

psychopharmacology center, particularly in our field. And whenever the drug has reached a point where there are some findings which indicate that it may be useful or that it may be harmful, this then is shared with the FDA and becomes part of their record as they build up the history of the evolution of a drug, which finally may be approved for general use.

Chairman BLATNIK. Doctor, what are the real dangers or relative degrees of danger in the use of heroin, LSD, and marihuana? Can you use this interchangeably, as they are all addictive, or they overlap, or what?

Dr. BARTON. A great deal of the discussion this morning was directed toward the hard narcotic, the opium derivatives, such as heroin. In discussing the drugs, in trying to keep the answer short, one always must preface it by saying that there are several factors concerned, such as the amount of dosage, the time over which it is being used, and the susceptibility of the individual. With these three general factors in mind, then one says that heroin is the more dangerous drug. It produces definite addictive symptoms with a severe withdrawal, particularly if the dosage is reasonably high. Sometimes that withdrawal is not excessively painful, because the dosage has been small. But, nevertheless, it leads to addiction. It can lead to deterioration in judgment and in the general mental functioning of an individual. Marihuana also is a hazard to a lesser degree. In susceptible individuals it may produce mental illness, characterized by hallucinations and delusions, and thus lead to very severe incapacity. It has one interesting kind of symptom in that some time after discontinuance of use, there is often a flashback phenomenon, in which the patient relives certain episodes during his experience with the drug. And this may occur at some time after the use of the drug.

LSD has a more dramatic immediate kind of impact, with a toxic type of delirium, in which a person sees and hears things that are usually transient, but, once again, for the susceptible person who abuses the drug and uses it over a period of time, it becomes serious and damaging.

Chairman BLATNIK. You mentioned——

Mr. EDWARDS. Excuse me. May I ask one question there?

Chairman BLATNIK. Yes.

Mr. EDWARDS. Is LSD addictive?

Dr. BARTON. LSD may be habitually used, but it does not have the same order of addictive withdrawal symptoms that an opium derivative would have. There is a tendency, however, for susceptible persons to use it over an extended time. But its order of addiction is not the same, nor is it the same as a barbiturate even.

Mr. EDWARDS. Thank you.

Chairman BLATNIK. You mentioned there is some incapacity due to marihuana, exaggerated notions, loss of reality as far as time, and so on. In connection with highway driving and highway safety, can one who has smoked or is smoking marihuana function relatively reasonably well in terms of walking, in terms of driving an automobile?

Dr. BARTON. Here again you must consider the dosage over a period of time and the element of susceptibility. Some people can take it without any major effect; they experience nothing or very little from its use. One of the most subtle changes, however, is the impairment of