daughter-in-law. The executive who can't accept retirement . . . for 'environmental depression' . . . engendered by such problems as the constant assault of noise on the eardrums, frustration from situations out of control, ecologic pollution, and social unrest."

If these ads reflect current practice, it appears that physicians now prescribe to adjust patients to conditions of modern life like pollution and family disintegration without identifying the causes of the patient's distress or suggesting corrective action.

Doctors are overworked, as drug houses and patients know. Inexpensive technical solutions to human distress become irresistibly attractive. The rate of increase of tranquilizer use outstrips any other class of drugs.

But do we serve our patients' true interests when we accommodate them to the problems of the times? Would we not help patients and society more if we encouraged reform action while limiting prescribing? A little untreated anxiety could go a long way. For example, we could suggest that bored, nervous, suburban housewives do something about their lot, like organizing day-care centers and getting jobs as we cease drugging them, even if they request it, into submission to empty lives. If physicians do not have enough time to talk with patients, why not admit this shortcoming instead of sweeping it into a pharmacologic closet, and relate our time limitations to legislatively correctable shortages of health manpower that patients as voters can influence?

The issues of tranquilizer use are complex and rarely discussed in medical schools or societies. Physicians are challenged to set standards. The recent ads call for a beginning of the debate.

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ANALYSIS OF "STREET DRUGS"

To the Editor: The use of illicit drugs is widespread and new drugs or drug mixtures are continually being offered to the buyer. Since it is generally believed that many street-drug samples do not contain their alleged contents, we have been collecting street drugs in Philadelphia and at various rock festivals over the last six months and have been analyzing these samples.

The samples were analyzed by thin-layer chromatography after pulverization and extraction with methanol. After development, the plates were subjected to various sprays. Identification and quantitation of the compounds was obtained by comparison of Rf values, color reactions and densities with those of known reference compounds. In some cases we obtained confirmation by developing the plates in a different solvent system.

The results obtained were as follows: of 10 samples sold as LSD, eight contained only LSD, and the other two contained LSD, one in combination with a compound that behaved like strychnine and the other with a compound that behaved like scopolamine. Four of 10 samples sold as mescaline consisted of LSD, two of LSD and scopolamine, one of ground peyote buttons, and one of phencyclidine, caffeine, aspirin, phenacetin and butalbital (Fiorinal), and one capsule could not be identified. Three samples sold as tetrahydrocannabinol (THC) contained no THC but a compound with a chromatographic behavior like that of phencyclidine. Two samples sold as combinations, THC with psilocybin and THC with psilocybin and mescaline, contained only LSD.

During the collection of the samples it was noted that the sale of alleged THC on the illicit drug market has increased recently. Interviews with drug users indicate that there is a fear of LSD-induced chromosomal damage and a desire to use naturally occurring ("organics") rather than laboratory-synthesized ("synthetics") compounds. Since most drug users consider marihuana not to be harmful, they believe that THC is also harmless even though it has greater potency. At present, phencyclidine appears to be the most commonly used compound in alleged THC samples. Phencyclidine is an anesthetic agent that is no longer sold for human use but is still used in veterinary medicine. The drug can produce general sensory deprivation, nystagmus, ataxia, slurred speech and a "schizoid" state with lethargy that can change to excitement as the drug effects wear off.[1-3] In animals high doses of the drug produce convulsions.[4]

The results are in agreement with those of Cheek et al.[5] and demonstrate that deceit is great on the illicit drug market, that LSD seems to be available freely at present whereas the supply of THC and mescaline is either nonexistent or limited, that a history of the use of a particular "street" drug by a person may not be reliable, that correlations between the clinical response and the use of a particular "street" drug are highly speculative and that clinical treatment should be symptomatic since it is difficult to know exactly what compound the user has taken.

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KETAMINE – "DISSOCIATIVE AGENT" OR HALLUCINOGEN?

To the Editor: Recently, ketamine (Ketaject, Ketalar) has been introduced as a general anesthetic agent. Although this drug has been classified as a "dissociative agent" both its chemical and its pharmacologic properties are similar to those of known hallucinogens. Like lysergic acid diethyldiamide (LSD) and phencyclidine (Sernylan), the drug has a marked sympathomimetic effect, with "dreams" on emergence from anesthetic levels. Appreciation of these characteristics has resulted in the illicit comsumption of the drug for the psychedelic effects. Some of those using the drug for this purpose report that in doses of approximately 0.5 mg per pound, intramuscularly (as compared to 4 to 6 mg per pound for surgical anesthesia) visual hallucination and tactile disturbances are consistently experienced. Frequently total disorientation regarding time and place and delusions also occur. An overall subjective evaluation by users indicates that the experience is usually pleasant ("good trip"). Differences between LSD and ketamine relate primarily to the rapid onset and short duration of the latter. Thus, the pharmacologic classification of this drug apparently is determined primarily by the purpose for which it is used – "dissociative" if it is being marketed and administered as an anesthetic, and hallucinogenic if it is employed illicitly.

The purpose of this argument over semantics exceeds that of simply being academic. The care given a patient emerging from anesthesia with a "bad dream" might differ substantially from that given to a hallucinating patient. Although self-inflicted injury resulting from "bad dreams" is exceedingly rare, serious injuries and even suicide have been reported to follow hallucinations induced by LSD and phen-

cyclidine. Furthermore, the potential drug abuse with this agent must also be considered.

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METHADONE OVERDOSAGE IN CHILDREN

To the Editor: We wish to report an alarming recent increase in the number of near fatal methadone ingestions occurring in small children, generally the group two years of age.

Within the past three months, four children with serious methadone ingestions have been admitted to the Boston City Hospital, Pediatric Department. Previously, only two possible cases of methadone ingestion were known to have occurred.

This increase has apparently occurred both because of more frequent methadone use in drug-addiction clinics and because the methadone is mixed with *Tang* when dispensed. When given this drug, the addict is not told the concentration of methadone in the mixture, nor is the bottle labeled. Young children are attracted to the pleasant-smelling, pleasant-tasting mixture, and drink it eagerly.

Fortunately, historical information available in our first two recent cases allowed for prompt treatment. In the latter two cases, however, the children were saved only by our previous experience and because the parents either saw the child with an orange liquid in one case or because the container smelled of *Tang* in the second case.

Physicians should be alert to this problem and report such cases to the Narcotics Bureau. We recommend either that methadone be dispensed in tablet form or that the liquid methadone be packaged in labeled containers with safety caps.

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LETHAL CANNABIS INTOXICATION

To the Editor: At a time when it is common to hear that cannabis is less toxic than alcohol or cigarettes it is of interest to call attention to the report of Heyndrickx et al.[1] on "Toxicological Study of a Fatal Intoxication in Man Due to Cannabis Smoking." Dr. Heyndrickx is professor of toxicology and dean of the Medical Faculty at the University of Ghent and a leading European toxicologist. His report was not mentioned in the recent reviews published by the *Journal*.[2,3]

A 23-year-old man was found dead in his room, which contained large amounts of cannabis herb and resin and a water pipe, but no drugs. At autopsy there was no evidence of natural or violent cause of death. Classic toxicological analysis of the specimens (blood, urine, liver, kidney and stomach) was negative for barbiturates and weak acids, neutral poisons, alkaline poisons, weak amines, benzodiazepin compounds, phenothiazines, for morphine, "mephenon," dextromoramide (Palfium) and related narcotics and for alcohol and carbon monoxide. The only toxin identified (by thin-layer chromatography) was cannabinol in the urine.[4] A similar cannabinol substance was identified in the cannabis herb and resin and combustion residues from the water pipe, which were found in the room of the dead man.

This report was corroborated by the observation of Gourves et al.[5] Dr. Gourves, chief of anesthesia and intensive care in the Robert-Picque Military Hospital, Bordeaux, France, reported the case of a coma of four days' duration due to cannabis intoxication in a young French soldier, who, with conventional supportive therapy (intubation, intravenous fluids, 2.5 liters per 24 hours), recovered. He acknowledged having smoked nine to 10 pipes of a mixture of tobacco and hashish with the intent of committing suicide, claiming that this method had been used by others. He admitted that each pipe contained 15 to 20 g of smoking mixture. Assuming a 5 to 10 per cent Δ^9THC content for a potent cannabis preparation, and nearly total absorption of this toxic by the lung, the lethal intravenous dose of Δ^9THC in man would be of the order of 1000 to 2000 mg or 30 mg per kilogram. The intravenous LD_{50} in rats is 28.6 mg per kilogram.[6]

The lack of similar reports in the United States may be due to the lower potencies of cannabis preparations used in this country or to the imperviousness of Homo Americanus to cannabis intoxication.

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THERAPEUTIC DILANTIN LEVELS

To the Editor: In the table of normal values for laboratory procedures recorded in the Case Records of the Massachusetts General Hospital (N Engl J Med 283:1276, 1970) the therapeutic level of diphenylhydantoin (Dilantin) is reported to be 1 to 11 μg per milliliter of serum. I consider this in error, since serum levels above 10 μg per milliliter are usually necessary for adequate seizure control. A study by Buchthal, Svensmark and Schiller reported that clinical improvement in patients with grand-mal epilepsy did not occur with serum levels below 10 μg per milliliter.[1] Kutt and McDowell indicated that a range of 10 to 20 μg per milliliter produced the best seizure control and the fewest side effects.[2] Both these groups determined the serum diphenylhydantoin dilantin level by the same or a similar method to the one listed in the table.

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The above letter was referred to Dr. Rieder, who offers the following reply:

To the Editor: Dr. Ruskin has discovered an error in the latest normal-value chart. The therapeutic level of diphenylhydantoin should be 10 to 15 and not 1 to 11 μg per milliliter.

In addition, it might be added that toxic effects may be seen at 20 μg per milliliter, that 25 per cent of people may have toxic effects at 25 and 50 per cent at 30 μg per milliliter, and that coma is reached at a concentration of 50 μg per milliliter.

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