MARIJUANA: THE MYTH OF HARMLESSNESS GOES UP IN SMOKE

by Peggy Mann

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New medical research puts a match to the myth that smoking marijuana is not harmful. The real dope is that the daily habit is damaging to the body as well as the mind.

by Peggy Mann

Is marijuana just the "innocent high" some have made it out to be? New medical research into the effects of this widespread drug points to heretofore unknown risks, as this exclusive two-part Post *series will show.*

"It's unreal," the school guidance counselor told me. "The kid looks you straight in the eye and says—full of conviction—'Well, pot doesn't hurt *me*!' His grades have slid from As and Bs to Cs and Ds. He's been put off the basketball team because of poor performance. He's irritable, hostile, always tired, feels depressed. He cares less about everything. He has a cough, chest pains. He's really going down the tubes. But blowing grass every day, he insists, has no relation to any of this.

"To my mind, the scariest thing about marijuana is that the user can't see what the drug is doing to him. Or, if he does admit to a symptom, he shrugs it off. Yesterday a seventh grader told me, 'I know pot's done bad things to my memory. But I don't really need my memory because I decided I'm not going to college.' "

The guidance counselor is Rick Gibson from Goddard, a small town in Kansas. I met him at lunch in another small Kansas town, Wellington. We were both attending a two-day "Grass Roots Conference on Grass." Wellington's population is 8,500. The school auditorium has 1,000 seats. And both days there was standing room only. Physicians, teachers, school administrators, guidance counselors, psychologists and parents came from all over Kansas and from nearby states to attend.

The Wellington conference was part of a burgeoning new movement throughout America. Schools and parents' groups are waking up to the fact that: (1) marijuana abuse has reached pandemic proportions among our youth; (2) something must be done about it; and (3) they are the ones who must do it. They realize that a vital first step is to educate themselves about the rising tide of medical evidence showing that pot can have serious psychological and physical effects. It can cause cellular damage and impair lung function, the reproductive system and the brain. Furthermore, the younger the user, the more deleterious the effects.

The roster of speakers at Wellington was an impressive one. The first speaker after lunch was Dr. Harold Voth, senior psychiatrist and psychoanalyst at the famed Menninger Foundation in Topeka, Kansas. He has studied the psychopathology of marijuana in depth for the past eight years. Coincidentally, his first point carried on from the one the guidance counselor had just made to me.

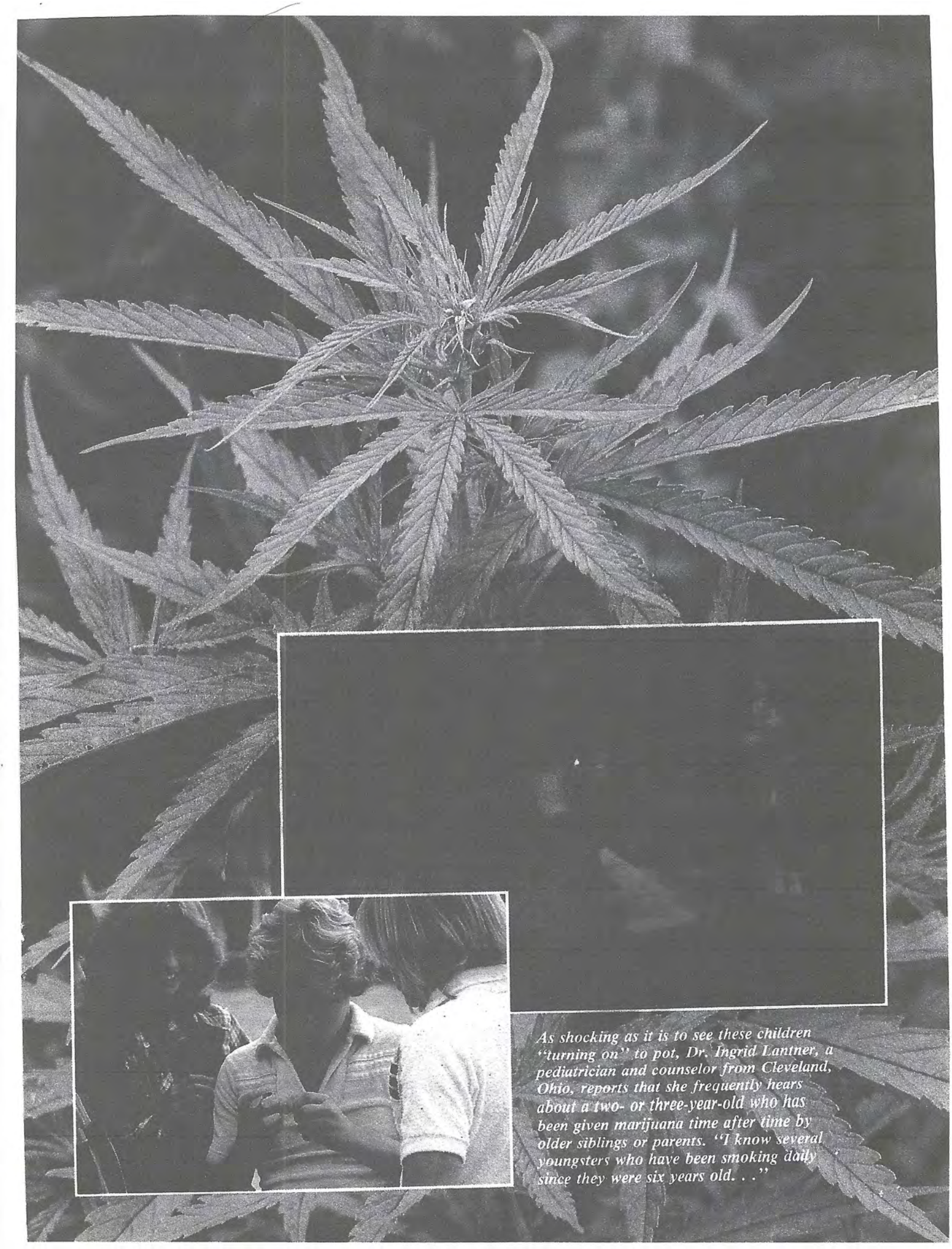
"Marijuana produces a wide spectrum of symptoms," said Dr. Voth. "Some affect some people; some affect others. And there are those who seem to 'get away with it' reasonably well, for a while. But there is one truly pernicious symptom—specifically related to marijuana—which seems to be evident in *every* chronic pot user, youngster or adult. This is the extraordinary refusal to accept the hard scientific evidence about the harmful effects of marijuana. The user will scoff at the evidence, twist it, pervert it, call it 'reefer madness'—anything except look it straight in the face.

"This may be one reason much of the media have, until recently, done shockingly little to relay the medical findings about the harmful effects of marijuana to the American public.

"In my opinion, marijuana use in the United States today constitutes a national crisis, and all-out efforts from all segments of our society are essential in view of the enormous harm being done to millions of Americans, particularly our youth."

Statistics on youth drug abuse clearly show why Dr. Voth's prescription for "all-out efforts" must be heeded on a national scale. For example:

- According to a report published by the House of Representatives Select Committee on Narcotics Abuse and Control, "The United States is the most pervasive drug-abusing nation in history and marijuana is our most pervasive illegal drug of abuse." Says Congressman Lester Wolff (D-NY), chairman of that committee: "Our young people are the first in all history to have used marijuana on a mass scale. Neither this nation—nor any other nation—has ever before faced a problem that is so insidious and so dangerous."
- Last year, according to the federal government's drug abuse network, marijuana accounted for the second largest number of admissions to our federally funded drug treatment facilities, and 33 percent of these had started their pot use before age 14.
- According to a recent national



As shocking as it is to see these children "turning on" to pot, Dr. Ingrid Lantner, a pediatrician and counselor from Cleveland, Ohio, reports that she frequently hears about a two- or three-year-old who has been given marijuana time after time by older siblings or parents. "I know several youngsters who have been smoking daily since they were six years old. . ."

drug abuse survey covering ages 12 and up (1976-1977), use of marijuana is twice as high for youngsters as for adults, and use by youngsters ages 12 to 17 increased by nearly a third in one year. (A new national survey has just been carried out by the National Institute on Drug Abuse and, according to Dr. Robert Peterson, assistant director of research, "We would be very surprised if this did not show an increase in use, especially among young users.")

- According to the High School Senior Survey, the only national drug abuse survey taken every year since 1975 (representing every state except Alaska and Hawaii):
  - In 1979, one out of ten high school seniors smoked pot daily, or almost daily—an 80 percent increase since 1975. Of these, daily users averaged 3½ joints (marijuana cigarettes) a day; 13 percent smoked more than seven joints daily.
  - Of the 50 percent of seniors who smoked pot at all during 1979, 37 percent said they "usually stay high three-to-six hours." (Add to this the fact that marijuana is up to ten times more potent than that smoked a decade ago.)
  - Forty-nine percent of all seniors who used pot "during the past 12 months" also used one or more additional illegal drugs during that period.

Popular drug-culture magazines teach how to grow your own, how to smuggle dope into the U.S., how to dress for pot parties, how to get around the law. Their advertisers reach a market of young people with money to spend, and the drug paraphernalia in their pages is available by mail—portable head shops, accessible to young residents of even the smallest, most remote communities. (Paraphernalia shops have been outlawed in Indiana.)

It is worth noting that this study surveys only those students who have made it to the end of their senior year. Drug use among dropouts is notably higher than among those who finish high school. (In some areas, for example, grocery store delivery boys no longer take coffee breaks, but "pot breaks.") Also not included are those who were not in school the day the survey was taken. Truancy is another "symptom" of regular pot use.

All recent state, city, suburban and rural surveys show that pot use has increased rapidly among youngsters of all income levels and all grade levels, with the highest increase at junior high school age. Throughout the country, surveys show that junior and senior high school kids are getting stoned on the way to school, during school, after school and at home—where they often "smoke out the window" or burn incense to cover the smell. One local newspaper series on the subject started: "For many middle school students, marijuana has replaced Wheaties as the morning 'meal.'"

In some areas, pot use starts as early as the fourth and fifth grade. If the saying is true, "as Maine goes, so goes the nation," it is worth noting that a 1979 two-county survey in rural Maine showed that in the fourth grade, 6 percent had tried marijuana at least once and one percent had used it "many times." ("And," says Mel Tremper of Maine's Office of Alcohol and Drug Abuse Prevention, "as drug use goes, we in Maine are kind of behind the times.")

California is a state "ahead of

"The target for drug paraphernalia in the 1980s is ages 6 to 16," the operator of one of Florida's largest head shop chains recently admitted, claiming it was "an industry decision." Organized campaigns of this sort, added to tremendous peer pressure, are misleading young people into believing that pot smoking is a normal part of growing up.

the times" in this area. Dr. Richard Blum, one of the country's foremost authorities on drug abuse, studied 3,200 school children in California and found that some started pot use in third grade. Said Dr. Blum: "The phenomena that appear in California generally appear in the rest of the country several years later." Dr. Blum's survey was conducted in 1976.

For the past two years, pediatrician Dr. Ingrid Lantner has been speaking on the subject of marijuana at schools in the suburbs of Cleveland, Ohio. She speaks two or three times a week, often to fifth and sixth graders. She always asks them: "How old is the youngest child you know who has smoked marijuana?"

Dr. Lantner told me: "I have never asked this question without hearing about a two- or three-year-old who has been given marijuana by older siblings or parents—and not only once. I know several youngsters who have been smoking daily since they were six years old. In all these cases, the parents are users. I have never known of a grown-up who would give a child that age a tobacco cigarette or any other drug."

Dr. Lantner also asks for written questions from her young audiences. Every time she speaks she receives one or two questions which indicate that parents give pot to their young children. Two typical questions:

"I am ten. My parents let me smoke pot since I was six. Will my eggs be damaged?"

"My brother smoked M.J. since age seven but not every day. Will he have his growth affected? He is now 11. He gets the M.J. from my mother."

Another question Dr. Lantner often receives from fifth and sixth graders is: "What shall I do if someone physically forces me to

Rhesus monkeys exposed to the human equivalency dose of one to two joints per day for three years exhibited a loss of drive, motivation and interest in the care of their offspring. A picture of a control, or non-drugged, rhesus shows a rhesus mother nicely nursing her baby. But the THC-treated mother (right) has been exposed to the human equivalency dose of one to three joints a day. Typically, these mothers didn't nurse their babies, groom them, retrieve them or cuddle them as the control mothers did. Dr. Ethel Sassenrath at the Primate Research Center of the University of California, who conducted the experiments, also noted that the THC-exposed babies showed deficits in attention and over-concentration on different stimuli in the environment—the types of deficits of behavior which indicate that the central nervous system had been affected in early development.

smoke pot?"

"School principals tell me," says Dr. Lantner, "that after a ball game, a group of potheads—older students—often come around to sell drugs, and they're very aggressive with the little ones, insisting they buy and smoke on the spot. This happens in a nice, upper-middle-class area in the suburbs of Cleveland."

Nor are the suburbs of Cleveland, Ohio, the only area in the country where parents are giving pot to very young children. Take Missouri, for example. Ed Moses, drug information officer of the state of Missouri, works full time lecturing and teaching about drug abuse. "Every year drug abuse is affecting younger age groups," he told me. "They commonly start feeling the pressure to turn on as early as the fifth and sixth grades. Also, every year the marijuana is getting stronger and more easily available in larger quantities.

"I think the most disturbing thing I've found is many parents' attitude that marijuana is so harmless that it's okay to reward their three- and four-year-old child with getting high.

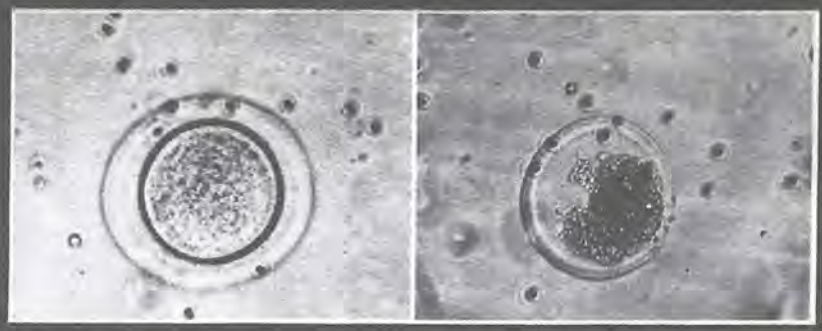
"For example, at parties, the parent will let the three- to five-year-old child carry the joint around to the toking [pot-smoking] guests. And, as a reward, the child is allowed 'to take a hit' and get stoned. This is becoming more and more common among young parents who are heavy users.

"The youngest I have seen in a home was with a couple in their early 20s who got their nine-month-old baby high by 'shotgunning' the child [turning the cigarette backwards with the lit part in the mouth so that a concentrated rush of smoke can be blown into someone else's mouth or face]. The father told me, 'We like to get Annie high so she won't be afraid to walk.' I pointed out that she was so stoned she couldn't even crawl. The father said, 'Well, that's cool. At least she's not afraid to try.' 'She boogies around when she gets high,' the mother said, laughing. This meant that the baby bounced around a little while. Then she sat—spaced out."

A kindergarten teacher in a South Texas town told me, "My

THC-Injected Mice Produce Abnormal Eggs

Current research indicates that THC (the active agent in marijuana) may induce genetic mutation. One recent experiment involved mouse ova (female reproduction cells, commonly called "eggs"). Two groups of 26-day-old female mice were used in the experiment. The control group was allowed to proceed with a normal routine while the test group was injected with daily doses of THC. The animals were then allowed to mate with non-treated young adult mice. Forty-eight hours after mating, the animals were sacrificed and the fertilized eggs were recovered from the oviducts. Abnormal cells occurred in 37.5 percent of ova recovered from the THC-treated mice, compared with 10 percent in those obtained from the controls.



A normal ovum (left) shows the chromatin (that part of the cell nucleus that is composed of DNA and is the carrier of the genes) to be finely granular and evenly dispersed throughout and responsive to fertilization and normal cell division.

In stark contrast is the abnormal ovum (above), taken from the THC-treated mice, where the chromatin has clumped together. The fact that it has coagulated is an indication that it is damaged and probably is a nonviable chronosomal substance, in which case there would be no pregnancy at all.

A normal fertilized ovum demonstrates predictable cell division.

Irregular shapes and sizes of fertilized cells appear in the mice ova in the THC-treated group 48 hours after mating.

It was the conclusion of this research that THC does act as a mitotic (dividing cell) poison and therefore is considered a chromosomal mutagen. It is also important to note that unlike male sperm, which is replenished during the entire life of the male, the number of female eggs is determined at birth and, once they are damaged or destroyed, they can never be replaced—the damage is permanent.

children don't smoke pot. But the first grade teachers tell me that some of *their* children come in stoned—always the ones with older brothers and sisters."

Maryland is so "typical" that it is often referred to as "America in miniature." Certainly the 1978 Maryland statewide survey reflects what is being found in local surveys throughout the country: "Students began using one or more illegal drugs at about one year earlier than the same grade level use in the last Maryland survey (1975)." And the "one" drug is invariably marijuana. Most local surveys show that, each year, initial marijuana use drops one year lower.

Older siblings are the chief source of supply for very young users. Because the myth of marijuana's "harmlessness" has so permeated our society, youngsters often feel they are doing their smaller brothers and sisters a favor by getting them high. There is also another motive. If the younger child gets involved, he or she won't "narc" (tell Mom and Dad).

It is quite possible for Mom and Dad to be unaware of the fact that their children are stoned. With marijuana use it's easy to "hide the high" or to "come down" by dinner time. The clearest tell-tale symptom—red eyes—is handled by kids via eye drops. (The eye drop industry reports a boom in sales.) Youngsters who use a local swimming pool have an easy excuse—"chlorine in the water"—even though the closest they may have been to the water was hanging out in the locker room blowing grass.

There are, of course, discernable symptoms of the youngster who is a heavy pot user. Unfortunately, most of them are so much like the "blow up" symptoms of normal adolescence that many parents tend to disregard such as merely something their child will "grow out of." But this is not likely to happen unless the child gets some firm, supportive help from parents and from the school.

Parents should realize that even the "straight" kids (non-drug users)—who represent about 50 percent of most surveys of junior high and high school classes—are under constant peer pressure to "Try it: It's great." And this pressure to start pot use comes not only from peers. All kids are affected by aspects of adult industries which make drug use in general—and pot use in particular—seem like a normal part of growing up in America today.

For example, a recent survey in Atlanta, Georgia, showed that while one third of non-drug-using kids listen to rock music on the radio three hours or more a day, virtually *all* drug-using youngsters listen three or more hours a day. Some reported: "I listen all the time when I'm home." In addition, they have favorite records and cassettes that they put on when they're high and "float with them."

The same Atlanta researcher, Dr. Fred Crawford, studied the contents of rock lyrics to determine what messages they contained suggesting or supporting drug use. He found that more than half of the current rock songs had messages condoning or suggesting the use of drugs, and that many students start listening to rock music at about the time of first use.

And what do they hear when they listen? There are countless songs with "do drug" messages such as this from Eric Clapton:

Cocaine, cocaine
She's all right.

And this from Dr. Hook's Medicine Show, the *Sloppy Seconds* album ("killer weed" is marijuana):

Some men need some killer weed
And some men need cocaine
And some men need some cactus juice
To purify their brains.
Blow your whistle,
Bang your gong,
Roll up something to take along
Feels so good it must be wrong
Freakin' at the freakers' ball.

Another example of the "mes-

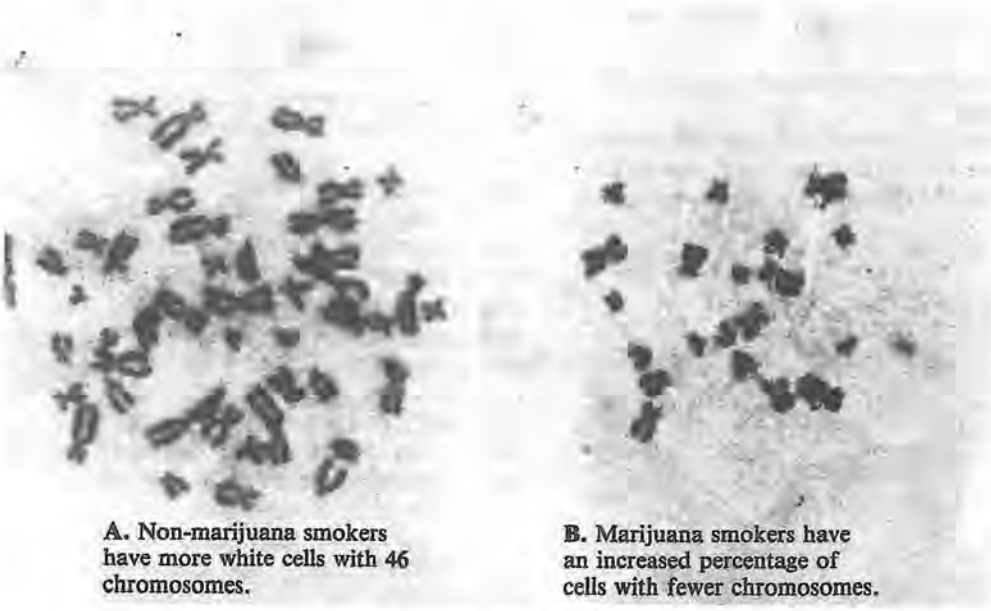
First-time marijuana-possession penalities for 1 ounce or less:

- ***Decriminalized; small fine and citation only.***
- ***Less than $1,000 fine and/or 1 year in jail.***
- ***More than $1,000 fine and/or 1 year in jail.***

In most areas, laws for possession of an ounce or less of marijuana (30 to 60 joints) for personal use are not enforced. Some say this is reason to relax the laws (decriminalization) or to eliminate them (legalization). However, in states which have decriminalized pot, law enforcement officials point out that marijuana use among youths has escalated greatly, and traffic accidents and drug-related crimes have increased dramatically.

sages" youngsters receive from the adult community comes from the drug paraphernalia industry—now a $3 billion business. A highly profitable line is the "kiddie" drug paraphernalia, which includes such items as baby bottles and "Catch-a-Buzz" flying discs which double as pot-smoking devices, skateboards and kiddie belt buckles for "hiding your stash" (your supply of pot), comic books which show how to cut and snort cocaine and *McGrassey's Reader*, an easy-to-read, 20-page primer which includes clear directions on how to roll a joint, a pot vocabulary, advice on what to wear to your first pot party, plus a packet of alfalfa "practice grass." For more advanced readers there is *The Whole Drug Manufacturers' Catalog*, one-third of which is devoted to "Kitchen Chemistry and Bathtub Dope: How to Produce Drugs from Non-Prescription Items and Household Chemicals in Your Kitchen Without Prior Chemical Knowledge."

In most states such items are legal and can be found in various varieties of stores, including posh gift shops, boutiques, record stores, flower shops and stores which specialize in magic, Oriental gifts, leather goods, smoking goods, etc., as well as in the "head shops." And some head shops advertise openly in school newspapers as "novelty shops." The kids know what they are, but (presumably) the teachers don't. One of the biggest head shop chain operators in Florida recently told Florida state legislator Mary Ellen Hawkins: "The target for drug paraphenalia in the 1980s is ages 6 to 16." He said this was an industry decision.



A. Non-marijuana smokers have more white cells with 46 chromosomes.

B. Marijuana smokers have an increased percentage of cells with fewer chromosomes.

While a normal cell has the typical complement of 46 chromosomes within its nucleus (left), recent experiments indicate that heavy-marijuana smokers have marked increases in the number of cells with micronuclei (nuclei with less than 46 chromosomes, as pictured right). The experiments were performed to determine the effects of marijuana on human lymphocytes (white blood cells, which are a major part of our bodies' defense systems). Five volunteers with histories of chronic marijuana smoking were used. They ranged in age from 22 to 32 and had histories of smoking at least ten marijuana cigarettes per week for six years or more. Seven healthy students who had no history of smoking marijuana served as the control group. After repeated periods of smoking followed by deprivation, blood samples were obtained from all subjects in the test group. Similar samples were obtained from control subjects on the same day. The cells from the non-marijuana smokers showed a 15 percent incidence of micronuclei, while the cells from the marijuana smokers showed a 36 percent incidence of micronuclei. Dr. Akira Miroshima of Columbia University noted that the marijuana smoker might run a greater risk of disease, since THC lowers our resistance to infection.

What does all this mean in terms of our youngsters' health? And what can parents look for as possible signs or symptoms of chronic pot use among youngsters?

The psychological symptoms are often the first to manifest themselves. These include decreasing school performance; increased irritability ("stop *hassling* me" flared out for no justifiable reason); a general apathy; depression; drastic, inexplicable mood changes; feelings of isolation; a cutting off of communication between parent and child and a general loss of interest in everything except pot smoking and the accompanying "kiddie drug culture."

There are two very common physical symptoms: a chronic cough—a bothersome, constant hacking—and chest pains. Says Dr. Ingrid Lantner, "I have yet to see a teen-age tobacco smoker complain of chest pains, but it's quite common among pot smokers. School nurses tell me this, too."

However, it is the nonvisible physical symptoms which may be the most damaging. And this is the information which is finally crossing the chasm between the scientific community on one shore, which has been putting forth these findings at ever-increasing rates, and the general public on the other shore. For years this chasm has not remained empty. It has been industriously filled with misinformation, distortion and perversion of the facts and, at times, even outright lies emanating from pro-pot organizations and individuals whose purpose seems to be to discredit the findings which prove that pot is harmful and to make it seem an essential and harmless ingredient of the "now" way of life.

Because of this constant surge of misinformation, which is still heard loud and clear throughout the land, pot smokers often have pat answers when confronted with the warning signals now coming loudly and clearly from the scientific community.

One common "turnoff" of these findings is the shoulder-shrug comment, "For every study showing that pot is harmful, there's another showing it's harmless."

This is simply not true.

One of the world's most knowl-

edgeable experts in the field of marijuana is Dr. Carlton Turner, director of the Federal Marijuana Project funded by the National Institute on Drug Abuse (NIDA). Dr. Turner and his associate, Dr. Coy Waller, have just completed a hefty two-volume work: *Marijuana: An Annotated Bibliography*. The first volume has already been published by Macmillan; the second will be published this summer. In preparing these works, Dr. Turner abstracted more than 5,000 scientific publications on cannabis (the plant from which marijuana, hashish and hash oil are prepared). He says: "As a scientist, I have to be objective. I am not a crusader for or against any drug. I am for evaluating any drug on its merit, which I base on all scientific publications about that drug. There is not a single paper on the crude drug marijuana which gives it a clean bill of health, not a single paper to support it as an innocuous drug.

"A widely quoted study of 30 Jamaican cane workers was never published by a scientific journal. It could not stand the scientific review process.

"There *are* some reports on *individual* cannabinoids indicating possible therapeutic use." (Cannabis contains 61 known cannabinoids—substances unique in nature, found only in the cannabis plant.) "However, it must be remembered that any drug has some side effects, and with the broad biological action of the cannabinoids at the cellular level, the side effects may outweigh the benefits in long-term use. This is the reason that marijuana has no place in modern medicine. Using marijuana would be like giving people molded bread to eat to get penicillin.

"Media, with some exceptions, have not taken the time to understand the nature of the crude drug marijuana. If you attend a conference and there are 15 scientific papers cautioning against the use of marijuana, and *one* saying that a single extracted cannabinoid might be useful in a therapeutic area, the media headline this by saying that *marijuana* has been found to be useful. The findings are reported in such a way that the public is led to believe joints of street pot are being smoked by people with glaucoma or by cancer patients to control nausea after chemotherapy treatments, when the research is actually being done with a synthesized THC capsule. And by the time this 'news' sifts down to the school yard, you have kids saying that pot cures cancer, pot cures nearsightedness and pot cleans out your lungs after you smoke tobacco cigarettes." (The latter comes from early findings which indicated that marijuana might be helpful in cases of asthma. Further research clearly showed just the opposite is true.)

"Incidentally, why the media have generally been so 'up' about publicizing the possible medical benefits of marijuana and so 'down' on relaying the consistently emerging evidence concerning the harmful effects of marijuana is a matter to be comtemplated."

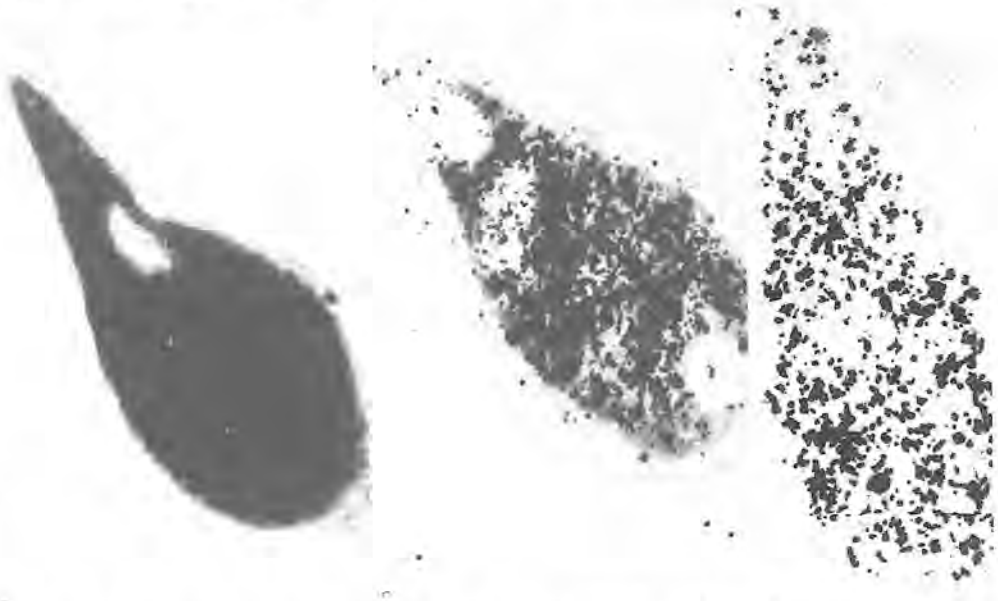
Another common argument of pot-smoking youngsters is this: "You have your martini, so why can't I have my pot?"

Dr. Nicholas Pace has a solid answer for this question, and he is well qualified to give it. Dr. Pace is the co-founder and past president of the New York City Affiliate of the National Council on Alcoholism. He is also one of the founding directors of the American Council on Marijuana and Other Psychoactive Drugs.

Dr. Pace points out: "There are two important differences between alcohol and marijuana. First, alcohol has a single chemical, and it is water soluble. One ounce is metabolized and is completely excreted from the body within 12 hours.

"What about pot? Youngsters like to consider it a 'natural weed.' Some even believe it to have health-giving properties. In reality, however, cannabis is an extremely complex crude drug containing 421 known chemicals. When you smoke a joint you are combusting these chemicals into hundreds of other different compounds. And we don't know how they are affecting the body.

"We do know, however, that among the 420 basic chemicals are



The only long-term (20-year) study of the effects of THC on the male reproductive cell (sperm) was conducted in the small laboring village of Piraeus, Greece, by Dr. Marietta Issidorides and Dr. Costas Stefanis of the University of Athens, Greece. Spermatozoa from nonsmokers and from chronic hashish smokers (hashish has a high concentration of THC) were photomicrographed. Normal spermatozoa from a non-hashish-smoking male show a proper density, indicating that it is rich in protein and other essential chemical substances. In the center and right panels, sperm taken from a hashish-smoking male shows a definite breakdown of protein substances and a clumping together of chromosomal material. The research team also noted changes in the ultrastructure of the spermatozoa of chronic hashish-smoking males which could result in genetic disturbances or prevent fertilization.

61 known cannabinoids (new ones are being discovered all the time), and so far scientists have studied only a few of them. We know that at least four of the cannabinoids are psychoactive, or mind-altering. But a few of the nonpsychoactive cannabinoids which have been studied thus far appear to be even more harmful to certain organ systems than the psychoactive ones.

"Therefore," says Dr. Pace, "the first important point to be kept in mind is that even the so-called 'NIDA marijuana' used by scientists is, in fact, a Pandora's box of unknowns."

"NIDA marijuana" is grown on a well-guarded five-acre "pot farm" on the outskirts of the University of Mississippi. This project, funded by the National Institute on Drug Abuse and directed by Dr. Carlton Turner, supplies to researchers marijuana which has a relatively stable Delta-9-THC content of about 2 percent. (This is the chief psychoactive cannabinoid in marijuana.)

Dr. Pace points out that so-called "good street pot" has a four, five or even six percent THC content. Therefore, sobering as the research findings are, they gain an even greater impact when we realize that they represent work with THC half as potent as that which many of our youngsters are smoking regularly today.

"The second important point regarding marijuana," says Dr. Pace, "is the fact that it is fat soluble, like DDT. And we have, of course, banned the use of DDT because it accumulates in body cells and organs.

"The cannabinoids are not only fat soluble. They are, in fact, lipophilic—fat loving. The fatty sections of cells and membranes and the fatty organs of the body act like magnets attracting the cannabinoids. The cell membrane—the coating surrounding the cell—is at least 60 percent fat. When the fat-soluble cannabinoids dissolve in the cell membrane, they make it difficult for the most important constituents of the cell, the proteins, to enter. And cannabinoid clogging of the cell has additional deleterious effects.

"What about the fatty *organs*? It should be remembered that the chief fatty organs of the body are the gonads (sex glands) and the brain. Indeed, the three-pound human brain is composed chiefly of fat. As one prominent researcher once noted: 'We're all fatheads, from that point of view.' "

Dr. Pace and every other marijuana researcher I have interviewed agree that the fat solubility of marijuana is the most important—and ominous—single factor about this drug.

Why? Dr. Pace puts it this way: "The most studied cannabinoid, the popular 'Delta-9,' has been traced radioactively in the body in human and animal studies. All the studies show that it takes three days to a week for the body to rid itself of *half* the THC in a single joint and much longer (some studies show up to 30 days) to get rid of all of it. This means that even if a youngster smokes only one joint a weekend, about half the THC and other cannabinoids *remain* in the body. Half the cannabinoids in next Saturday night's joint are added to the first. And so on, for a smoke-filled series of Saturday nights."

Dr. Robert C. Gilkeson, who has spent 15 years in neurophysiologic research, puts it this way: "No drug or chemical improves the normal cell. Marijuana is a known intoxicant. Toxic means poison. Anyone who smokes or ingests more than the equivalent of one marijuana cigarette every 30 days will accumulate an acute neurotoxic substance in his or her body."

What are the results of "cannabinoid accumulation?"

A single article can only touch the iceberg's tip. This becomes clear when picking up a 777-page volume, *Marijuana: Biological Effects*, published by Pergamon Press. This contains 50 scientific papers given at the two-day Reims Conference held in France in July 1978. The conference was limited to marijuana's effects on four areas: the lungs, the reproductive system, the brain and the cells.

The September issue of the *Post* will discuss these four areas in depth, as well as give some useful pointers for parents and other interested adults who wish to combat this "grass fire" of marijuana use among our young people. ✱

PUTTING A MATCH TO THE MARIJUANA MYTH

Most kids are fully convinced that the use of marijuana is not harmful. But new medical research proves them dead wrong.

by Peggy Mann

We have found that students in the lower grades will look their counselors straight in the eye and say—with full conviction—"Pot doesn't hurt me*!" But the latest medical research has determined that marijuana can cause cellular damage and impair lung function, the reproductive system and the brain. In the conclusion of this article, we take a closer look at these four areas of abuse—and offer suggestions to parents and other adults interested in combating this "grass fire" now raging through our schools.*

Although one in every ten high school seniors admits smoking pot daily, and in some areas pot usage now starts as early as the 4th and 5th grades, the highest usage of all is in the 18- to 25-year age group.

Marijuana and Cellular Damage

Many scientists, including pioneer "pot researcher" Dr. Gabriel Nahas, consider the reports on marijuana's impairing effects on body cells to be the most alarming because, as Dr. Nahas says, "they are the underlying cause of all the other deleterious effects that have been reported."

Not only do cannabinoids clog the cells, inhibiting their functions to some degree, but many studies have shown that heavy pot smokers have an abnormally large number of abnormal cells.

Dr. Akira Morishima, of the Columbia University College of Physicians and Surgeons, has done studies on the increased incidence of cells in marijuana smokers which have less than the normal number of chromosomes and which tend to revert back to the normal level after the individual has stopped smoking pot. In more recent studies, published in June 1980, Dr. Morishima found that THC disturbs the *movement* of chromosomes which, he says, "probably accounts for the production of cells with an abnormal number of chromosomes." A similar finding has just been published by Dr. Arthur Zimmerman in Canada, using an entirely different methodological technique.

Pot advocates are swift to "discredit" chromosome studies by saying that "aspirin and coffee also cause chromosome breaks." Dr. Morishima points out that his studies did not relate to chromosome *breaks*. Furthermore, in the 1980 studies he used the same technique to test the effects of aspirin, caffeine and alcohol on chromosome movement. He also used "comparable doses," except that in the case of alcohol, "we went up to 100 times the equivalency dose." The result? Neither aspirin, caffeine nor alcohol produced abnormal movement of the chromosomes.

As early as 1973, Dr. Nahas found that THC lowered the rate of cell division by diminishing the cell's ability to make DNA, RNA and essential proteins. DNA is the all-important genetic material of the cell. RNA controls gene "expression." These findings have since been replicated by scientists in 12 important research centers in the U.S. and abroad.

Said Dr. Nahas: "These findings indicate that the pot smoker may not only be damaging his own mind and body, but may be playing genetic roulette with his or her unborn children."

Marijuana, Sex and Reproduction

There are other ways in which pot smokers may be damaging their unborn children.

As noted, cannabinoids collect in the fatty gonads *and* in the brain. In the brain, THC seems to affect the hypothalamus which, in turn, affects the pituitary, a pea-like structure at the base of the brain which is a control center for sex and reproductive hormones.

It is not surprising that this double-barreled influence on the reproductive system should result in some dysfunction and abnormalities.

A sexual performance study of 500 pot-smoking men was made by Dr. Robert Kolodny of the Reproductive Biology Research Foundation in St. Louis. He summed up: "The general trend was that with increasing use,

there were lower rates of sexual activity and a lower frequency of orgasm." A study of 1,238 male users in India showed similar results.

Other researchers have shown that marijuana smoked in moderate to heavy doses results in an abnormally large number of abnormal sperm. And this is dose-related. The more joints smoked, the more abnormal sperm there are.

Dr. Carol Grace Smith did a recent study on male rhesus monkeys. Both males and females of this breed have a reproductive system close to humans. "In fact," says Dr. Smith, "under the microscope, rhesus sperm are almost indistinguishable from human sperm." She gave male monkeys the "rhesus THC equivalent" of one to two joints a day. She summed up: "THC profoundly inhibits testosterone and hormones which stimulate the sex organs, bringing them down to the level of a castrated animal. One dose 'shuts down production' for as long as 24 hours."

Testosterone is the all-important male sex hormone. A number of other human and animal studies have also shown that THC lowers the testosterone level in males.

There has been only one study made on long-term (20-year) human male cannabis smokers. The researcher, Dr. Mariette Issidorides, of Greece, summed up: "Cannabis interfered with protein substances essential for the normal development of the sperm, and it altered the metabolism of the sperm cell, thus possibly affecting expression of the genetic material."

Since males produce so many millions of sperm, all indications are that, if the pot smoker ceases and desists, sperm return to normal. Females, however, may be another matter. An infant girl is born with her lifetime supply of eggs. If these are damaged, there's no replacement. And cannabinoids collect in the ovaries, a fact proved by radioactively tagged THC. What effect might this have on the eggs? Thus far, the only researcher to have delved into this question is Dr. Akira Morishima. He worked with "teen-aged" female mice. He gave them miniscule mouse-size doses of THC. Scientists figure in "human equivalency doses," which can be "checked out" by testing THC in blood levels. If a mouse has a percent of THC in its blood which is equal to the percent of THC a human adult has in his or her blood after smoking—for example, one joint at 2 percent THC—then this is the "human equivalency dose." According to human equivalency charts just published by another "pioneer pot researcher," Dr. Harris Rosenkrantz, Dr. Morishima's female mice received the THC "equivalent" of an adult woman smoking two joints a day. In his report, published in July 1979, he revealed that in the control group, very few of the mice had abnormal eggs. But in the THC-exposed group, about half the eggs were dying or had died. "And," said Dr. Morishima, "of those that lived, 20

Magazines extolling the joys of drug taking are found on newsstands throughout the U.S. As some fold, others are born. The slick **High Times** *boasts 4 million readers. Such publications make illicit drugs seem as "normal" as popcorn and apple pie.*

or 30 percent looked unhealthy."

Dr. Ethel Sassenrath at the Primate Research Center of the University of California has done other types of investigation into pot's effects on the female reproductive system. She works with female rhesus monkeys, whose reproductive system is very close to the human female's, including a 28-day menstrual cycle. Every day for three years—she even came in on Christmas—Dr. Sassenrath fed her monkeys the THC human equivalency dose of one to two joints. (She gave THC on raisin cookies.)

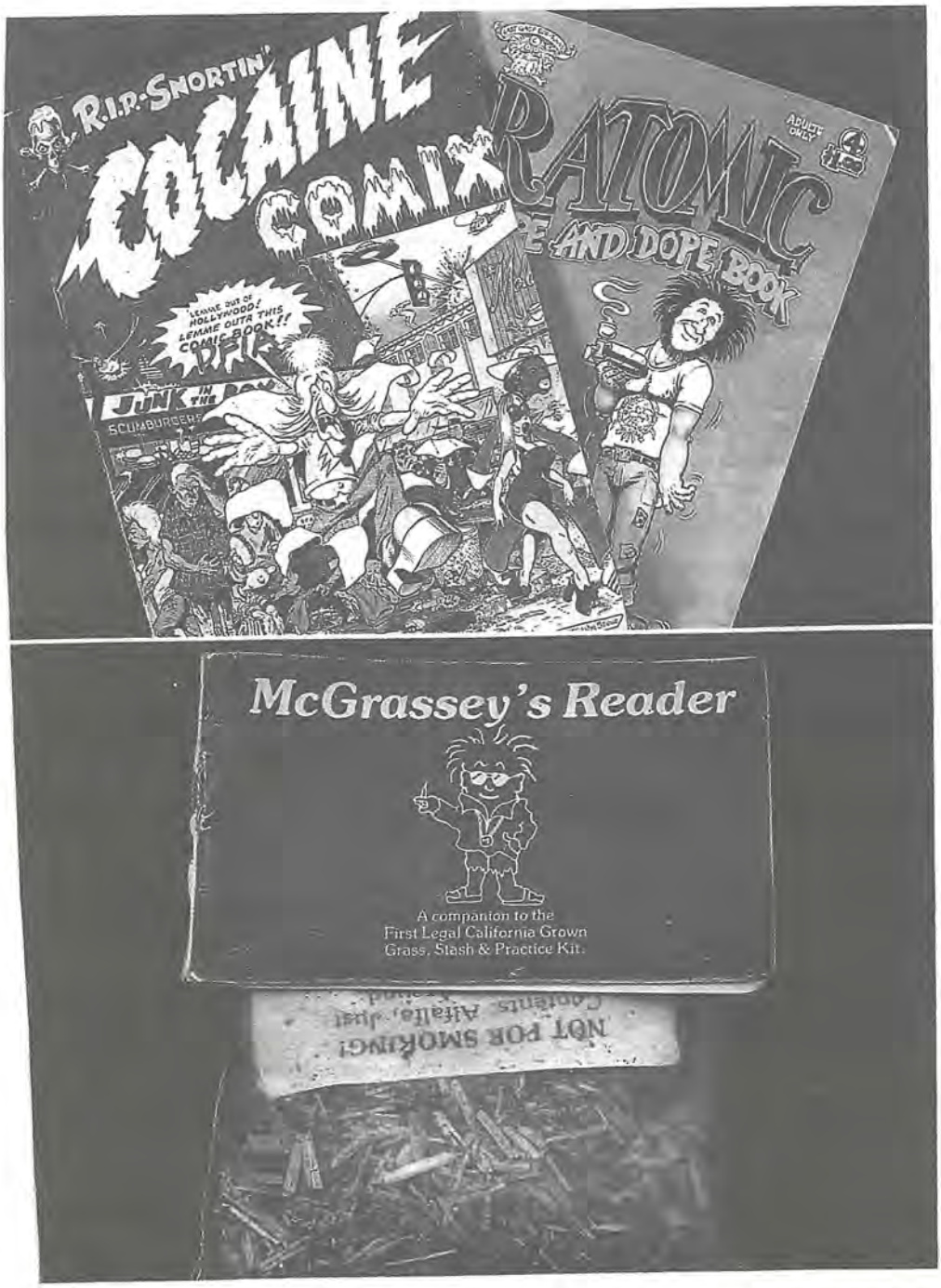
Result: Forty-four percent of the pregnancies of the THC-treated mothers did not result in living offspring. The losses occurred as abortions, reabsorptions, *in utero* death, stillbirth or death just after birth. The control mothers had a 12 percent birth loss—which is normal for a monkey colony.

Of even greater concern were the results obtained when the pathologist did microscopic evaluations of tissues and organs from the dead fetuses and infants. This was a double blind study. He did not know whether tissues came from the THC-exposed offspring or the offspring of undrugged mothers. Result: Although the dead THC-exposed offspring appeared to be normal, in each case he found subtle developmental abnormalities in various organ systems and tissues which were not found in the offspring of the undrugged mothers.

"Furthermore," said Dr. Sassenrath, "the THC-exposed babies that survived acted differently than the others. They over-responded. They didn't seem to have normal 'brakes' on such behavior as active playing without stopping or clasping cagemates who struggled to get away. They all showed deficits in attention and overconcentration on different stimuli in the environment. They had the type of deficits in behavior which indicate that the central nervous system has been affected. This kind of subtle behavioral difference can be characteristic of marginal brain damage in early development."

It has been well established that THC easily passes through the placenta. But how does it affect the placenta itself? In March 1979, Dr. Paige Besch of Baylor College of Medicine in Houston, Texas, completed a four-year study on the subject. He found that the more THC was added to the human placenta, the less estrogen was produced. Says Dr. Besch: "Decreased estrogen results in decreased blood flow to the placenta, which means decreased nutrition to the developing baby."

Other scientists working with rhesus monkeys and with human females have found that THC appears to interfere with the hormonal system and with the menstrual cycle. For example, Dr. Joan Bauman and Dr. Robert Kolodny found that 38.8 percent of pot smokers they studied had defective



A profitable branch of the drug publications industry is aimed at children. Comic books show how to "smoke dope," how to cut and snort cocaine. **McGrassey's Reader,** *an easy-to-read primer, explains how to roll a joint and comes with "practice grass" (alfalfa), rolling papers and a "roach clip."*

[producing deformed babies]. It is, however, embryocidal [having a fetus-killing effect].

Marijuana and the Brain

Pot is smoked to get a "high"—to "alter" the mind. But no smoker wants his brain cells affected, structurally changed. Yet this may be what is happening.

Dr. Robert Heath, chairman of the department of neurology and psychiatry of Tulane University, has pioneered in the study of the limbic area of the brain, working with humans and with rhesus monkeys. This particular brain area is very similar in both species. This so-called "old mammalian brain" is the site of such specifics as time sense, sexual activity, appetite and emotions—both pleasurable and painful.

In July 1978, Heath showed some startling slides to more than 100 marijuana researchers at the Reims Conference. These were magnified pictures of brain cells from rhesus monkeys that had been exposed to the smoke of two to three "monkey-sized" joints a day (one-fourth the size of an average human joint) at 3 percent THC for six months. The monkeys had received *no* THC for the following six months (equivalent to a much longer time in human terms). Then they were sacrificed and the pictures taken.

Dr. Heath, a distinguished-looking, white-haired man, stood by the large screen. Using a pointer, he illustrated what were, perhaps, the most sobering slides shown during the entire two-day conference. He identified the following structural brain cell changes which were glaringly evident when the cells of the THC-exposed monkeys were compared to the cells taken from the same brain area of the control monkeys.

"Here," said Dr. Heath, "we see an accumulation of granular material in—and a definite widening of—the synaptic cleft between nerve cells [where the flow of messages jumps from one cell to the next]. This," he said, "causes a slowing down in the movement of the messages and may impair some brain processes."

The pointer moved on to another spot. "Here we see a clumping of the synaptic vesicles [small sacs in the endings of nerve cells, containing the essential nerve transmitters: chemical activators of the brain]. We find the identical conditions in cases of early brain damage in humans.

"And here," said Dr. Heath, "note the significant increase in inclusion bodies. These foreign substances are seen in degenerating brain cells of very old animals and humans, but not to the degree that we see them here in very young pot-exposed rhesus monkeys."

Dr. Heath summed up: "Since the monkeys had received no pot smoke for six months prior to being sacrificed, it is clear that, at least in the limbic area, structural brain changes caused by marijuana are not readily reversible."

Dr. Robert Gilkeson of Cleveland, Ohio, is completing a study of pot-smoking teen-agers which concentrates on EEG readings of the highly developed, cognitive cerebral cortex, or "new brain." Gilkeson specializes in neurophysiologic research and electroencephalography in learning disabilities. In addition to the standard hour-long EEGs, he developed another half-hour of techniques to pinpoint learning disabilities. In a unique on-going study, he has applied this technique to more than 50 youngsters, ages 13 to 18. All come from the affluent suburbs of Cleveland. All said they did not "do" other drugs. All had met the "criteria" of being high on pot at least two or three times a week for the four months preceding the EEG. But all were forbidden to smoke pot for at least 24 hours prior to the test.

Results: *All* EEGs were "markedly immature for age." They also had an abnormal amount of slow theta rhythms, "sufficient," said Gilkeson, "to be diagnostic of diffuse brain impairment. In the EEG section of academic tasks, none of these youngsters could speed up when challenged. Their brain waves failed to respond to these stimuli in the usual way, according to the standardized norms."

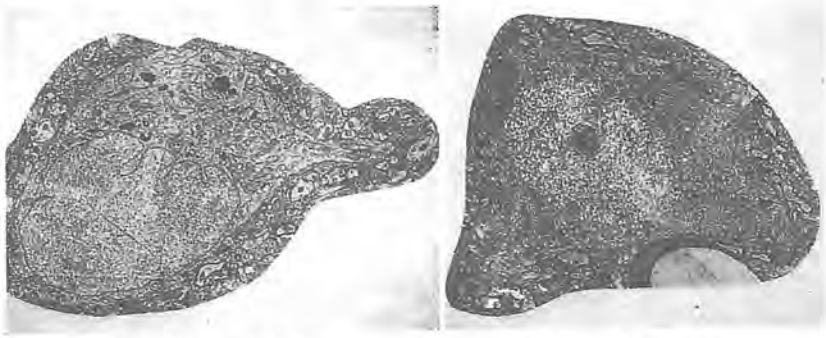
Reading the encephalographer's report shocked many youngsters into "getting off the pot." Those who stayed off for three months had normal EEGs when they took the test again. "Of even greater significance," said Gilkeson, "are those who progressed from abnormal to normal with abstinence—and a return to abnormal again when the youngster returned to chronic pot use."

Gilkeson's findings are con-

Dashboard pot pipes enable the smoker to "drive high." More than 50 research studies show that one or two joints seriously impair driving performance, even after the high has gone. Despite this, surveys reveal "60 to 80 percent of users say they sometimes drive while "intoxicated on marijuana."

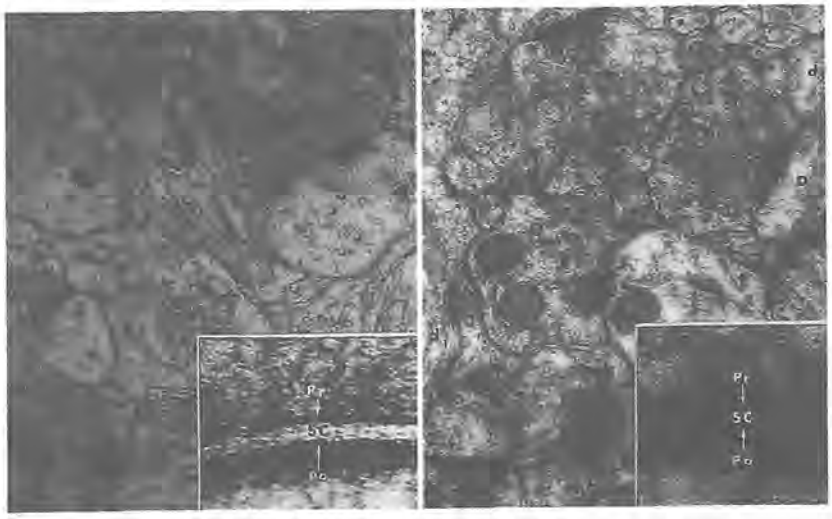
Marijuana and Brain Damage

To determine the effects of marijuana on the brain, Dr. Robert Heath of Tulane University gave rhesus monkeys 2 to 3 "monkey-sized" joints per day (inducing blood levels equal to those of human subjects smoking 3 joints per day) for six months. A control group was given an equal number of marijuana cigarettes with the active ingredient THC removed. Heath reported significant damage.



Normal Brain Cell *Damaged Brain Cell*

While no changes were noted in cells taken from the "control" group, cells from the THC-exposed brains show a marked increase in the number of inclusion bodies that appear in the nuclei, and the rough endoplasmic reticulum is disrupted. These changes in the cell structure may be interpreted as a sign of injury in most cells, including brain cells. These injured cells have a reduced capacity for normal function.



Normal Synapse *Damaged Synapse*

Vital to survival, the synaptic membrane serves as the body's communications network, transmitting messages to the brain. While a normal synapse (left) allows for free flow of messages, the THC-exposed synapse (with widening of the synaptic cleft, electron opaque materials in the cleft and some clumping in the synaptic vesicle) will not properly transmit these necessary messages.

In the light of recent experiments, little doubt can remain as to the gradual, yet significant, consequences of smoking marijuana. Perception, motor activity, sensation, emotional response, motivation, memory and states of awareness can all be affected.

menstrual cycles, compared to 12 percent of the non-pot smokers. Sex hormones were also affected.

Dr. Bauman pointed out: "Researchers are forbidden by FDA regulations to administer marijuana to teen-agers in the course of controlled experiments. But we are particularly worried about what the drug may be doing to pre-teen and teen-aged girls. Any of the effects we found could be even stronger before the body's endocrine-regulated systems have matured."

It should also be remembered that in our country, for the first time in the history of any country, pre-teen and teen-aged girls are smoking cannabis on a mass scale. Our pot-smoking teen-aged girls, therefore, are unwittingly turning themselves into guinea pigs.

Many animal experiments have shown that the mother's THC exposure affects the "next generation," to whom no additional THC has been given. One particularly strange result was found by Dr. Susan Dalterio of the University of Texas Medical School at San Antonio. She gave nursing mice mothers a tiny drop of sesame oil containing THC—the human equivalent of two joints a day. Aside from one equally small dose the day before they gave birth, none of the mother mice had ever before received any THC. The offspring were fed no THC at all. Yet when the males reached young adulthood, they all became very fat and half were "grossly overweight": 50 grams. (The normal male mice of their breed weigh 10 grams.) These fat fellows were also sexually inept, "showing," said Dr. Dalterio primly, "deficient copulatory behavior." When autopsies were performed, there were globs of fat throughout the bodies of all the male mice—whose only exposure to the drug had been as infants, through their mothers' milk.

Other researchers working with mice, rats, dogs, rabbits and rhesus monkeys have shown that the mother's exposure to THC—or to other cannabinoids—causes smaller-than-normal litters and smaller-than-normal babies.

Research on animals has proven that marijuana is not teratogenic

firmed by a number of other scientists. Dr. Turin Itel, one of the foremost investigators of the effects of drugs on human EEGs, sums up: "Acute or chronic use of marijuana produces an EEG shift toward slow. This is definitely associated with impairment of cognitive functions."

Marijuana and the Lungs

Since pot smoke enters the body through the lungs, it obviously reaches its highest concentration in these organs. A 1975 study compared the compounds in a "weak" marijuana cigarette (.8 percent THC) with a high-tar standard tobacco cigarette. Aside from the fact that tobacco smoke contains nicotine and pot smoke contains cannabinoids, the two types of "smokes" have roughly the same compounds, including lung irritants and carcinogens (cancer-producing agents), co-carcinogens and carcinogen activators. Furthermore, a number of these are present in pot smoke in amounts 50 to 100 percent greater than in tobacco smoke—for example, the carcinogens benzanthracene and benzopyrene, with the latter also being a strong cancer initiator.

In addition to the carcinogens, there are elements in both types of cigarettes which irritate and inflame the lungs. Here, too, marijuana smoke comes out with an even "darker" picture than tobacco smoke. And, whereas tobacco smokers avail themselves of filters, low-tar cigarettes, etc., pot smokers consider "good pot" to be the strongest they can get. In addition, an entire "line" of the drug paraphernalia industry—the "power hitter"—blasts the smoke deep into the lungs. Some power hitters are produced in such kiddie-appealing shapes as red plastic space guns and miniature footballs. Many pot smokers use "bongs" in the belief that drawing the smoke through water or ice lessens the harshness of the smoke by cooling it down. The bong, however, concentrates all the smoke inside a chamber so that none is diffused into the air. As one manufacturer advertises: "The only thing wasted is you."

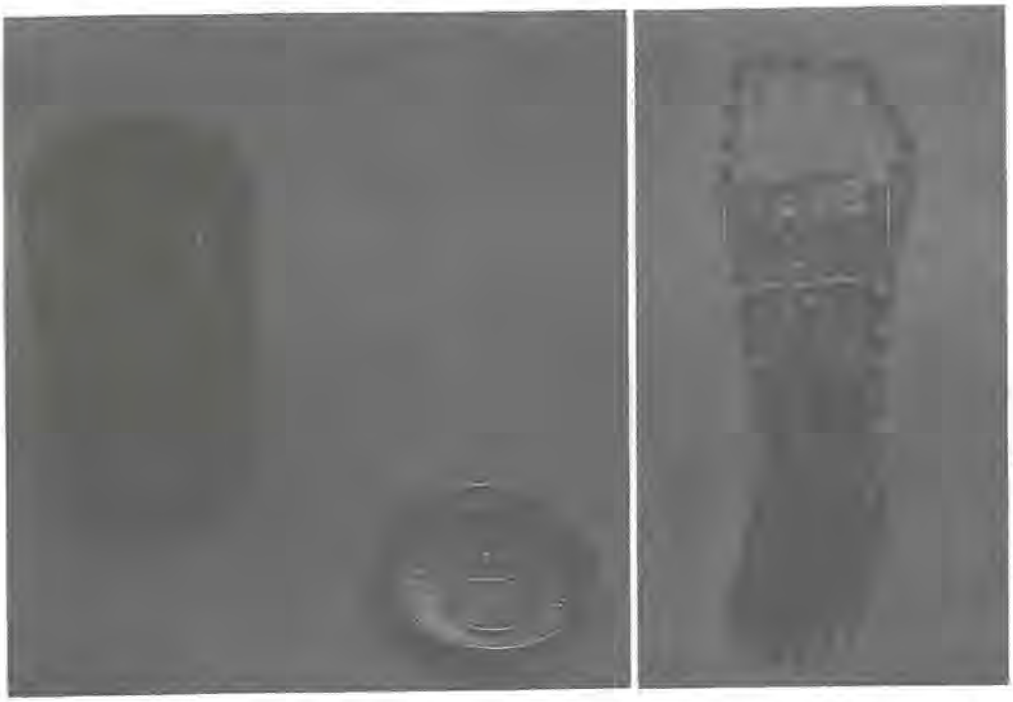
Pot advocates claim that comparisons between marijuana and tobacco do not hold up, since the tobacco smoker generally puffs on a pack a day or more, whereas the chronic pot smoker may use only one or two joints a day, or less. The noted researcher Dr. Sidney Cohen, who has done one of the three major human studies with marijuana, points out: "There are two factors which equalize the risks involved. First: People—especially young people—are, in fact, smoking more joints per day than ever before [this despite the ever-increasing potency of marijuana available on the streets today]. And it is the younger age groups who seem to be smoking the most.

"Second: Typical tobacco cigarette smokers either do not inhale the smoke into the bronchial passages or, if they do, it is for short periods of time. In contrast, the usual method of smoking marijuana is to inhale the material as deeply as possible, keep it in the lower airways for as long as possible and exhale only when another breath must be taken. At times the inhalation is so complete that no smoke is detectable in the exhaled air.

"This means that not only are the irritants and carcinogens in contact with the actual lung tissue for a longer time, but more of the toxic elements may be absorbed into the bloodstream than is the case with cigarettes. These elements are then delivered to other tissues. New studies show that heavy tobacco smokers are more prone than nonsmokers to cancer of the bladder, the esophagus and other nonpulmonary organs. Presumably, therefore, the carcinogens in both tobacco and marijuana smoke do 'carry.' "

Pot advocates like to point out that "there are no dead bodies from marijuana." With the notable exception of highway accidents caused by stoned drivers, this is true. "However," says Dr. Cohen, "we should not forget that it takes 20 to 30 years of consistent heavy use of tobacco to produce a lung cancer. We have been smoking marijuana heavily in the U.S. for a decade or less. Also, with all our medical sophistication, it was not until the 1950s that we noted any relationship between cigarette smoking and lung cancer.

"In those countries where cannabis has been smoked by adult males for centuries, there have been no long-term longitudinal studies regarding cancer and can-



Stash cans for pot come in many guises—and disguises. A popular item: Christmas stockings with candy-flavored rolling papers and pot pipes. Drug paraphernalia has been banned in ten states so far, and the Drug Enforcement Administration's new "model" anti-paraphernalia law is available to all states.

nabis. Studies have been done, however, which show a high incidence of bronchitis, pharyngitis, etc., among cannabis smokers, especially those who used the stronger varieties."

(In this context, it is interesting to note that in the oft-quoted "Ganja in Jamaica" study of 30 cane workers, lung cells were not analyzed. Furthermore, only healthy people were accepted for the study, thereby excluding those with chronic lung disease. In the words of Dr. John Hall, chairman of the department of medicine in Kingston, "Omitted were all cannabis smokers who showed pathological symptoms such as we see in our clinic." Among other "pathological symptoms" evidenced by long-term "ganja" smokers, Dr. Hall listed emphysema, an irreversible lung disease.)

The 1979 surgeon general's report on tobacco cigarette smoking contained some 30,000 research papers all bearing out the slogan: "The surgeon general warns that cigarette smoking is dangerous to your health." And, based on past statistics, the surgeon general said that "this year alone, cigarettes will kill 346,000 Americans."

Research on marijuana and the lungs is in its infancy compared to that on tobacco and the lungs. But, thus far, the findings are hardly reassuring. For example: Dr. Donald Tashkin, a specialist in pulmonary medicine at UCLA, found a 25 percent increased airflow resistance among pot smokers compared to non-pot smokers. (Airflow determines how well we can get oxygen into our bodies and how well we can get carbon dioxide out.) This was an abnormality which did *not* occur in heavy tobacco smokers.

In studies published in February 1980, Dr. Gary Huber, director of the Smoking and Health Research Program of Harvard University, showed that marijuana activates—by some 200 percent—enzymes which contribute to the "eating" or digesting of the lung itself.

In animal studies where marijuana and tobacco smoke condensates are painted on mouse skin, both produce cancers.

A further gloomy point is that many pot smokers also smoke tobacco cigarettes, and the harmful effects may be additive. Dr. Cohen sums up: "There is real reason for concern that marijuana alone, or marijuana smoked with tobacco, will bring forth a new wave of lung cancer in another 10 to 20 years."

Many people who once believed marijuana to be harmless have now concluded that it may be the most dangerous drug in America today, for many reasons. One such person is Dr. Robert DuPont, chairman of the Drug Dependence Section of the World Psychiatric Association and former federal director of the National Institute on Drug Abuse.

Dr. DuPont says: "I believe it to be our most dangerous drug because of widespread frequent use, especially by our youth, and because the psychological as well as the physical effects are insidious and ultimately devastating. Furthermore, for millions of our youth, marijuana is the gateway to the use of many other illegal drugs, including angel dust, LSD and heroin.

"One of the most disturbing aspects of marijuana use is that the user's judgment about the effects of the drug is clouded by his or her own use of marijuana. If an enemy nation were to plan to undermine America's future, they could not think of a more effective strategy than poisoning our youth. Marijuana is such a poison. The tragedy is more painful because the poison is not being administered by an enemy, but by ourselves. Not only the marijuana-using youth, but all of us as well, must share the responsibility for this tragedy, and we must all participate in combating and overcoming this marijuana plague.

"The one hopeful sign on the horizon is the mobilization of concerned parents. They are distraught—sometimes terrified—by the effects of marijuana on their children. And they are angry at the "professionals" who make them feel that *they* are the problem, rather than the drug. These parents throughout the country are discovering one another and are forming action groups which are beginning to have a positive impact on their own children as well as on our local and national leadership. But parents can't do the job alone. Government, business, educators, media—all segments of our society—must join in a massive endeavor to stop our kids from going to pot."

What Parents Can Do

Three national organizations have spearheaded the movement for "combating" the marijuana plague. The pioneer group in this effort is the American Council on Marijuana, founded in 1977 by the Myrin Institute. On its board were the leading scientists in the field at that time. They developed the first accurate resource materials: scientific information on marijuana for the lay public. Their publication, *Marijuana Today*, by Dr. George Russell, was the first such compilation of medical findings and is now in its fourth updated edition, having sold more than 100,000 copies.

In addition, ACM has held three major conferences at New York University Medical Center and at Columbia University. The second of these, which focused on "Marijuana: Biological Effects and Social Implications," a two-day conference, was the largest gathering of scientists, drug-abuse specialists and educators ever to be held in this country. It was also the first lecture series on marijuana to be accredited by the AMA.

The second organization, also founded in 1977, was PRIDE—Parent Resources and Information on Drug Education—which now has active parent groups in more than 19 states. PRIDE has two main functions: One is to disseminate reliable medical information on the health hazards of marijuana (a "PRIDE Packet" is available to individuals and organizations); the second is to stimulate the organization of new parent groups, using a concept originated by PRIDE—that of developing parent peer pressure groups comprised of the parents of the children's friends (not the parents' friends—these parents may not even know one another) in order to combat teen peer pressure and the "do drug" messages of the "kiddie-youth drug culture." In addition, PRIDE sponsors drug education and prevention conferences for schools, educators and parents to encour-

age them to work together to establish ongoing programs.

The third national organization, Citizens for Informed Choices on Marijuana (CICOM), whose staff helped plan Wellington's "Grass Roots Conference on Grass," has organized similar conferences from Connecticut to Washington.

Lee Dogoloff, White House drug policy advisor, supports the efforts of these groups, saying:

"I truly believe that our brightest hope for the future of hundreds of thousands of young people in the U.S. today is the burgeoning movement of parent/citizen groups now organizing in virtually every state of the nation. There are at this time thousands of adults all working toward the same goal—to see that our children grow up drug-free." ✖

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Marijuana Reprints

Extra copies of the two marijuana articles which have appeared in *The SatEvePost* may be ordered by enclosing a check or money order as follows:

1 to 9	$1.50 each set of two articles
10 to 99	85¢ each set
100 to 999	65¢ each set
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For special bulk purchases, call Susan Hanley at 317-636-8881 for price quotes (any more than 1500).

For reprints, write to: MERF, Dept. M-Reprint, P.O. Box 2166, Indianapolis, IN 46206.

Make your check or money order payable to: MEDICAL EDUCATION AND RESEARCH FOUNDATION.

Check or money order *must* accompany order. Remit in US funds *only*.
Postage is included in the above prices. Special shipping will require additional charges.

Additional References:

American Council on Drug Education, 6193 Executive Boulevard, Rockville, MD 20852. *Marijuana Today,* by George Russell, Ph.D. Medical findings for the layman. $3.00. *Keep Off the Grass,* by Gabriel Nahas, M.D., Ph.D. The marijuana story from 1969 to 1980. $9.50. *Twelve Is Too Old,* by Peggy Mann. The first novel on the pot scene for teens and pre-teens. $7.95.

Committees of Correspondence, Inc., Box 232, Topsfield, MA 01983. (617) 774-2641. *Quarterly Drug Abuse Newsletter* covering an important issue, plus suggestions on what you can do to effect a change. Encourages letter writing. $10 per year. Resource list, pamphlets, etc.

Drug Enforcement Administration: Preventive Programs, Washington, D.C. 20537. (Or GPO, Washington, D.C. 20402.) Excellent 44-page magazine with articles and pictures on health hazards and articles on drug paraphernalia. Single copies free.

Essex County Grand Jury Presentment, Prosecutors' Office, New Courts Building, Newark, NJ 07102. Startling 60-page report on drug abuse in schools, plus Grand Jury's 31 practical mandates (to schools, courts, PTAs, etc.) which can be adopted or adapted by any community. $5.00.

Executive Information Resources, Box 611, Wellington, Kansas 67152. Unedited cassette tapes of the general sessions of the "Grass Roots Conference on Grass" held in Washington. Tapes are priced at $6.40 each or $35.00 for a complete set of seven tapes. Prices include shipping.

Families in Action, 3845 N. Druid Hills Road, Suite 300, Decatur, GA 30033. 164-page book *How to Organize Your Community.* $10.00. Plus quarterly newsletter which includes latest information on the drug scene at state, national and international levels. $10.00.

Logical Communications, Inc., 16 Thorndal Circle, Darien, CT 06820. *How to Help Your Child Resist the Marijuana Culture.* $3.00.

Mini-Courses, 4290 Raintree Lane NW, Atlanta, GA 30327. Six-unit teaching manual, "Drug Abuse and the Growing Child," for third through eighth grades (for schools, homes and agencies). $10.00. Cassette with narration, plus 80 color slides showing youth drug subculture, plus prevention methods. $46.75.

National Federation of Parents for Drug-Free Youth, 1820 Franwall Ave., Suite 16, Silver Spring, MD 20902. (301) 649-7100 or 1-800-554-5437. *Parent/Community Task Force Manual,* $5.00. *Education Kit/Public Speaking Manual,* $5.00. *Press/Media Guidelines,* $4.00. *Organizing a Parent Group,* $2.00. Membership $10.00.

Narcotics Education, Inc., 6830 Laurel St. NW, Washington, D.C. 20012. Six Q & A booklets on marijuana and P.C.P. $2.00. *Listen* (magazine for teens) issue on marijuana. $1.00.

Phoenix House, 164 West 74th St., New York, NY 10023. Free information on drugs, plus advice on school programs.

Prevention Materials Institute, P.O. Box 152, Lafayette, CA 94549. *Communicating About Drugs,* for parents and teachers. $1.75.

PRIDE, 100 Edgewood Ave. NE, Suite 1216, Atlanta, GA 30303. Send for free catalog of publications and audiovisuals.

These organizations cannot process C.O.D. orders.