug carries any long-term debilitating effects remains unanswered. Although the occurrence of coke hallucinations is frequently referred to as "cocaine psychosis," the UCLA findings do not suggest any severe disturbances of thought or emotion among those who hallucinated. The psychological profiles of those taking part in the study—as measured by the MMPI, Experiential World Inventory, in-depth interviews, physical examination and visual imagery tests—were all essentially normal, according to Siegel. This "would seem to indicate that the reported phenomenology might simply be an acute pharmacological effect of the drug and not a symptom of incipient psychosis," he says. And anecdotal reports linking cocaine use to aggression and criminality have yet to be validated by research, says NIDA's Peterson.

Conversely, the alleged positive effects of coke—such as the enhanced endurance, physical strength, creativity and intellectual capacity suggested by Freud and others—also remain unconfirmed by controlled scientific study. Indeed, "much of the anecdotally based information about the drug has never been subjected to systematic investigation," Peterson says.

Lacking hard evidence in either direction, cocaine continues to be, if nothing else, desirable. "Unlike such drugs as LSD and heroin, which are frequently viewed as leading to greater orientation toward self and one's internal processes, cocaine is considered by users as a social drug—one which facilitates social interaction," according to Peterson. "At least part of its appeal is its rarity, high price and use by celebrities, musicians and other folk heroes."

But there is a real, basic quality of appeal that transcends its social status as the "in" drug—namely, the cocaine "high." For many users, the various uncomfortable sensations or hallucinations that the drug may bring are outweighed by its euphoric effect.

In animal studies, where social status and celebrity use exert little force, cocaine is almost uniformly demonstrated to be highly desirable. In one of the latest such studies, rhesus monkeys were allowed to choose (by pressing a lever) between intravenous injections of cocaine and food reinforcement every 15 minutes for eight days. "The animals chose cocaine almost exclusively," Thomas G. Aigner and Robert L. Balster of Virginia Commonwealth University's pharmacology department report in the August 11 SCIENCE. The monkeys continued to select coke despite decreased food intake, weight loss and "marked behavioral toxicity," including excessive grooming, scratching, facial grimacing and continuous movement of the head. "All of these exaggerated behaviors disappeared after the study ended," report the researchers. "At no time were any convulsions observed."

These and other animal results might seem to provide a basis for the human theory that, although not physiologically addictive, cocaine may cause "psychological dependence" in some users. "Evidence for the potent positive reinforcing properties of cocaine should be considered in the etiology of recreational cocaine use by humans," say Aigner (now at the University of Chicago psychiatry department) and Balster.

In the medical environment, the drug is considered valuable in a variety of situations, primarily those requiring anesthesia. Harvard University's Andrew T.

Weil has suggested that a coca-based chewing gum could be used as a combination stimulant, antidepressant and antacid (SN: 2/25/78, p.122). The leaves of the western South American shrub have been chewed by Bolivian and Peruvian Indians since antiquity for religious, medicinal and work-related reasons. The chewing of the coca leaf has supposedly enabled the Indians to work under difficult conditions of high altitude and inadequate diet. Weil's research has determined that the leaves are rich in calcium, iron, phosphorous, riboflavin and vitamins A and E.

The leaf, however, is not nearly so potent—or potentially abusable—as its pure, powdered extract, which experts emphasize *can* cause death in high enough concentrations. And whatever the risks and benefits, cocaine appears to be gaining steadily in use and popularity, despite its relative rarity and illegality. But use is still not widespread enough to provide scientists with a large enough sample upon which to conclusively assess the drug's potential.

"Although most cocaine use, even in a social recreational setting, does not produce adverse medical or psychological consequences, one should not necessarily conclude that cocaine use is harmless," advise David E. Smith and Donald R. Wesson of the Haight-Ashbury Free Medical Clinic and San Francisco Polydrug Research Project. "If the drug were more readily available at a substantially lower cost, or if certain socio-cultural rituals endorsed and supported higher dose patterns, more destructive patterns of abuse could develop." □

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