ABSTRACT

MARIHUANA REFORMATION: A STUDY OF ITS HISTORY, EXISTING RESEARCH, LEGAL PENALTIES, AND ENFORCEMENT COSTS

By

John Wesley Ingersoll

The problem being researched is the controversial topic of marihuana use through review of existing research and literature on the topic. The hypothesis that the present legal penalties for marihuana possession or use are unrealistically harsh in view of existing information about its effects on the human being is proved. The techniques used in arriving at this conclusion were to review a large volume of existing literature and research about marihuana. Also, a study was conducted on the cost of enforcing today's marihuana laws and then this total information was used to develop a model for reduction of penalties.

Marihuana has been and is one of the most controversial topics and drugs to be found by man. Throughout its recorded history, beginning about 2737 B.C., Cannabis sativa has been in and out of favor with each society. As its use spread through the Old World, therapeutic applications developed for this plant which were extremely diverse.

Marihuana was used to treat beri-beri, gout, and constipation to jaundice, migraine headaches, and convulsions. Harvesting techniques were developed to reap stronger and more intoxicating marihuana as its popularity increased. Along with its medical and euphoric properties man utilized the hemp plant in the production of cordage, ship sails, alter cloths, and even flags.

Legal restrictions on marihuana and its use in the United States began in 1912 at the Hague Conference on Opium and culminated in prohibition in 1937 with the Marihuana Tax Act. Attempts to find its active ingredients date back to 1896 when "red oil" was extracted from cannabis. Cannabinol, derived from "red oil," was considered the active ingredient until being disproved in a series of experiments between 1932 to 1942, where THC was found to be the primary active principle.

In the United States concern for marihuana developed slowly as use increased until 1967 when one survey noted that about ten million Americans had used marihuana at least once. Within five years, experimentation passed 24 million with about 2 percent being regular users. Cannabis users are basically white, upper-middle class, educated, and from families of an educated background. Generally, it's noted, the more one knows about marihuana the more apt one will have liberal ideas about it.

The primary findings of this study, by reviewing existing research and updating the New York (City) mayor's

committee on Marihuana are:

1. Marihuana is not physically addictive but with heavy long term use does form a psychological dependence. This dependence is less though than that of nicotine or alcohol.

2. Reverse tolerance does not occur except with learning and possibly with long term heavy use.

3. Marihuana use does not lead to violent crimes nor is it the primary factor in the commission of crime in general.

4. Its use does not cause genetic, fetal, or organic damages to a human being. The lethal dose is unknown for man, but is tabulated to be extremely high and may possibly be one of the safest drugs known.

5. The existence of an "amotivational syndrome" is still debatable, as is the exact effect of marihuana on an individual's ability to drive.

6. A large section of the U.S. population, including students, professionals, and general citizens use marihuana.

7. Marihuana does not lead to the use of harder drugs nor is it the primary factor in what is known as a psychotic reaction. The main factor is attributed to a predisposition to drugs in general and defect in character which could be caused by the use of marihuana or almost any drug.

In a study of the Flint Police Department and Michigan

State Police Post #35 on the cost of enforcing the marihuana laws, it was found that:

1. A minimum savings of tax money amounting to $13 million could have occured in 1970 if marihuana use and possession was reduced to a misdemeanor.

2. In this sample almost 50 percent of those arrested were released after arrest with no warrant issued.

3. No other studies of this type are known to exist in the area of average cost of enforcement of marihuana laws. The average case cost in this study was found to be about $1,310.00 for a court case, with it being $115.69 for a case not exceeding the arrest stage.

4. Average costs are derived for each individual, for police, and for the courts, prosecuting attorney, and probation departments.

5. The average number of police man hours expended are shown and the age, race, and sex of those apprehended.

The last chapter develops a model for the reduction of penalties after a presentation of each state's penalties for possession. Supportive evidence is presented to verify this model. Reasons are shown why legalization should not occur at this time, with the major one being our insufficient knowledge in many areas of research. These areas are reviewed to give the individual a greater understanding of what is still unknown about this controversial drug.

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By

John Wesley Ingersoll

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Approved:

Louis A. Radelet

(Chairman) Louis A. Radelet

Robert C. Trojanowicz

(Member) Robert C. Trojanowicz, Ph. D.

John H. McNamara

(Member) John H. McNamara, Ph. D.

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HISTORICAL PERSPECTIVES

The purpose of this study is not to establish that marihuana is harmless or that everything is known about this drug. The intent is to present a reasonable portrayal of what is known, as accurately and honestly as possible and attempt to dispel the distortion and hypermotionalism which presently surrounds this topic. It is only through critical evaluation, more thorough research, and the development of effective means of disseminating these evaluations and research findings to the public, that someday we shall begin to answer a few of the questions presently facing us.

As of 1968, there were only about 2,000 publications on marihuana and since the introduction of amphetamines in the 1920s there are well over 2,000 publications.[1] We can only wonder why marihuana, even with its controversial nature throughout its history, has gone so long unnoticed as an entity separate from other drugs, even as amphetamines have become. Of these 2,000 articles only a minority can be presented in this study; but they are used with no regard for their perspective on marihuana.

By the use of this information it is hoped that at least one thing can be shown; that is, that the present legal penalties for marihuana possession or use are unrealistically

harsh in view of existing information about its effects on the human being. To accomplish this the thesis is divided into four chapters, each dealing with a separate, yet interwoven topic. It is only in this manner that it is possible to derive an atmosphere which is conducive to realistically approaching this hypersensitive area. As one author said, "... it is through the experience of disagreement and discord that the reader will encounter the 'reality' of marijuana."[2]

In approaching marihuana in an educated manner it is easier to view it objectively and in so doing man will benefit. Because public belief is shaped by many factors, it becomes necessary to generate only those which are not emotionally laden and distorted by misinformation or misrepresentation. By developing the thesis on this basis each chapter will stand on its own, yet tied to the next to gain the strength needed in standing against prejudice, emotionalism, and folklore surrounding marihuana.

In this chapter, a review of literature is conducted to illustrate the long, involved history behind Cannabis sativa. How it progressed from acceptance to nonacceptance, and vice versa, will help to show why it is such a controversial topic today. The chapter will be approached in an all encompassing manner to give a broad, generalized understanding of marihuana. This prepares us to better comprehend the differences of opinion held by individuals who have researched the effects of marihuana.

The chapter is subdivided into five sections. The first will trace marihuana's travels throughout the world. The second section deals with the harvesting techniques used in some countries to show man's ingenuity in obtaining what he wants. Section three is a combination of two related areas concerning the use of the marihuana plant for both medical and commercial products. Medical uses are followed up to 1944 while commercial uses are considered up to the present date. The fourth section reviews legal controls in the United States up until and including the Marihuana Tax Act of 1937. The final section deals with pharmacological makeup of marihuana and briefly reviews the research conducted in this area.

Chapter 2 will be comprised of the surveys, expert opinions, and research gleaned from the literature on marihuana. By having knowledge of what has been done in the area of research and its impact on the public it becomes easier to formulate educated decisions concerning marihuana. Articles which contradict a research finding or opinion will be included to show shortcomings of the research or the misstatement of presumed fact. By using the conclusions and summary findings of the Mayor's Committee Report on Marihuana (LaGuardia commission) the chapter will take shape. Research will be presented to update this landmark study and where applicable to prove or disprove their findings. In the final process it will show that today's laws were based on erroneous information and emotional reactions to marihuana.

Public cost in tax dollars expended for enforcement

of the marihuana laws will be presented in Chapter 3. This study consists of a survey of arrest records in two police departments, Michigan State Police Post Number 35 and Flint Police Department, so that police costs can be ascertained in relation to arrests for possession or use of marihuana. The cases studied are traced from the point of arrest through court disposition, if one resulted, and any expenses incurred are included. This would include court, probation, and prosecution expenditure for each case and then each individual.

Average police and other costs are shown along with the average man hours expended in each case. Any information derived from the age, race, and sex of those arrested is also developed. Since this chapter covers a new area, very little is available to confirm this study, but where some does exist it is presented. In 1967, the president's Task Force Report: Narcotics and Drug Abuse stated, "... we are not aware of any studies of actual charges and dispositions."[3] This area is briefly touched on to fill this gap in information. Chapter 3, in its entirety, bridges a gap in our existing knowledge and sheds light on another reason to reduce present legal penalties.

The final chapter will summarize the first three to build a base on which to prove the hypothesis of this thesis. A model will be developed for the reduction of legal penalties on a state basis. Supportive evidence which verifies this model is presented and additional reductions recommended by any other source are also given. Next, reasons against

legalization are developed to show why our present knowledge is insufficient to take this step. After this, recommendations made by different sources for further research are presented. This new added research is a primary reason for opposition of legalization at this time. Until it is possible to say for sure what marihuana's long term effects are it is felt that it's best not to release marihuana to the public in the same manner alcohol was after the Volstead Act. Yet, it is better to light one candle than to curse the darkness.

DEFINITION OF TERMS

Addiction - The craving, compulsion, or compelling urge to use a drug so as to prevent or relieve a distressing mental or physical disturbance or to avoid an extreme sickness when the use of the drug is discontinued. Addiction can be of a physical or psychological nature brought on by the need for or want of the drug and with the knowledge that without it mental anguish and/or physical pain will be felt.

Bhang - The uncultivated female plants are used from which the tops are cut and it is usually of a very low resin content. Bhang is normally smoked in a pipe or in a form similar to rolled cigarettes.

Cannabis sativa L. - This plant is a herbaceous annual that grows in both temperate and tropical climates throughout the world and matures in four to five months. The plant is normally dioecious, having separate male and female plants, but it has been reported that on an occasion to be monoecious, containing both sex properties. The plants' height varies depending on the climate it is grown in, from as short as two or three feet up to eight or ten feet. Cannabis produces a varnish-like resin which covers the leaves and flowering tops. This resin is believed to be a protection against heat and because of this the quantity of resin varies from country to country, the warmer the climate the more resin. The plant was originally grown for its fiber and later in its history as an intoxicant and for medical purposes (developed in later chapters). The plant has also been known by the name Cannabis indica and Cannabis Americana. At one time Cannabis indica was thought to be the source of the intoxicant and Cannabis sativa as the source of fiber. These distinctions have been dropped now that it is realized that there is only one genus and presently the terms distinguish the origin of the plant, i.e. Cannabis indica, India; Cannabis Americana, the United States; and Cannabis Mexicana, Mexico and Central America.

Charas - (also: hashish, churus, and churrus): This being the pure unadulterated dark brown resin which is taken from the finest female plants and is from five to eight times more potent than marihuana.

Drug - Any substance recognized as a drug by the official pharmacopoeia or homopathic pharmacopoeia of the United States. Also, any substance whose intended use is for the diagnosis, treatment, cure, or prevention of disease in men or animals. Substances,

excluding food, which affects the structure or any function of the body of either man or animals.

Drug abuse - This is one term extremely difficult to define because it is based on an individual's own perception of the drug he is using. For example, an individual who smokes two or three packs of cigarettes a day may not see this as abuse, whereas, another individual who abstains from the use of nicotine will see this as abuse. "The American Medical Association, . . . defines the term: 'drug abuse is taking drugs without professional advice or direction' (A.M.A., 1967:2). Nonmedical drug use is, in the medical view, by definition abuse. Any use of any drug outside medical context, regardless of its consequence, is always undesirable, i.e. is by definition, abuse."[4] (Italics in original.)

Drug habit - This is very similar to drug addiction except there is no compelling or compulsive need for the drug, only a willingness of the user to take the drug. A drug habit, by definition, could possibly become abusive but this would depend again on who decides if the use is free from compulsion.

Ganja - It is of medium strength between bhang and charus and is a specially harvested grade of female plants. The tops are used for smoking, in foodstuffs, and also in a beverage made similar to tea.

Lethal dose - The amount of a drug taken which causes 50 percent of the takers to die.

Marihuana (marijuana) - This consists of a dried mixture of crushed leaves, flowering tops, stems, and seeds of the Cannabis sativa L. plant from which the resin has not been extracted. The origin of the name marihuana is in debate, some believing that it is "... a Mexican-Spanish word first used for a poor grade of tobacco, only later--and much more widely--applied to this plant ..."[5] While others believe it "... to be a corruption of the Portuguese 'maraguango,' meaning intoxicant, ..."[6] and still others, "... That it has its derivation in the Mexican words for 'Mary and Jane ...'"[7] When smoked, as is the normal mode of consumption in the United States, the smoke has a sweetish odor and is similar to burning grass or rope in smell and is harsh in taste. It is usually smoked in a crude cigarette and sometimes in a pipe. Occasionally it is chewed or eaten in foodstuffs, i.e. brownies, candies, etc. The potency will vary depending on where the plant is grown. If it is grown in India or Mexico, the potency is much greater than that grown in the United States. This is because that grown in warmer climates contains a greater concentration of resin and it is this resin which

contains the intoxicants.

Physical dependence - A dependence or need produced by a drug in which a discontinuation of the drug causes physical pain.

Pothead (head) - An individual who has made the use of marihuana a way of life. They would be equivalent to a chronic alcoholic in that they have taken a chemical to solve their problems.

Psychedelic - This term is "taken from the Greek for 'mind' and 'manifest,' literally 'mind made manifest,' the term suggests that the mind most truly and characteristically 'manifests' itself in a high state ..."[8]

Set - The expectation, beliefs, and moods that an individual takes into a drug experience and how he thinks the drug will act on him.

Setting - The environment in which the drug is taken, both social and physical surroundings. The setting can and does, at times, effect the way the drug will react on the individual.

Tetrahydrocannabinol (THC) - This is the basic active pharmacological ingredient in Cannabis sativa, technically Delta^{9}THC.

Tolerance - The need for larger doses of a drug, which develops over a period of time, to produce the same effects as was caused after the first experience.

Toxic reaction - "Toxic reactions to marijuana may be considered as any effects that result in physical or psychological damage, that are subjectively experienced as unpleasant by the user, or that produce significant interference with adequate social functioning."[9] Also, this can be divided into acute toxic reactions and chronic toxic reactions. Acute toxic reactions are caused by a single experience with marihuana and chronic toxic reactions are the undesirable effects caused by prolonged use.[10]

Reverse tolerance - This is the need for a smaller quantity of a drug to produce a similar experience as was caused by the first use of the drug.

Withdrawal - "... Any syndrome that consistently appears when the intake of certain drugs that have been used regularly is cut off: by definition, it is relieved when administration of the drug is reinstituted."[11]

HISTORY OF MARIHUANA

Throughout marihuana's recorded history, which covers more than 4,500 years, there has been controversy surrounding its discussion. Whether it was accepted or not depended on what it was used for and which part of society accepted it.[1] This same fact seems to be true today and will, more than likely, remain true in the future.[1] In this chapter marihuana's history will be traced from its first recorded use and its movement through the Old World to the New World. Also, how it is harvested, what its medical and commercial uses have been, its legal history in the United States, and marihuana's pharmacological makeup.

Historical Movement

The majority of authors feel that marihuana's recorded history originates in 2737 B.C. when Emperor Shen Nung wrote a pharmacopeia, in which he mentions cannabis and its medical uses. This is debatable because the Treatise on Medicine which has been attributed to Shen Nung may actually have been written by the Han Dynasty scholars who go back to the fourth century B.C.[12] Whichever is the true source it can be seen that marihuana has been around for thousands of years. Even in China the use of marihuana was not always seen as good, as can be told by some of the names given it in this country, i.e., "Giver of Delight" and "Liberator of Sin."

From China nomadic tribes carried with them the use of cannabis in their travels to conquer other lands. Sometime

near 2000 B.C. it was brought into India by these nomadic tribes. This is shown by the four Vedas of the Hindu Kush, the oldest religious texts, which were completed approximately 1500 B.C. Later, 1400 B.C. to 1000 B.C., the Atharva-Veda in a hymn for freedom from distress also mentions marihuana.[13] From this we can conjecture that in India marihuana was used for medical as well as religious purposes. This religious practice was condoned and even today is one of the main uses of cannabis in India.

In the fourth and fifth centuries B.C. the religious use of marihuana spread to Europe from Siberia. This is shown by statements of Herodotus and frozen hemp seeds found in burial kettles in Germany.[14] We can infer from the Greek and Latin names for marihuana, Kannabas and Cannabis respectfully, that they also had knowledge of it by the second century B.C., where it was applied as a medical concoction (see section on medical uses). As is known, the Greeks and Romans were traders throughout the Mediterranean Sea countries and in Europe. Commerce and later conquests by the Romans spread the use of marihuana to these countries. This can also be shown by the names used and their similarity, "the Assyrians called the plant 'Quonoubou Qunnapu,' ... the Hebrew 'Quanneb,' the Arabic 'Qannob,' the Persian 'Quonnab,' the Celtic 'Quannab,' and the Greek 'Kannabas,'"[15]

Approximately A.D. 1090 Hasan-i-Sabbah from Persia captured the fortress of Alamut in northern Persia. It was this army that later was called the "assassins," and from this came the word hashish. There is much debate whether

hashish comes from Hasan-i-Sabbah or assassin. The way hashish was used, according to some authors, is that it was given to the soldiers before the battle and caused them to be fierce and commit murder without feelings or thought.[16] Yet, Lester Grinspoon points out that hashish was used after the battle as a reward.[17] The use of hashish continued to increase in every Moslem kingdom. Because it was believed that hash caused an individual to commit violent crimes government officials attempted to ban its use. Even though this restriction was stringently enforced, the use of hashish, bhang, and ganja continued to grow in India especially after Hinduism replaced the Vedic religions. The Hindu's called hash 'The Heavenly Guide,' 'Poor Man's Heaven,' and the 'Soother of Grief,' which tends to show their acceptance of the drug.

From India and the Middle East the knowledge and use of cannabis spread into Europe and Africa. By A.D. 1548 its use had gained wide enough acceptance to be listed as "hemp" by William Turner, in one of the first complete English herbals.[18] Before the year A.D. 1800 marihuana became intrenched in almost all of the Old World. It was not until 1753 that Linnaeus gave Indian hemp or marihuana its botanical name Cannabis sativa L. In South Africa cannabis had a long history and was used extensively by the Hottentots and Bushmen. This is shown by,

> ... the first governor of South Africa, Jan vanRiebeeck, who arrived in 1652, mentions cannabis smoking, and in subsequent reports of early travelers there is repeated reference to smoking.... Some accounts suggest that the Arabs brought hemp into Central Africa sometime before the Portuguese introduced tobacco.[19]

The spread of marihuana to the New World is somewhat easier to trace. As early as the 17th century, the colonists in the New England colonies were required to grow hemp for fiber as an export product to England. From existing information on what names were used in Africa for marihuana it can be concluded that cannabis was introduced in Brazil during the colonial period, probably by the slave trade.[20] During colonial days hemp was used for many purposes and for many commercial products (this is shown in a later section). Cannabis sativa was not introduced in Jamaica, Trinidad, and other islands of the West Indies until after the Emancipation Proclamation in the 1860s. It is also known that prior to colonization of North America, hemp was not used by the North American Indians. There is no mention in Indian medicine of its use, either medical or religious.

Even though hemp was grown in the New England colonies for many years its intoxicating effects never became much of a problem. It was used extensively for medicine by many well-known people, including George Washington. It is believed that the use of marihuana did not become a problem in the United States until about the 1920s. At this time Mexican laborers in the country introduced the intoxicating effects to others. At first it was used by musicians and blacks who were not seen as a threat. As the use of marihuana spread to larger numbers of individuals, it was thought to lead to crime, insanity, and harder drugs. The newly formed Federal Bureau of Narcotics pressed for legislation against use and sale of marihuana which ended in the 1937 Marihuana Tax Act

(this will be expanded in a later section).

During marihuana's brief history in the United States it has had a large number of slang names. Some of the most common names are Mary Jane, weed, tea, and Indian hemp. Others which have been used are: boo, gage, gates, giggle-smoke, goof-butts, greeters, griffo, jive, joy-stick, muggles, and mooters. The majority of these names give the impression of something enjoyable to use.

Harvesting

Harvesting of the hemp plant depends on whether one is after the fiber or the resin. This paper will deal only with harvesting of the resin because it is more applicable to the subject of intoxicants. There are a number of methods in which to gather the resin depending on the quality which is being sought. The first and the lowest being to just cut the tops, flowers, leaves, and stems all at once and grind them up. This method is normally used in the United States and other illegal markets where marihuana is smoked in cigarette form. It can be bought in large quantities, kilos or in the form of a joint, a rolled cigarette. The amount of work necessary to harvest and prepare marihuana is minimal when done this way.

Next is ganja, which is more potent than marihuana. The techniques used to harvest it becomes more complex. Specially dried leaves and flowering tops of the female plant are laid out together and are struck by a rock or stone slab until the resin forms a sappy mixture of leaves and tops held together by the resin. This is usually known as round ganja

because it is rolled in balls before sale. Also ganja can be made into what is called flat ganja.

> As the female plants begin to form the resin, all the larger leaves ... are removed. The smaller leaves and the brackets of inflorescence become agglutinated into a resinous mass. The plants are then cut about six inches from the ground ... Those bearing flowering heads are arranged in a circle with the heads directed toward the center and overlapping each other .... While holding the plant tight with the left foot, the laborers press down and trample with the right foot .... Fresh bundles are placed over those which have been already pressed and the treading is repeated. This goes on until the ring is about a foot in height after which the flowering twigs are removed.[21]

The most potent form of Cannabis sativa is charas or hashish and has been harvested in many different ways. Once naked men would run through the hemp fields. Mostly female plants and the resin which clung to their bodies was scraped off. Later, for sanitary reasons or because enough was not being collected in this manner, the men wore leather aprons or pulled leather straps through the fields and the resin was scraped off the leather.

Another method was to take one plant at a time and push it into a container and shake the resin off. Another procedure was to press the flowers between a material, similar to cheesecloth, or rubbed between fine mattings to separate the resin from the plant. In these methods of gathering the final product is pressed into blocks which range from a dull yellow to chocolate brown in color.

Both ganja and charas are generally smoked. In some countries they are blended with other foods. For example, in Africa, the tops and leaves are added to water to make a paste

and then swallowed. Furthermore, the concoction is mixed with jams or with nuts to stuff dates. In other countries the leaves are brewed in the form of tea. The Turks make a paste with the leaves, tops, spices, and chocolate which is eaten. Even in the United States ideas have been developed to mix marihuana with foodstuffs, i.e. brownies, cakes, and candies.

Medical and Commercial Uses

Marihuana's medical and commercial history parallels its history as an intoxicant and even precedes it. In the process of tracing the uses of hemp up to 1945, (1945 to 1972 found in Chapter 2), there will be a crisscrossing of its medical and commercial practices. The first recorded use for medicinal purposes was in 2737 B.C. Shen Nung prescribed its use, "... for 'female weakness, gout, rheumatism, malaria, beri-beri, constipation, and absentmindedness ....'"[22] It is difficult to believe that hemp preparations could actually cure these variable diseases, however, they must have had some success even if it was just psychological.

Hemp was utilized as far back as 1200 B.C.[23] for its long fibers in making textiles. This use continued to be one of its main services. The Greeks and Romans used hemp fibers for ropes and sails on their ships. By the first century Dioscorides and later in the second century Galen prescribed hemp preparations for its ability to cure earaches and assorted pains, extinguish flatus, and as a pleasant relaxing dessert.[24] Later yet, in 1645, Nicholas Culpeper's herbal

actually prescribed Cannabis sativa for jaundice, coughing, worms, gout, and rheumatism.[25]

The utilization of hemp for textiles was brought by the Spaniards to Chile during their conquests about 1545. In Jamestown, as early as 1611, the colonists were required to plant hemp by the king of England. Only eight years later the Virginia General Assembly requested the planting of hemp for its use in making textiles and cordage. During this same period marihuana's medical uses were expanded as shown by "Rumphuis in the Herbarium Amboineuse [sic.] 1695, stated that the Mohammedans in his neighborhood frequently sought marihuana from his garden for those afflicted with virulent gonorrhea or asthma."[26]

Marihuana was used by George Washington for its textile properties and there are indications that, according to his diary, he may have also used it for its intoxicating or medicinal capabilities. This is not difficult to understand from past medical recommendations which were made by physicians prior to Washington's time. Around 1800,

> ... Dr. J. R. Reynolds summarized 30 years of experience in dealing with cannabis by pointing out that he had found it most helpful in the treatment of certain neuralgia, including tic douloreux. He had also found it useful in the treatment of migraine, ... He states that it had been of help in treating certain epileptoid states, depression, and dymennorrhea....[27]

Some 38 years later, 1838, J. J. Moreau de Tours, a French physician, studied possible uses of Cannabis sativa for nervous and mental disorders. In 1845 he wrote that it could also be used "... in the treatment of melancholia

(particularly with idée fixe), hypomainia, and chronic mental illness in general."[28] During this same period an often quoted doctor studied marihuana, Dr. W. B. O'Shaughnessy, "... found tincture of hemp to be an effective analgesic and to have anti-convalsant and muscle-relaxant properties."[29] He also stated a, "... belief that in hemp the profession has gained an anti-convulsive remedy of the greatest value."[30]

It was after Dr. O'Shaughnessys' studies that U.S. physicians began to recommend and prescribe hemp tincture for a variety of conditions. These usages were expounded to the Ohio State Medical Society in 1860 by Dr. R. R. M'Means to include,

> ... tetanus, neuralgia, the arrest of uterine hemorrhage, as an analgesic during labor, in dysmenorrhoea, convulsions, the pain of rheumatism, asthma, postpartum psychoses, gonorrhea, and chronic bronchitis."[31]

Prior to the Civil War, Cannabis sativa was the second most important cash crop grown in the South. At this time hemp fibers were used for rope, fine paper used in making Bibles, currency, fiber for ship sails, fine napkins, alter cloths, and even flags. Much of these raw fibers, as well as cotton, were being sold to foreign countries and this may be a reason why some countries were aiding the South during the Civil War. The fact that a large quantity of hemp was grown in the South and that those who worked the fields were slaves from Africa it could be conjectured that the intoxicating properties of marihuana were also known during this period in the South.

In response to the widespread use of Cannabis sativa

in India the British House of Commons formed the Indian Hemp Drug Commission in 1893. After an exhaustive year long study in India the commission reported their findings in seven massive volumes. The commission studied cannabis uses for medicine, in religion, as a work aid, and any association to crime, loss of motivation, disease, and possibly a "stepping-stone" to harder drugs. Several of their findings should be mentioned since this was one of the first and most comprehensive studies completed to date on marihuana uses and its consequences.

The Indian Hemp Drug Commission found that,

> ... the drug was used extensively in treating diseases of the nervous system - including headache, brain fever, neuralgia, sciatica, convulsions in children. One of the commonest uses was for the relief of protracted labor pains, dysmennorhea, toothache, and as a local anaesthetic in extracting teeth.[32]

They also called, "... Cannabis indica [italics were added] one of the most important drugs of Indian Materia Medica ..."[33] In addition, a number of conclusions were:

> 1. There is no evidence of any weight regarding mental and moral injuries from the moderate use of these drugs.
>
> 2. Large numbers of practitioners of long experience have seen no evidence of any connection between the moderate use of hemp drugs and disease.
>
> 3. Moderation does not lead to excess in hemp any more than it does in alcohol. Regular, moderate use of ganja or bhang produces the same effects as moderate and regular doses of whiskey. Excess is confined to the idle and dissipated.[34]

In India a hemp product, bhang, is used extensively in religious ceremonies among a number of different religious sects.[35] The commission came to these conclusions after

gathering information from over 1,000 witnesses during hearings held in 30 cities throughout India. It should be realized that their findings were based on individuals who had used cannabis products for many years and whose families probably used them for generations. This could be an over-statement of fact, however, it could be possible to arrive at such a conclusion seeing that marihuana, bhang, ganja, and hashish have been known and used for centuries in India.

A fact which was pointed out by the Indian Hemp Drugs Commission was that bhang was used in mines to reduce fatigue. This point was later shown to be true in Africa.

> C. J. Bourhill, writing in 1913, states that dagga [another name for Cannabis sativa] smoking was not only permitted but actually encouraged among African mine workers because after a smoke the natives worked harder and showed very little fatigue. The usual mine practice was to allow three smokes a day.[36]

Robert Walton points out that, "During the period 1840 to 1900 there were something over 100 articles published which recommended cannabis for one disorder or another."[37] A number of medical uses have been mentioned in previous paragraphs which give an idea of the diverse illnesses hemp has been used to cure. Other commercial uses are: birdseed, artists' paints, and twine. These are all made from some part of the hemp plant.

Before the passage of the Marihuana Tax Act in 1937 the use of Cannabis sativa was already declining as new synthetic drugs were introduced. The lack of cannabis solubility in water and the variation of potency in different

quantities was a large factor in the reduction of medicinal uses. By the middle of World War II, with the introduction of nylon for rope, most of hemp's commercial uses were eliminated, birdseed being one of the few remaining uses. However, it should be realized "... that the decline in the use of cannabis was apparently not connected either with its intoxicating properties or with its addiction liability."[38]

United States Legal Restrictions

Legal penalties have been applied in this country to prevent the use of many drugs: alcohol and marihuana being two. The Volstead Act was alcohol's prohibition. Up until 1912 marihuana was not seen as much of a problem. But in 1912 the United States government proposed worldwide prohibition against marihuana at the Hague Conference on Opium. This approach has continued as the way to prevent the use of cannabis. This section will deal with legal restrictions in the United States up to 1937 and the Marihuana Tax Act. From 1938 to 1972 will be included in Chapter 3.

During the 1920s there was an upsurge in interest in marihuana. This interest centered on and spread from New Orleans. In New Orleans there was a series of crimes in which marihuana was blamed for at least a casual relationship and in some cases the triggering factor of the crime. By 1923 New Orleans banned the sale and use of marihuana by city ordinance. By 1927 a statewide law was in effect in Louisiana. Prior to this, in 1915, California had prohibited its possession except when prescribed by a

physician. Other states followed Louisiana's example: Texas and Colorado in 1929, Illinois in 1931, and New York in 1933. As stated by Walter Bromberg,

> In 1931 the International Narcotic Education Association in its Geneva convention acted to include marihuana (hashish) in an international treaty for the limitations of the distribution of narcotic drugs.[39]

Again in 1930 the district attorney of New Orleans, Eugene Stanley, stated in an article that of the 450 individuals arrested for serious crimes, 125 were marihuana addicts.[40] Since the adoption of the Uniform Narcotic Drug Act in 1932 the states have covered marihuana under the definition of a "narcotic drug," even though marihuana is not actually a narcotic drug and is not considered one by federal law.

In 1930 the Federal Bureau of Narcotics was created in the Treasury Department. Its responsibilities were to cover opium, coca leaf and its chief derivative cocaine, a specific class of synthetic drugs, and *Cannabis sativa L.*[41] With marihuana enforcement under the jurisdiction of the newly formed bureau, it needed a scapegoat. Marihuana was the choice. Spearheaded by its director H. J. Anglinger the bureau pushed for passage of the Marihuana Tax Act on October 1, 1937.

To get the Marihuana Tax Act passed there had been a campaign aided by newspapers and national magazines which printed a number of sensational horror stories on what could happen if one were to use the "killer drug" marihuana. Many

of these stories were provided by the Federal Bureau of Narcotics from its case files. One of these stories was of a 27-year-old bellboy who shot and killed an elderly security guard while under the influence of marihuana.[42] Another story was about a 26-year-old who raped a 9-year-old girl while under the influence of marihuana.[43] A city police file reports a case of a man who after smoking two marihuana cigarettes, jumped through a hotel room window, dropped 18 feet to the roof of another building, and went through an adjacent window, where he proceded to beat another man to death.[44] From these and other cases, it was alleged that marihuana lead to assault, murder, rape, robbery, and suicide. This point was brought out in the committee hearings before passage of the Marihuana Tax Act.[45]

Another foe of marihuana was the alcohol industry which was just beginning to get back on its feet after repeal of the Volstead Act. The legalization of marihuana posed a threat to the alcohol industry and a stumbling block to their success in rebuilding the industry. (Whether a fact or not, it has been said that individuals who use marihuana have a tendency not to use alcoholic beverages, except sweet wines.) This might explain the alcohol lobby's insistence that the tax act should be passed.

The hearings held to discuss the implications of marihuana use in the United States were conducted before the House of Representatives Ways and Means Committee. A number of authors (Solomon, Grinspoon, Lindesmith, and Aldrich) felt

that these hearings were one of the most lopsided and judicially unfair of any held thus far in the United States. From a review of literature on the hearings there seems to have been only two dissenting opinions heard. One was the birdseed industry who feared the loss of one of their prime commercial products. This fear was quashed when an exception was made for the commercial use of hemp seed by this industry as long as the seeds were nonreproductive. The second opinion was that of Dr. William C. Woodward.

Dr. Woodward felt that they were acting too hastily, more study was needed, and "... that 'primary data' from government agencies such as the Bureau of Prisons, the Children's Bureau, and other sources should be collected and analyzed."[46] He also gave the impression that marihuana use was being exaggerated, that state legislatures should be able to take care of any problems which might arise from cannabis use, and that the tax act's passage would inhibit any further research which might be conducted to explore medical or pharmacological uses. Dr. Woodward's statements seemed to inflame the committee hearings and its constituents to the point where they tried to browbeat and dismiss the statements by challenging Dr. Woodward's credentials, which were unimpeachable. As a final reaction to Dr. Woodward, this statement was made,

> If you want to advise us on legislation, you ought to come here with some constructive proposals, rather than criticism, rather than trying to throw obstacles in the way of something the Federal Government is trying to do.[47]

Of the many individuals who spoke before the hearings these were the only dissenting opinions heard. Although this is true, when H. J. Anslinger was asked if marihuana users went on to heroin or other addictive drugs his answer was, "No, sir, I have not heard of a case of that kind...."[48] The basis on which marihuana was being debated was its propensity to produce crime. Yet, some authors felt the intent of the Marihuana Tax Act was, as stated by Roger C. Smith, "The obvious intent of this legislation was to impose federal police powers in the area of marijuana enforcement...."[49] Lester Grinspoon tends to agree with this, but with a little different twist.

> By making the individual who wished to smoke marihuana pay $100 tax per ounce, the government would effectively force the user to purchase it in an underground market, thereby exposing himself to the risk of tax evasion...."[50]

Whereas another source felt that when talking about the Marihuana Tax Act,

> Legal control is one of the most important and effective aspects of prevention.... The basic features of federal control are to make marihuana dealings visible to public scrutiny, and to render difficult the aquisition of marihuana for nonmedical and noncommercial purposes.[51]

It was also felt that by imposing $100 tax per ounce on marihuana when illegally purchased, that revenue could be raised by this tax. This was shown to be false by the president's Task Force Report on Narcotics and Drug Abuse of 1967, in which it was stated, "The act raises an insignificant amount of revenue..."[52] A brief rendition of the Marihuana Tax Act follows, which was taken from the Task Force Report:

Narcotics and Drug Abuse, so that it will be easier to understand the effects of the law.

> At the heart of the act are provisions requiring that all persons with a legitimate reason for handling marihuana register and pay an occupational tax, requiring that all marihuana transactions be recorded on official forms provided by the Treasury Department, subjecting transfers to a registered person to a tax of $1 an ounce, and subjecting transfers to an unregistered person to a prohibitive tax of $100 an ounce.[53]
>
> At both the Federal and State level marihuana is controlled in a manner similar to heroin and other 'hard narcotics'. Federal control is via the taxing power, and a transfer tax and an occupational tax are prescribed by the Marihuana Tax Act. All persons dealing in marihuana must register with the Bureau of Narcotics and pay an occupational tax. The act required registrants, whenever required to do so by the Secretary of the Treasury or his delegate, to render information returns, verified by affidavit,... Returns are to set forth the quantity harvested, or, if received from another, the persons from whom received and the date and quantity of each receipt. The great number of transfers are taxable and must be made pursuant to official written order.... The written order requirement is inapplicable to transfers by registered practitioners to patients 'in the course of ... professional practice only.' ... Similarly, transfers made in good faith pursuant to written prescriptions of registered practitioners are also exempted from the written order requirement....
>
> The transfer tax applies to all transfers except certain transfers of seeds, certain transfers to Federal, insular, State and local officials, legitimate exportations and transfers connected with medical use (including prescriptions) 'in the course of professional practice only.'[54]

With the passage of the Marihuana Tax Act of 1937 the United States went into a new era of legal prohibition which will be covered later in Chapter 3. As a parting point in 1937 during committee hearings, the American Medical Association concluded, "there is positively no evidence to indicate the abuse of cannabis as a medicinal agent or to show that its medicinal use is leading to the

development of cannabis addiction...."[55] Even with this fact being stated by a professional organization the tax act was still passed.

Pharmacological Makeup of Marihuana

This will be a brief history of the search for the active ingredients contained in marihuana and some of the answers thus far gained. The chemical composition of Cannabis sativa is extremely complex and to go into the entire breakdown would not be profitable in this report.

The search and discovery of the pharmacology of cannabis from 1840 to 1895 was somewhat unsuccessful. It was not until 1896 that a breakthrough was made by Wood, Spivey, and Easterfield when they were able to extract a product containing most of hemp's active principles. This extract they named "red oil" mainly because of its appearance. From "red oil" they developed a pure crystalline form and by hydrolysis came up with another oil which was named cannabinol.[56]

Cannabinol was believed to be the active ingredient in cannabis but this was later disproved. It wasn't until 1932 that Cahn was able to duplicate the above mentioned experiment. Cahn continued until he derived a structure in respect to its position on the hydroxyl and n-amyl groups.[57] Roger Adams with other colleagues conducted a series of experiments which were published from 1940 to 1942.[58] They describe the chemical formulas of cannabinol, cannabidiol, and tetrahydrocannabinol. The relationship of these three

substances are explained and how each in the process of aging may develop into another chemical formula.

It was from Adam's experiments that the major active principle of Cannabis sativa was found to be tetrahydrocannabinol (THC). By use recently of modern separative and analytical techniques researchers have been able to isolate the absolute and structural configurations of the active and inactive principles of cannabis. All the answers are still not available and further research is necessary but some conclusions can be made.

> Cannabis constituents are divided into two major classifications: the cannabinoids, which contain most of the active principles, and the non-cannabinoids including waxes, starches, terpenes, oils, and traces of other identified or non-identified materials....[59]

Up until 1963 the principles of only one cannabinoid was known, that being cannabinol (CBN). But in 1964 tetrahydrocannabinol was isolated and Delta^{9}THC the active principles were described.[60] With the use of petroleum ether it has been shown that at least four principle groups exist in Cannabis sativa. The first is cannabinol, the second group is made up of Delta^{9}THC and Delta^{8}THC, group three is made up of the cannabidiols (CBD), and the final group contains the carboxylic analogs of the above three mentioned. Cannabidiols and Delta^{9}THC seem to have an inverse relationship between the amounts existing in a given sample. It is also felt that Delta^{9}THC converts to cannabinol with age. If in reviewing literature it is stated that Delta^{1}THC or Delta^{9}THC are both the active

principles, this is because two different numbering systems are presently being used and until this is settled either one of these labels are correct.

Much is still unknown about the active principles of Cannabis sativa and how they react on the brain and the central nervous system. Until recently it was not possible to trace the flow of THC in the human anatomy. Yet, with the use of radioactive particles tacked to Delta^{9}THC, researchers are finding answers to questions which have faced them about marihuana's effects and which parts of the anatomy are affected. Also through the use of standard samples provided by government laboratories, scientists are now able to obtain truer results with greater consistency.

Summary

This history of marihuana has been traced from when it was first recorded in 2737 B.C. and its uses throughout the entire world. Also shown was how the use of marihuana spread to other countries in the Old World and thus to the New World. Cannabis sativa was shown to be used for religious purposes, medicinal remedies, for its intoxicating properties, and hemp's commercial uses. The legal history of marihuana in the United States was traced including the Marihuana Tax Act. How marihuana was harvested to gain each of the intoxicating agents with their different potencies was explained. A very brief synopsis was provided on the history of research for the active pharmacological agents in marihuana and some of the results thus far.

Chapter 1

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Chapter 2

RESEARCH ON MARIHUANA

The main part of this chapter is developed around the summary and conclusions made by the New York (City) Mayor's Committee on Marihuana,[1] LaGuardia committee, published in 1944. Prior to this is a presentation of surveys on the number of marihuana users, their age, opinions, and conclusions which can be drawn from these surveys. An appraisal of research limitations is provided to show existing disadvantages on research done in this area. The LaGuardia committee report will be updated. Knowledge gleaned from other studies will be provided which either agree or contradict the LaGuardia report. Areas which are not covered by the LaGuardia committee have been developed to provide a complete picture of knowledge which exists today.

SURVEYS

Estimated Number of Users

In 1967, Life figured there were 10 million Americans who had used marihuana at least once.[2] From surveys conducted, 15 to 40 percent of college students had smoked hemp.[3] According to the National Institute of Mental Health, the college use is about 20 percent.[4] In a study in 1969 of

Columbia University Law School with 491 out of 900 students completing the questionnaires, 69 percent stated they had smoked marihuana at least once. Of the 491, 40 percent smoked "infrequently," while 53 percent used it once or twice a month.[5] The Institute for Public Policy Analysis, at Stanford, conducted a survey in which it was found that 69 percent of its undergraduates had tried marihuana in the 1968-69 school year. A projection stated, "it may not at all be out of line to expect a figure of 80 to 90 percent for the class of 1971."[6]

By 1970 a multitude of surveys was completed, some of which were national, while others merely pertained to a certain locale or school. One was a survey of four medical schools with a total of 1,057 medical students responding to the questionnaire. Marihuana use ranged from 16 percent to as high as 70 percent. Of these 1,057 students more than 500 had smoked marihuana at least once with 114 more than 100 times and 300 stated they were currently using it.[7]

Another survey released by Gallup Poll, based on interviews with 1,063 students on 61 college campuses, found 42 percent had tried marihuana. In comparison to 1969, this figure was almost doubled and compared to 1967 use was eight times higher.[8] Also, of this same group 28 percent stated they had used marihuana during the 30 days preceding the interview, with 17 percent using it an average of 4 times per week during this 30 days.[9]

In 1970 the largest federal survey was conducted by

the National Institute of Mental Health at 50 campuses involving 10,000 students from which was released this information. Of the 10,000 students 31 percent had tried marihuana at least once, with 14 percent using it every week or two.[10]

The House Armed Services Committee reported that as many as 60 percent of all U.S. servicemen had tried drugs, principally marihuana, and that up to 20 percent could be regular users. A Pentagon study of the Army's 25th Infantry Division in Vietnam, published December 1, 1970, of 1,205 responses found 50 percent had experimented with marihuana and 28 percent were regular users.[11]

As can be noted, the increase in the number of people trying grass is also followed by an increase in the number of regular users. In 1971 surveys of the number of users was expanded to include high school and junior high school users. Again there were a large number of surveys. Only a few are mentioned here. A study at the University of California, Berkeley, found 73 percent of those checked had used marihuana at least once and 51 percent classified themselves as occasional to regular users.[12] Again in 1971 a Gallup Poll was released which showed marihuana use among college students rose to 51 percent. The survey covered 57 college campuses and 1,063 students of which 40 percent had used pot in the last year and 30 percent in the last 30 days. Of this college population only 5 percent were considered "heavy" users, using pot an average of 25 times out of the 30 days previous to the interview.[13]

A national survey in May 1971 was conducted on young adolescents, ages 12 to 17. It was found that this group had used marihuana as often, if not more often, than the 18 to 29 age group surveyed earlier.[14] From another source it was found that of the 31 percent of the college students who had used marihuana in 1970 increased to 44 percent in 1971. Also, of 13.6 percent of those who had used grass at least every week or two had increased to 21.6 percent in 1971.[15]

McGlothlin estimated marihuana use in the middle of 1971 in a comparison of college, non-college, and high school students. He stated,

> ... college students as a subgroup of the 18-24 year population group have a usage rate about twice that of the non-student age group. And high school students have a rate equal to that of the 18-24 year non-student age group.[16]

In Time magazine February 1972, McGlothlin was quoted as estimating that, "within five years, ... there may be 6 to 12 million weekly users and from 800,000 to 2.5 million daily ones."[17]

In a report by the secretary of the Department of Health, Education, and Welfare they estimated that 15 to 20 million United States citizens had tried marihuana and over half use it at least once a month. Also, the report figures about one fourth of this number smoke grass three times a week or more and high school users, "... range from as low as five percent to as high as 90 percent" per school.[18] The National Commission on Marihuana and Drug Abuse released a report March 22, 1972 in which a study placed the number of

possible users at 24 million with 8.3 million still using it.[19] Also,

> About 15% of all Americans over 18, and 14% of those under 18, have smoked marijuana according to The National Commission on Marihuana and Drug Abuse ....reports the Commission, there isn't much of a generation gap between users and the non-users.[20]

The commission found peaks of use from the 18 to 25 age group with use quickly falling off after this.[21]

So from 1967 to 1972 the estimated number of individuals who had smoked marihuana at least once went from 10 million to 24 million. So in five short years 10 percent of the United States total population had at least tried marihuana. From a 1956 estimation made by the "... United Nations Commission of Narcotic Drugs over two hundred million people made regular use of cannabis,..."[22] It can only be inferred, but if use in the United States has grown almost one and half times in five years, then use throughout the world in 15 years must also have increased.

Survey Opinions and Conclusions

Surveys conducted in the United States not only estimated the number of users and their regularity of use but also attempted to gain a clearer understanding of public, professional, and users expectations and knowledge of marihuana. Presented here are some of these studies and their results.

In 1970, Psychology Today[23] sent questionnaires to both physicians and researchers to determine their opinions on some aspects of psychedelic drugs, of which marihuana was included. In this study "researchers" were those who were

or had been actively involved in drug research and the "professionals" were physicians and psychiatrists who had lacked research drug experience. The returned sample of questionnaires included 127 "researchers" and 490 "professionals." From this sample came a few key points that include 97 percent of the "researchers" and 83 percent of the "professionals" feeling "more or moderately more" scientific study should be encouraged by the federal government.[24] A major split in opinion surfaced on the safety of marihuana with 58 percent of the "researchers" but only 39 percent of the "professionals" feeling that it was safe.[25]

In this same study it was reported that, "Professionals are much likelier than researchers to think that unsupervised use of marijuana is a danger to the user's mental health."[26] When comparing the danger of marihuana and alcoholic use 68 percent of the "researchers" and 54 percent of the "professionals" saw marihuana as "equally or less dangerous" than alcohol.[27] One last point was that 43 percent and 57 percent of the "professionals" and "researchers" respectfully regarded marihuana as less likely to cause genetic damage than caffeine and tranquilizers.[28] It should be noted the small sample size may explain some of these differences of opinion, but according to these figures researchers see marihuana in a brighter light than do physicians and psychiatrists.

Another survey in 1970 was done to find out why college students smoked marihuana. Results were 58.4 percent

stating, "because I was curious," and the second largest answer 25.7 percent, "I thought it would be worthwhile for its own sake."[29] With a sample size of 6,531 the group was rather large in comparison to other surveys. The reason given most often for discontinuation was, "I became afraid of the possible legal consequences."[30] This sample size was somewhat smaller, only 3,094, but 16.2 percent gave the above reason for not smoking grass anymore. Psychology Today in 1970 reported that regular cannabis users are also more likely to be regular tobacco smokers, 60 percent. Also 62 percent of all their respondents thought marihuana should be as available as alcohol, with 40 percent of those individuals who have never used Cannabis sativa agreeing.[31]

In a report, January 1971, an indication of a decrease of marihuana use in some West Coast high schools which previously had high levels of marihuana use, would imply a possible decline in the future.[32] The significance of this point is that the West Coast has had a history of leading the country in drug use and so it could be inferred from these findings that other parts of the country will follow suit in a number of years. Another source which supports this concept of a movement away from grass, at least by those who have been using it for a period of time, came out with the same idea for college students. The article pointed out that alcohol is now beginning to gain a renewed popularity among college students.[33]

With a lack of surveys showing validity for their findings between expressed use and actual use we must

question some of the survey studies previously mentioned. There has been one study which checked reliability of teenage questionnaire responses.

> In this research based on a carefully developed drug usage questionnaire, students responded nearly identically two weeks later on re-test regardless of whether or not they provided their names.[34]

Also because of similarity of findings during each year it is possible to gain at least a rough estimate of marihuana use and its popularity.

From a college student Gallup Poll covering 1971, they concluded:

> Students majoring in social science or the humanities were found to be more likely to have used the drug...
> The survey also found that students whose fathers had college training were more likely to be current users than were students whose fathers had not gone beyond high school.
> A considerably greater percentage of men (36) than women (23) had used the drug within the last month.
> Current usage was higher in independent colleges (35 percent) than in public institutions (24 percent).[35]

Whether this typology has changed is debatable. A number of sources have reported that there is an increase of use among females, closing the gap between the sexes.

A report published in 1972 by the Department of Health, Education, and Welfare made a number of conclusions and hypotheses which should be reviewed.

> ... 1. Most 'hard' drug users have used marihuana previously, but most marihuana users do not progress automatically to heroin;
> 2. Marihuana use is usually preceded by experimentation with alcohol and tobacco;
> 3. Marihuana use is related statistically to the use of most other drugs (including alcohol and tobacco,...) 4. Frequency of use of marihuana

> is even more closely related to the use of other drugs than is mere incidence of use....
> 5. Heavy marihuana use apparently tends to involve the user in a drug-oriented group or subculture which may alter his life style and his conception of himself. It may also increase his opportunities to try other drugs,...
> 6. There apparently is an individual 'drug proneness' factor that accounts in part for the phenomena of progression, substitution, and multiple drug use.[36]

These conclusions give an idea of possible reasons of why and how drug use is related from one drug to another and also, why an individual might begin using drugs.

Expressed Opinions

In the past a number of individuals and organizations have spoken in support of or against marihuana for a variety of reasons, some of which would not have otherwise been included but do merit mentioning. In a study done by Richard Blum and Jeanne Wall in 1964 a small sample population of police narcotic officers were asked to describe a typical marihuana user. Their description was, "... disrespectful or rebellious toward authority, exploitative of others, self-indulgent, and abusing sources of pleasure."[37] Their view of a marihuana smoker may not be totally valid but what is true depends on the perception of the onlooker.

Some writers have questioned why in countries where alcohol is legal and regularly used that so often they ban marihuana. H. B. M. Murphy in attempting to answer this question thought it might be that a positive value is placed on action and aggressiveness in countries where alcohol is permitted and that passivity is seen as a poor

attribute.[38] This could be one possible answer when we look at the United States and the above perception of the narcotic officers which verifies this point of view.

In a joint statement the Council on Mental Health, the Committee on Alcoholism and Drug Dependence of the American Medical Association, and the Committee on Problems of Drug Dependence of the National Research Council, National Academy of Sciences concluded, "Cannabis is a dangerous drug and as such is a public health concern."[39] This same concern for society is shown by N. B. Eddy who wrote,

> The harm to society derived from abuse of cannabis rests in the economic consequences of impairment of the individual's social functions and his enhanced proneness to asocial and antisocial behavior.[40]

Recently Dr. Bertram S. Brown, a top psychiatrist of the federal government and director of the National Institute of Mental Health, stated one of the critical aspects of the increased use of cannabis was that it involved vulnerable young children.[41] This feeling is probably a major reason why a large number of the population is against cannabis use.

Research Limitations

In the process of doing almost any research there are certain limitations encountered. In research on the effects of *Cannabis sativa* there seems to be many limitations. In realizing these limitations it is easier to understand problems confronted in analysis of studies using marihuana or its synthetic derivatives. Those problems encountered in early research studies have continued to plague even modern

researchers with only some becoming less of a problem or with some being solved. The limitations mentioned below may not be a complete list but hopefully it will explain the primary complications in marihuana research.

The most frequently mentioned limitations are the set, setting, dosage level, route of administration, physical and psychological structure of the taker, and the users basic personality makeup. In 1939 Walter Bromberg reported that the "... need for a social setting is a reaction to an inner anxiety arising from the threat of bodily destruction implied in somatic illusions induced by marihuana."[42] The idea of bodily destruction may not be the actual reason, but the setting does have great effect on the reactions felt by the user when taking marihuana. Another controlling factor is the expectation of the user, or set. The combination of the two can effect the individuals response to cannabis.

When interpreting effects of marihuana, the researcher normally conducts the experiment in a laboratory, which is not similar to the social setting of illegal street use. In the laboratory it is possible to control the dosage level and neutralize the setting. According to Andrew Weil, "... there is no firm evidence that THC reproduces the action of whole cannabis."[43] As of yet, it is not possible to say that there are not other properties of marihuana, other than THC, which are active and cause some of the effects man feels when taking cannabis. When the pharmacological principles of Cannabis sativa are completely understood, then it will be possible to control dosage of all active ingredients and this

limitation may be overcome. In controlling the dosage we control the potency and this is seen by many sources as a problem in itself. "... some of the confusion regarding the dangers of marihuana is caused by a failure to recognize the different potencies of cannabis."[44]

Another prime factor in studying marihuana is the method of administration used in the study. When marihuana is smoked, it is extremely difficult to measure the dosage because of a lack of quantitative tests to ascertain the amount of cannabinoids in blood and plasma. Whereas, if THC or other synthetics are taken orally, through intravenous, or intraperitoneal routes they can be measured with the use of quantitative tests but produce effects which are not typical of street use. Also, by these methods, effects which are not usually found may be produced and reactions noticed by one individual are completely unrelated with others. So as can be seen, the method of administration can cause conclusions which are possibly erroneous for the actual effects of one method and may even create reactions not normally found. Until it is possible to correlate the different means of taking marihuana and their effects, we are faced with a predicament and each study must be read with this in mind.

In conjunction with the route of administration is the quantity of marihuana or synthetic absorbed by the individual.

> ... it was estimated that the percentage of THC absorbed can vary between 15 and 41 percent[45] in contrast to the earlier estimate of about 50 percent absorption based on using a mechanical smoking device to imitate human smoking and measuring the delivered THC in the smoke.[46]

With this difference of absorption between each individual this could be one explanation for the variation of effects felt by different users. Not only is there a problem in potency and route of administration but also the quantity absorbed which can diminish the effects of the others.

A number of limitations are created when comparing animal and human studies and when comparisons are made between different cultures. When animal and human studies are contrasted, difficulties arise similar to those mentioned above because of potency variability and the fact that animals cannot express verbally their feelings. Behavioral effects are all that can be measured and these vary from species to species and among species. When administering cannabis in synthetic form certain additives are necessary because of its insoluble nature.

> Because of this extreme insolubility in water, the administration of pure cannabinoids in animals ... requires the addition of ... emulsifiers, suspending agents or solubilizing vehicles which may have pharmacologic effects of their own.[47]

Another limitation is that the dosage levels used in animal studies are extremely high when compared to human consumption.

> ... the human oral dose of marihuana which produces psychoactive effects in man varies from 200-500 micrograms 1 kg. Thus a 50 mg/kg dose in animals is about 100-250 times greater than the effective human dose.[48]

With a difference ot this magnitude some of the validity is lost in this type of comparison.

When comparing marihuana use and effects from one culture to another many problems arise which should be

understood. As is pointed out in a report by the secretary of health, education, and welfare, "When cannabis use is studied in cultures that are different in many ways from our own, the implications of use may be quite different from that in American society...."[49] In a report a year earlier, it was felt that this type of extrapolation was inevitably hazardous.[50] With the differences in diet, medical care, living standards, and patterns of use which are very much greater than in the United States researchers run the risk of over-generalizing from one country to the next. These types of parallels in the long run are necessary but stricter and clearer outlines of when and where they are valid should be enunciated. In this manner both laymen and professionals are not misled because of faulty comparisons.

In a number of studies a marihuana psychosis has been shown to exist. This is debatable according to one source. "The problem of elucidating a cannabis psychosis is made particularly difficult because there are no symptoms which can be specifically attributed to it and not to other psychiatric syndromes."[51] It has been noted that in some situations an individual not professionally qualified to label a reaction psycotic, has,[52] and that at times even a qualified individual assesses the situation too quickly and what may be a panic reaction or transient paranoid ideation is called a psycotic state.[53]

In general terms, "... there is an almost total absence of therapeutic efficacy studies which meet the criteria of modern scientific methodology."[54] It is also

felt by some authors that bias and prejudice when evaluating such a controversial area is the primary limitation in marihuana research.[55] The ever present temptation of researchers to over-generalize beyond what the research warrants is tied to this idea of bias and prejudice which surrounds this topic.

From the limitations listed above it is easy to see why more scientific research is necessary in this area and that these further studies should be conducted with stricter controls. Yet, it could be a long time before all these limitations are overcome and valid answers are found. In the sections to follow these limitations should be remembered.

RESEARCH UPDATE ON LAGUARDIA COMMISSION

Using the outline provided by the LaGuardia commission (Appendix A), research which was conducted during the same period of time or later will be presented to update this study. The commission report published in 1944 was the first large, systematic study performed in the United States on the effects of marihuana. The findings, on a whole, will be shown to be consistent with present research conclusions. In essence, studies during the past 28 years have reached similar findings, yet many still consider marihuana as a dangerous drug. It would seem that the public would learn from the past and apply it to the present. Unfortunately this does not hold true for cannabis.

After revising the commission report findings, areas of new research conducted since 1944 that could not be

compared are presented. These include drug classification, possible physical and psychological problems encountered by marihuana use, the use of cannabis as an aphrodisiac, its effects on driving a car and what progress has been made toward identification of an intoxicated individual, similar to the Breath-a-lizer used for alcohol. Not all of the summary and concluding points made in the LaGuardia report are revised because some are not generally applicable to other studies.

Sociological Aspects

Under the section titled, "The Sociological Study," those points in the conclusions which will be discussed are; low cost, most smokers are Negroes and Latin-Americans, sale and distribution are not controlled by organized crime, marihuana use does not lead to harder drugs, its use is not the determining factor in major crime, smoking is not widespread among school children, and marihuana smoking is not related to juvenile delinquency.

In 1944 the LaGuardia commission concluded that the cost of marihuana was low enough to enable most individuals to buy it. This seems to be true even today with an ounce costing from $10 to $15 depending on potency, supply, and demand. A single cigarette or joint might sell for 50 cents to $1 with about 100 being made from an ounce. Today almost every individual who wishes to purchase marihuana can afford it if they can find a seller.

It was noted in the LaGuardia report that the majority of smokers were Negroes and Latin-Americans. Four studies

conducted in 1945 and 1946 of marihuana users in the Army tended to verify this point. In these studies Negroes made up 90 or more percent of the samples.[56] With marihuana use gaining popularity since 1944 its use spread to all groups of the population and by 1967 one study of blacks and Mexican-Americans contradicted earlier findings. The study compared ghetto youth, 16-to 22-year-olds to other high school and college surveys and showed that the 54 percent of users in the ghetto was not any higher than other groups.[57] By looking at the surveys previously presented in this chapter it can be seen that the minority populations of this country are no longer the majority users.

All indications today are that marihuana distribution and sale are not controlled by organized crime. Because of the low cost and the large number of sources from which it can be purchased, its sale would be very difficult to control. Many times an individual grows his own or purchases a large quantity on a one shot basis in hopes of making a quick profit. From all indications the sale of marihuana is no more controlled today than it was in 1944 when the New York City study was released.

The LaGuardia commission concluded that marihuana use did not lead to harder drugs. However, there is some debate on this point. The majority of authors agrees with this, that marihuana use, in itself, does not lead to the use of heroin, morphine, or cocaine.[58] "The basic text on pharmacology, ... states quite explicitly that marihuana habituation does not lead to the use of heroin."[59] According

to A Federal Source Book,

> In one college survey, 1 percent of the 'potheads' became addicted to opium or heroin. In surveys on heroin addicts, 85 percent had previously tried marihuana, but a still larger percentage had used alcohol before heroin.[60]

Even though most sources do not feel marihuana use leads to harder drugs, there have been a few who felt that those who use cannabis might be predisposed to the use of drugs in general.[61] This concept is very plausible when considering that many people who use any drug are more apt to use other drugs without hesitation. There are authors who feel a direct association between marihuana and opiate use does exist. John Ball, et. al., in a national sample of 2,213 heroin addicts concluded;

> Data of the present study support the conclusion that marihuana use is closely associated with opiate addiction in the high drug use metropolitan areas of the East and West, but not associated with opiate addiction in 12 southern states.[62]

From research findings of other authors it might be questioned whether Ball's study could be duplicated. Other than this survey, none were found that made similar conclusions. This in itself threatens the validity of Ball's findings.

The next conclusion made in "The Sociological Study" was that the use of marihuana does not cause commission of major crimes. There is one exception which should be made in relation to federal and state laws. An individual who uses or possesses marihuana is committing a crime, normally a felony according to the law. Other than this the majority of authors agrees that marihuana does not cause an individual

to commit serious crimes or anti-social acts of a serious nature. Those who disagree give a variety of reasons.

Dr. Lawrence Kolb expressed a reservation, "one may say of such a drug that, if it were abused as alcohol is abused it might be an important cause of crimes and other misdemeanors."[63] A pamphlet released by the federal government states that although an individual under cannabis intoxication tends to be passive, crimes have been committed while they were "high" and that in lowering the persons self-control could lead to criminal actions.[64] Roger Adams, in Science, 1940, wrote that with the releasing of inhibitions, "... an individual with natural criminal tendencies, which he controls under ordinary conditions, will commit crimes when under the influence of the drug."[65]

On the other side of the fence are reports like; "The Medical Society of the County of New York has stated flatly that there is no evidence that marihuana use is associated with crimes of violence in this country."[66] The president's Ad Hoc Panel on Drug Abuse in 1962 stated, "although marihuana has long held the reputation of inciting individuals to commit sexual offenses and other anti-social acts, evidence is inadequate to substantiate this."[67] In addition to these studies the one released by the secretary of health, education, and welfare which explicitly states that a causal role does not appear to exist between marihuana and crime.[68] Whereas, some state that a criminal uses marihuana as an excuse to explain his actions so that a reduction of a sentence might be possible.[69]

In one study a comparison between marihuana users and multiple drug users, including marihuana, found the latter group committed more deviant and illegal acts than those just using marihuana.[70] A study by Walter Bromberg published in 1939 of the arrest and conviction records in the New York County Court of General Sessions found that, "... drugs generally do not initiate criminal careers."[71] Bromberg also found that,

> No positive relation could be found between violent crime and the use of marihuana in the cases observed in the Psychiatric Clinic. No cases of murder or sexual crimes due to marihuana were established.[72]

Later Bromberg wrote that out of 200 marihuana users arrested only 6 were charged with violent crimes.[73] This is a very small proportion of the original number arrested, about 3 percent.

It might not be valid to compare studies done in foreign countries but they throw some light on the relationship of marihuana and crime. Chopra, in a study of violent crimes in India, found Cannabis sativa could only be attributed to 1 to 2 percent of the cases.[74] It should be noted that in India hemp preparations may be 5 to 8 times more potent than those used in the United States. In yet another study Chopra suggests a negative relationship with heavy marihuana use because heavy use results in a stupor which would inhibit the commission of any crime.[75]

In a study of Nigerian hospitals and patients with case histories of marihuana psychosis, no relationship to crime was found.[76] Andrade, in Brazil, studied 120 criminals

who used marihuana and concluded that their drug use had not caused their criminal actions.[77] In each of these studies the sample was small and the potency of the cannabis not necessarily the same as that used in the United States. But they do indicate similar findings to those studies conducted here where the use of marihuana is rather recent when compared to other countries.

Conclusion number 11 from the LaGuardia commission was that marihuana use was not predominate among school children. This is disproved by the surveys presented earlier in this chapter. Not only has the use of marihuana increased since 1944, it has reached both the old and young. Point 12 was that marihuana smoking was not related to juvenile delinquency. This point, if it is similar to adult use, can be correlated to crime studies in this age group. Other than that, no studies were found which looked at only juvenile use in comparison to committing crimes. Later in this chapter the "Amotivational Syndrome" will be discussed which will throw some light on this section.

Medical Aspects

The first paragraph in this section explains the approximate onset and duration of orally taken cannabis concentrate used in the LaGuardia commission study. This study found when taken orally, cannabis effects begin in 30 minutes to one hour and last from three to five hours and in extreme cases twelve hours or more. A presentation will be made of not only the onset and duration of orally

administered marihuana or a synthetic but also that of smoking.

With the continued use of synthetic cannabis and measured doses of THC, which is normally taken through the stomach, there have been a large number of experiments in which all agree with the mayor's commission findings as to onset and duration.[78] Explanations have been offered for the variation of duration of orally administered doses. The most common explanation being that the potency up until recently was uncontrollable and it could vary widely even within the same study. This also effects reactions which will be covered later in this section. Another explanation is that the difference of absorption, either the speed or quantity absorbed, may account for variable durations and onsets.[79] When administered orally or smoked, the duration and effects of marihuana can differ according to each individual's physiological makeup.

When marihuana is smoked, the onset of effects can begin within minutes and appear to be completely dissipated in two to three hours.[80] The duration of effects when smoked depends on many factors; the set, setting, expectations of the user, and his personality to mention a few.

The LaGuardia report next summarizes the symptoms occurring after oral consumption and some of the observations of the behavior and responses of the user. In the section following this, "Organic and Systemic Functions," a further summary of effects is noted which includes those developing as a result of organic reactions to marihuana.

Rather than attempt to disprove each one of these reactions, effects reported by other authors will be presented for comparison. Distinctions will be made if the reported effects are from smoking or oral consumption, seeing as they differ according to existing research.

It was pointed out that the personality of the user can effect the kind of responses induced, ranging from hilarity and disconnected ideas to quietude and reveries.[81] It has been noted that when marihuana is smoked in large doses it rarely produces anything worse than sedation. Yet when eaten in large doses it may create a reaction resembling a delirium caused by a high fever. Hallucinations are rare when marihuana is smoked and a hangover is almost never reported. When eaten in large quantities, hallucinations similar to those caused by hallucinagenic drugs may be encountered and a feeling similar to a hangover is common.[82]

The basic pharmacological manual used today lists the most common reactions.

> ... a dreamy state of altered consciousness in which ideas seem disconnected, uncontrollable, and freely flowing. Ideas come in disrupted sequences, things long forgotten are remembered and others well known cannot be recalled. Perception is disturbed, minutes seem to be hours,... space may be broadened, and near objects may appear far distant. When larger doses are used extremely vivid hallucinations may be experienced;... Uncontrollable laughter and hilarity at minimal stimuli are common. This is often followed by a moody reverie,... With larger doses, panic states and fear of death have been observed....[83]

These responses are caused normally when marihuana is ingested even though some can be attributed to smoking.

One of the early researchers on the effects of

marihuana, Bromberg, presents a pessimistic view on what can be expected. "The patient is tense, nervous, frightened; a state of panic may develop. Often suicide or assaultive acts are the result."[84] This same idea was expounded by H. J. Anslinger some years later when he wrote,

> A small dose taken by one subject may bring about intense intoxication, raving fits, criminal assaults. Another subject can consume large amounts without experiencing any reaction except stupefaction.[85]

Anslinger also stated that the last stage of intoxication could include terrifying hallucinations, restless sleep, and bizarre phantasm may overcome the user.[86]

Samuel Allentuck mentions a number of effects not stated by Goodman and Gilmer such as;

> The tongue becomes tremulous and dry,... and increase in the radial pulse rate and a rise in blood pressure... involuntary twitching, hyperreflexia, increased sensitivity to touch, pressure, and pain stimuli....[87]

From observations of reactions to oral use by Europeans, Roger Adams concluded, that an overdose and a disagreeable atmosphere could create excruciating pains for the user usually in the head and neck. These pains were described as similar to torture and even the feeling that the user may be dying. The user fears his enemies are plotting against him at which point he has fits of terror and may commit violent crimes.[88]

One of the physical reactions not yet mentioned is the reddening of the eyes which is consistently reported. This effect occurs whether marihuana is smoked or taken orally. This would indicate that reddening of the eyes is

not caused completely by smoke irritation.[89] For many years it was thought that pupils enlarged after cannabis use, but this has been disproved.[90] Another often reported response is that of hunger and an increase of appetite. At first it was thought that there might be a lowering of the plasma glucose level but this has also been disproved. From present studies glucose levels have been shown to be changed negligible when marihuana is smoked or eaten.[91]

It has also been reported that there is a decrease of tears and saliva[92] along with the lowering of the body temperature and the increase of reaction time depending on the task. One of the indicating factors commonly found, increase in heart beats, is thought to be the best physical index of dose related activity.[93] There are many areas of debate still remaining, including how marihuana effects the central nervous system and the brain in man.

Under this section something which has been avoided so far is any discussion of marihuana psychosis, either toxic or chronic reactions, and whether these reactions can be completely attributed to marihuana. There is no set answer to this statement, but much has been published. Researchers stand on both sides of the fence on this subject. Some of their findings will now be presented according to their date of publication so as not to show any partiality.

A study by the United States Army in 1933 found no reports of marihuana psychosis among several hundred smokers in Panama.[94] Whereas, Bromberg found two types of mental reactions,

> ...: (1) acute intoxication (marihuana psychosis), containing sensory, motor, and subjective elements, lasting from several hours to several days,... (2) toxic psychoses, including (a) those in which there are many admixtures of a disturbed sensorium with delusional and emotional reactions amounting to a psychosis, but with the common characteristic toxic signs, and (b) atypical functional psychoses which are initiated by marihuana... induced state apparently representing an incipient stage in the psychosis.[95]

According to Bromberg acute intoxication causes, "... an increase in motor activity, a feeling of excitement, mental confusion, disorientation, crowding of perception ... hallucination, euphoria and talkativeness."[96] He also states that the relationship of marihuana and a "... psychotic state is not always clear. The inner reaction to somatic sensation seems to be vital."[97] Manic-depressive states were occasionally reported, but in Bromberg's study schizophrenic psychosis was more common. He felt this was because drug users initially have a feeling of severe inadequacy.[98] He does feel that "one is apt to overestimate the place of marihuana in the causation of a psychotic picture..."[99] So even though he does perceive an actual marihuana psychosis, he also feels that it is possible to act too quickly and label a reaction as such, when it may not be.

Some years later Samuel Allentuck and Karl Bowman wrote that, "... a characteristic marihuana psychosis does not exist. Marihuana will not produce a psychosis <u>de nova</u> in a well-integrated, stable person."[100] They also pointed out, "Marihuana psychosis is protean in its manifestations and may be mistaken for schizophrenic, affective, paranoic, organic, psychoneurotic or psychopathic reaction types."[101]

When marihuana is smoked, the user learns very quickly to avoid becoming too "high" and any ill effects which might result.[102] The following year J. Bouquet contradicted Allentuck and Bowman when he indicated that the study to which they referred, used oral administration and that marihuana lacked a history of long time use in the United States.[103] A paradox exists when we consider that oral consumption is usually more intense and less controllable than when cannabis is smoked. If this is so, then Bouquet's argument loses much validity.

In 1946 another study conducted in the Army found no mental records of 310 users who had used marihuana for an average of seven years apiece.[104] Mayer-Gross, et. al., after reviewing earlier studies of what had been described as chronic hashish psychoses, concluded that the users actually suffered from schizophrenia compounded by marihuana intoxication symptoms.[105] These findings agree with the results reported by Samuel Allentuck and Karl Bowman in their study.

A two-year study in the country of Morocco found 25 percent of 2,300 male admissions to have had a cannabis psychosis diagnosed when admitted. With less than 10 percent of Moroccan population using some form of cannabis it was felt a definite association between cannabis use and psychosis existed.[106] Yet, Chopra's study in India, where marihuana use has a long history, only little more than 1 percent of this sample was diagnosed as psychotic, 13 out of 1,200 regular users.[107]

In a massive study in the United States of over

700,000 consecutive admissions, 1961 to 1969, in Los Angeles hospitals, only nine were induced by marihuana use and most of these were because of intravenous use which in itself could account for the resulting complications.[108] In a report to Congress considering statements by researchers of marihuana psychosis existing in this country since the late 1960s it was felt that,

> ... few of these provided any indication of how frequently such reactions occur in a large population of users. A wide range of symptoms have been reported, most more nearly resembling a panic state than full-blown mental illness.[109]

H. B. M. Murphy in a Bulletin on Narcotics concluded that marihuana smoking "... probably produces a specific psychosis but this must be quite rare, since the prevalence of psychosis in cannabis users is only doubtfully higher than the prevalence in general population."[110] The New York County Medical Society agreed with Murphy when they reported that a cannabis psychosis existed primarily among long term heavy users and very few users of this capacity live in the United States.[111]

In two reports of marihuana psychosis in Vietnam the instances were low. One conducted by Talbott and Teague reported 12 cases of which most cleared up in one to four days after the first use.[112] The second found five cases a month out of a 45,000 troop population. "The authors felt that the presence of a personality disorder or a borderline personality state were predisposing factors in the development of a cannabis psychosis."[113] Along with the personality, David Smith and Carter Mehl felt that two other factors were

necessary in the analysis of a cannabis reaction. The two factors were the nature and strength of the drug and the social environment surrounding its use.[114]

In a report by the New York State Temporary Commission to Evaluate the Drug Laws, it was stated that high doses of marihuana could percipitate a temporary psychotic episode in a user.[115] This is substantiated by the National Institute of Mental Health in perhaps 1 out of 300 cases is a psychotic episode found and those who are affected were about to "crack anyway."[116] Another source agrees with this general feeling that the individual was already susceptible to possible mental illness. They state that the youthful user is more apt to react to marihuana by acute panic or depression because of this susceptibility.[117] "... a predisposed individual might experience aggravation of a latent psychotic state or other underlying instability."[118] This is the way the National Commission on Marihuana and Drug Abuse states this point which adds agreement to those already mentioned.

In the preliminary finding of two small samples in Greece, 31 male chronic hashish users and in Jamaica, with a similar sample size, there has been relatively no pathology found.[119] These samples are rather small and the studies are not complete yet.

There are some shortcomings which should be understood. It is extremely difficult to actually state that a drug causes psychological harm when its effects are not dramatic. Unless the deficiency is marked or the harm rather dramatic it could be attributed to other factors and

could be exhibited by users and non-users alike. It is also generally felt that most previous studies could not stand up to modern scientific standards.

Psychophysical and Other Factors

Under this section of the LaGuardia commission report, the effects on an individual's physical reaction according to dose and impairment are covered for both experienced and inexperienced users. Their findings were that the individual user is affected somewhat proportionately by the complexity of the task and the amount of the dosage. This report noted that the function most severely affected was body and hand steadiness. It was found that when marihuana was smoked the psychomotor effects were similar but occur sooner and expire quicker. Non-users seem affected more by the drug when taken orally than regular users. The commission found no affect on auditory acuity nor was musical talent aided by the use of marihuana. The ability to measure time or distance, according to this report, was not affected to any degree after orally taking cannabis.

In the first report to Congress the secretary of the Department of Health, Education, and Welfare, 1971, agreed with the LaGuardia commission that a small decrease of strength in hands, fingers, and legs occurs. That hand and body steadiness is affected as dosage increases.[120] Lester Grinspoon reports that visual perception varied the most of all the effects among individuals and with the same person at different times or different circumstances.[121]

As to whether musical talent increased, Aldrich using

the Seashore test found that experienced marihuana users actually performed worse on this musical test.[122] In another study by Williams, he noted a rather "marked improvement" in 3 out of 12 subjects in their auditory acuity.[123] Whereas, in the LaGuardia commission report, Morrow found that no change of an individual's musical ability or auditory acuity was found to exist.[124] It should be noted that in each of these studies a synthetic drug derived from cannabis was used which in reality may not produce effects similar to regular marihuana. In 1967 the Council on Mental Health and Committee on Alcoholism and Drug Dependence, in a joint statement, felt that even though the user claimed that his artistic endeavors improved, in actuality this could not be shown.[125]

The secretary of health, education, and welfare contradicts the LaGuardia report in stating, "Changes in time sense have definitely been shown to take place... There is a tendency to overestimate the passage of time particularly while engaged in some activity."[126] An individual, while intoxicated, may perceive hours as minutes and minutes as seconds and his ability to measure linear distances is also somewhat affected.

A subsection under "Psychological Aspects," is "Intellectual Functioning," in the LaGuardia commission report. Under this section it was concluded that when smoked or taken orally, marihuana has a transitory adverse effect on the user's mental functions. The extent of this impairment is dose related. The larger the dose the

greater the impairment. This adverse effect starts earlier and lasts longer with large doses than with small ones. Depending on the complexity of the function or act attempted, impairment is greater with more complex acts than with simpler ones. This study found that non-users experienced great intellectual impairment than users and this impairment had a longer duration. It was felt this suggested a habit situation with marihuana. They explained this loss of ability was due to a loss of speed and accuracy. It was felt that marihuana use did not result in mental deterioration, even though it was shown to impair temporarily intellectual abilities.

Some findings of other studies may be applicable to more than one of the LaGuardia commission's conclusion. An example of this was reported in 1972 by the secretary of health, education, and welfare. The report stated that in assessing immediate effects on mental and physical performance depends greatly on the complexity of the task, expectations of the user, and his motivation, level of intoxication, the cultural context and the stage in which it is used.[127] As can be seen, this one statement refers to a number of the LaGuardia commission's conclusions. An attempt to delineate between each conclusion will be made.

One of the staunch defenders of the legal penalties levied against use of marihuana, Harry Anslinger stated, "The drug has a corroding effect on the body and on the mind, weakening the entire physical system and often leading to insanity after prolonged use."[128] This may be an overstatement

of fact which is shown by the following studies.

Impairments of short term and immediate memory are the most consistently reported by systematic research.[129] Abel reports that,

> ... marihuana does not significantly interfere with the retrieval of information already present in the memory. It was shown, however, that marihuana interferes with initial learning, significantly affecting acquisition processes involved in the storage of information.[130]

Allentuck and Bowman report that an intoxicated individual's "attention, concentration and comprehension are only slightly disturbed, as is evidenced by the fact that the results in his educational achievement tests are only slightly lowered."[131] The results of these educational achievement tests vary according to dose and experience as is stated by the secretary of health, education, and welfare. Experienced marihuana users can tolerate larger doses with less adverse effects on various intellectual, perceptual, and psychomotor tests.[132]

George T. Stockings, using a synthetic derivative of cannabis in 1947 concluded,

> ... that with ordinary therapeutic doses there is little or no deleterious effect on the intellectual performance... the only inconvenience... being the slight distractibility... and the tendency to daydreaming...[133]

Whereas, Weil et. al., found:

> 3. Marijuana-naive persons do demonstrate impaired performance on simple intellectual and psychomotor tests after smoking marijuana; the impairment is dose-related in some cases.
> 4. Regular users ... do not show the same degree of impairment of performance on the tests as do naive subjects. In some cases, their performance even appears to improve slightly after smoking marijuana.[134]

Weil, in another report, found that after an individual has used marihuana for a while he can fully compensate for its effects on tasks of ordinary complexity. There are limits on this ability to adapt depending on the difficulty of the task, but even inexperienced users learn after increased use. He explains this ability by concluding that marihuana effects the cortex of the brain giving them the capacity to ignore the drug's effects.[135]

In studies using the Continuous Performance Test it was shown that a definite difference exists between the degree of impairment in casual and heavy users. With, "... casual smokers making five times as many errors of omission as they did under placebo while no increase in number of errors was found in heavy users."[136]

On the last point made in this section about whether or not any mental deterioration results from the use of marihuana, there seem to be many who have studied this phase of the results of cannabis intoxication. Walter Bromberg in 1939 reported that eastern European and Asiatic researchers had found what he calls, "chronic dementia and deterioration," which is a result of continual use. Bromberg felt that this country had not reached this point because it had not been observed in U.S. clinics.[137]

Three years later Allentuck and Bowman disagreed with Bromberg after their study showed that prolonged use did not produce physical, mental, or moral degeneration. They did not feel any permanent deleterious effects resulted from this continued use.[138] H. Freedmen and M. Rockmore agreed that no

mental or physical deterioration results, in their study of 310 users who each averaged seven years of use.[139]

Most early neurological studies of marihuana effects found only minor changes in test patterns of neurological functioning.[149] The Wootton report of 1968, after reviewing all the material at their disposal, agreed with both the 1893-94 Indian Hemp Drug Commission and the LaGuardia commission report that long-term moderate consumption of marihuana produces no harmful effects.[141]

The secretary of health, education, and welfare agreed with the Wootton report when this department reported in 1972,

> ... both Eastern and Western literature contain little evidence at this time that light to moderate use of cannabis has deleterious physical effects. (An occasional allergic reaction may be an exception to this, but these seem to be very rare.) Almost all reports of physical harm from cannabis use are based on observations of moderate to heavy, chronic use of the drug.[142]

On March 22, 1972, the National Commission on Marihuana and Drug Abuse released its first report where it was found that, "no objective evidence of specific pathology of brain tissue has been documented."[143] Nor, was this report able to find any "... outstanding abnormalities in psychological tests, psychiatric interviews or coping patterns...conclusively documented in studies of cannabis users in other countries of the world."[144] This same report found little proven evidence that there is danger of physical or psychological harm from what could be considered moderate or experimental use. They felt that any danger which might exist was in heavy, long term use.[145]

Still under, "Psychological Aspects," is another section titled, "Emotional Reactions and General Personality Structure," which concluded that the basic personality structure of a marihuana user does not change, although, superficial behaviors may show some alterations. An individual feels more relaxed, uninhibited and self-confident. The user expresses himself orally rather than physically. There even seems to be a decrease in physical activity of any kind. The disinhibition which results releases only what was latent and does not develop responses which are totally alien to the user when undrugged. Both pleasant reactions and anxiety feelings are released while a person is under the influence of marihuana. The final point made in this section was that introverts are more likely to use marihuana to aid in social contacts than are extroverts.

The first point, concerning no change in personality structure except superficial aspects, will be discussed later in the chapter under "amotivational syndrome." While the second conclusion, increased feelings of relaxation, disinhibition and self-confidence, will be discussed now with other feelings which researchers found to appear while an individual was under the influence of marihuana. Bromberg found that the subjects saw themselves as witty, even brilliant, with ideas and words flowing readily.[146]

The experienced user reaches a state of relaxation, satisfaction, and self-confidence consistently, according to William H. McGlothlin.[147] Even with this feeling of self-confidence an intoxicated individual loses some of his

ability to make decisions requiring logical thinking and to perform complex tasks.[148] Along with the state of relaxation EEG tests have confirmed that it makes it easier for an individual to be able to close his mind to outside stimuli.[149]

"... Marihuana, by virtue of its stupefying effects, may sometimes inhibit the expression of aggressive impulses," according to D. P. Ausubel.[150] Even though an individual may be hyperactive and possibly suspicious of others he does not hold an abnormal mental content which is not of his nature to have.[151] In essence, an emotionally unstable individual using marihuana may become more impulsive and with the reduction of inhibitions may react in a violent manner. The marihuana, in itself, is not the cause of this violence, but it might have been the triggering agent of a latent feeling. This action may have surfaced at some later time even without the use of marihuana.

Cannabis may actually be used to strengthen the inner want to commit some repressed or suppressed violent act. The individual knows this urge exists but is not able to commit the act without its use.[152] Many times alcohol is used for this same purpose. Another author, J. Bouquet feels that an individual may be driven to irresistable and dangerous impulses, while another subject may react in a manner which is neither dangerous to others or to himself and it is this unpredictability which must be feared.[153]

Although pleasant feelings are normally enjoyed by users, in one study it was found that one out of five practiced users had at one time or another temporarily

experienced negative feelings.[154] Unfortunately, their mental state prior to use is not mentioned. "However, non-drug factors may be the most important determinants..."[155] in causing adverse reactions. Because of the unpredictability and difficulty to measure the effects of marihuana on emotions, many researchers are faced with an almost insurmountable obstacle. C. T. Tart reported that in his sample almost all emotional reactions were positive and pleasant but "freak outs" did occur in 20 percent of the users. Only in one case was this negative emotion great enough to require professional aid.[156]

It is pointed out by the National Commission on Marihuana and Drug Abuse that there is no evidence, "... to indicate that marihuana was responsible for generating or creating excessive aggressiveness or impulsivity in individuals having no prior history of impulse or personality disorder."[157] Grinspoon agreed with this report when he stated that it was doubtful whether moderate use leads to any type of personality change.[158]

There seems to be general agreement among researchers that many heavy marihuana users have a basic personality defect of one kind or another. The use of marihuana was seen to be a means of supporting the ego of some psychopathic personalities. Whereas, the general effects of cannabis are not usually able to affect deep psychopathic problems.[159] It has been reported that even though cannabis can trigger an already mentally unstable subject, no lasting mental changes are produced that did not previously exist.[160]

Joint findings by the Council on Mental Health and the Committee on Alcoholism and Drug Dependence, concluded that regular use signifies a psychological conflict, a way to function in a social setting to gain acceptance or to escape an existing mental state such as depression or anxiety. They also stated that habitual use was an indication that the use of the drug was one of many symptoms manifested to counteract this psychological problem and that many who are regular users have a psychiatric illness or have one developing.[161]

Some authors feel that this attraction might be because of a search for a psychotherapeutic agent to help them.[162] It has been found that these personality defects are similar to those suffered by alcoholics.[163] "The degree of personality integration, psychological rigidity and the presence or absence of psychopathology are all important contributors to one's subjective reactions to marihuana...."[164] These factors and others aid in the forming of what is called a predisposition for drug use in general, be it alcohol or narcotics. This attraction is part of the psychological problem being faced.

In the report recently released by the National Commission on Marihuana and Drug Abuse concerning heavy cannabis users, it was found that users originally took the drug for curiosity, to share a social experience, and provide relief of anxiety, or boredom.

> They tend to evidence social and emotional immaturity, are especially indifferent to rules and conventions, and are often resistant to authority.... several surveys ... revealed that

> they tend to be curious, socially perceptive, skillful and sensitive to the needs of others....[165]

It was found also that a correlation exists between marihuana use and visits to psychiatrists,[166] but this is not one of the major factors that the report dwells on.

Addiction and Tolerance

In the section, "Addiction and Tolerance," of the LaGuardia commission report, both of these terms were defined. Since these terms were defined in the first chapter of this paper other points made in the commission report will be discussed. Practically all subjects in this study reported they could and did discontinue use of marihuana without any side effects. According to this report, at least for New York City, true marihuana addiction does not exist. From their findings, if tolerance does exist, its duration is for a limited period of time. It was stated that an increase in dosage is not necessary to obtain similar effects after repeated use. With these conclusions they determined that no true addiction or tolerance exists with marihuana use.

J. Bouquet in a report sent to the League of Nations, did not agree with the commission report on whether a cannabis addiction exists. "... the use of cannabis, whether smoked or ingested in its various forms, undoubtedly gives rise to a form of addiction which has serious social consequences...."[167] However, in a summary statement Bromberg reported a lack of increased tolerance and no withdrawal to marihuana use makes it difficult to say it is habit forming.[168]

Since Bromberg, many researchers have agreed with him, that marihuana is not habit forming or to be more specific, physically addictive.[169] There is almost total agreement on the point that there is a lack of increased tolerance and no withdrawal in humans to marihuana.[170] However, a few sources either feel there is a tolerance to marihuana or its synthetics or that if a tolerance does exist its duration is short.

E. G. Williams, et. al., reported that use of a potent marihuana synthetic, synhexyl, caused subjects to request larger doses as a tolerance developed. Upon discontinuation of the drug no craving was reported. The subjects did have a loss of appetite, insomnia, and a feeling of restlessness.[171] When comparing Eastern reports to studies conducted in the United States, a conflict of opinion develops with Eastern researchers feeling a tolerance to cannabis does exist. This conflict was discussed by the secretary of health, education, and welfare in his report. It stated: "... as tolerance to a drug is often defined only in terms of a diminishing response to a constant dose, failure to control the dose adequately may make demonstration of tolerance difficult."[172] Many studies have found what has become known as "reverse tolerance" an actual decrease of the dosage level needed to produce effects similar to that originally felt.[173]

Experiments with animals has found tolerance to exist for certain effects. An important point is that in animals and humans tolerance develops for some effects

while not others.[174] "Some confusion still exists about the type of tolerance observed (behavioral only or pharmacologic) and the type of pharmacological effects which show tolerance versus those which do not."[175] Just recently it has been reported that with long term heavy cannabis use some tolerance does occur but an abstinence syndrome and physical dependence has not been found in either humans or animals.[176]

Even though physical dependence has not been found to exist, some authors have described a psychological dependence or habituation in reference to cannabis use. This was noted by Bromberg,[177] Allentuck,[178] and Grinspoon.[179] It was felt that this psychic habit could occur with any euphoric drug, and this dependence is not as strong as with tobacco or alcohol. Most researchers have reported psychological dependence in man when it comes to cannabis use, even though no distinction was made as to how often use was necessary before the formation of this dependence.[180] One source has made a distinction in the frequency of use necessary for the formation of a psychological dependence. Intermittent and experimenting users form none, with moderate users showing a small degree of dependence and heavy and very heavy users having a strong psychic dependence on cannabis, according to the National Commission on Marihuana and Drug Abuse.[181] Yet, the "... level of psychological dependence is no different from the syndrome of anxiety and restlessness seen when an American stops smoking tobacco cigarettes."[182]

Therapeutic Uses

The last section to be updated in this chapter will be based on what was stated in the LaGuardia commission report on "Possible Therapeutic Applications." They concluded that with Cannabis sativas' low toxicity and marked pharmacological actions, it could be of great therapeutic value. With marihuana's intoxicating powers and ability to bring pleasurable feelings it was felt that it could aid in dealing with mental depressed patients. It was also pointed out that the stimulation of appetite, pleasurable experience, and lack of addiction characteristics, might be a useful agent for the withdrawal of drug addicts. An experiment was conducted with heroin and morphine addicts. By giving them THC, the addicts experienced an easier and healthier withdrawal period. Further research was suggested in this area of therapeutic use.

The idea of marihuana as a remedial agent is not considered by all to be one of its attributes. Many feel that it has no possible medical use in this country, despite the use of marihuana as self-medication in many countries of the world, in the past as well as the present.[183] According to Anslinger, "... marihuana has no therapeutic value, and its use is therefore always an abuse and a vice."[184] Italics in original. Others have attempted to ascertain whether Cannabis sativa or its derivatives do have any medical uses or not.

Some agree with the LaGuardia report that marihuana has great therapeutic possibilities.[185] In 1937 Dr. Walton did an extensive review of literature concerning the

therapeutic uses of marihuana. He feared that the passage of the Marihuana Tax Act would cause a loss of research into medicinal uses of Cannabis sativa. This review covers remedial uses for "spastic conditions," "analgesic uses," "headache and migraine," "sedative and hypnotic action," "mental conditions," "uterine dysfunction," "effects during labor," and its "diagnostic usefulness" in psychiatricanalysis. In each of these ailments, conditions, or physiological, and psychological problems, marihuana and its derivatives were seen as aids to be used by physicians and psychiatrists.[186] A study released in 1963, "... demonstrated antibacterial, analgesic, anticonvulsive and local anaesthetic qualities of tetrahydrocannabinols,"[187] which agrees with Dr. Walton's findings.

Cannabis sativa and its derivatives have been used by researchers in experiments to aid in the treatment of mental disorders. In 1947, Stockings used synhexyl in the treatment of chronic and intractable depressive states. Use of this derivative did not interfere with other treatments which were already being used, i.e. psychotherapy and occupational therapy. He found it almost inoperative for severe sensory thalamic dysfunction syndrome but was satisfied with the results in treatment of the depressive states mentioned.[188]

Even with the excellent and encouraging results reported by Stockings, a number of studies following suggested that its effects were not superior to those of a placebo and less than the results derived from the use of

amphetamines.[189] In 1953 with the use of pyrahexyl only 4 of 20 neurotic depressant patients tested actually improved. This same study found no improvement in six psychotic depressant subjects, after which pyrahexyl experimentation was discontinued because of poor results.[190]

By using marihuana synthetics in treatment of subjects who were withdrawing from drugs, including alcohol and opiate narcotics, results were more impressive than results with mental problems. Allentuck and Bowman, by substituting marihuana during withdrawal from opiate drugs, felt that their results were superior to other treatment methods. They reported that their subject's physical and mental conditions were elevated to the point of wanting to return to an occupation and their frame of mind and spirits were generally better than after other withdrawal treatments.[191] In response to this report J. Bouquet, who was known as an expert on marihuana, stated, "The use of marihuana to combat disorders due to the abuse of narcotics and to chronic alcoholism appears paradoxical."[192]

In 1953 the results of a large study reported the alleviation of post-alcoholic syndrome in more than 84 percent of the cases, or 59 out of 70.[193] This same study improvements in four of six barbituate addicts, three of four Dilaudid addicts, in both Pantopon, two subjects, and paregoric, one subject, addiction, eased withdrawal was noted. Impressive results were found with Demerol addicts, with 10 out of 12 withdrawing in one weeks' time. It was explained that the other two had been long-time users and

previously were treated for withdrawal from this same drug. Yet only two out of six morphine addicts reported an easy withdrawal. The subjects were found to be more physically active and stronger with the reduction or elimination of normal withdrawal symptoms, i.e. nausea and diarrhea.[194] Little has been done in this area since this study, probably because other legal synthetic drugs were developed which were more soluble and easier to administer.

There were also possible therapeutic uses not mentioned by the LaGuardia commission report. In 1947 anticonvulsant activity in animals using marihuana was studied.[195] From these results synhexyl was used on epileptic children.[196] The children reacted to this synthetic as well as previous treatment methods and some even better. "Some later research demonstrated that cannabis preparations had an antibacterial action in the treatment of dermatological conditions as well as in the treatment of otitis and sinusitis."[197] Just recently the National Commission on Marihuana and Drug Abuse reported that intraocular pressure was reduced, which could have a remedial use to aid glaucoma patients.[198]

New Areas of Research

Besides therapeutic applications not mentioned, a number of other areas of interests should be mentioned to complete the picture of marihuana research. This will include classification of cannabis in a drug class and any physical or mental problems which have been attributed to marihuana use. Consideration of marihuana for aphrodisiac

properties, studies conducted on any limitations while driving a vehicle, and results of research to develop a test for identifying individuals who are intoxicated similar to the blood-alcohol and Breath-a-lizer tests will also be reviewed.

By assigning Cannabis sativa a drug classification according to the effects of the central nervous system, the brain, and bodily functions it might be easier to understand why certain effects occur. The problem here is that researchers studying marihuana have not agreed on the drug class to which it belongs.

Allentuck and Bowman placed marihuana in the atropine group of drugs because of its physiological effects, but felt its psychological effects were closer to that of alcohol.[199] Andrew Weil agreed that cannabis fits the prototype of the atropine drug class, at least in regards to its peripheral effects. He bases this on the marked decrease in the flow of tears and saliva when the drug is used. These effects are caused by a blockage of the para-sympathetic part of the nervous system.[200]

Unfortunately, not everyone agrees with the above researchers. H. J. Anslinger and William F. Tompkins report that cannabis was a depressant drug according to its actions.[201] Another source felt that because of the wide variation of effects it could be classified as a stimulant or depressant. At the same time THC was seen as a strong hallucinogen, with sedative properties.[202] These drug classifications were verified in animals because of the action on the central

nervous system. THC has both stimulant and depressant properties.[203]

In a Life magazine article, marihuana was seen as having, "... a mildly stimulating effect on the noradrenaline and serotonin pathways in the brain."[204] This corroborates perviously mentioned researchers' statements. Yet, there are others who put this drug in with the mild hallucinogen classification.[205] Lester Grinspoon debates this because at times when the drug is used hallucinations do not occur. He wonders, if when they do, they are true hallucinations.[206] Richard Blum agrees with Grinspoon that it should not be classified as a hallucinogen based on the fact that its intoxicating effects are actually similar to those caused by alcohol.[207]

Based on two studies, the secretary of the Department of Health, Education, and Welfare described cannabis as a psychotomimetic drug because of its ability, under some circumstances, to produce similar effects. These effects being visual and auditory hallucinations at high standardized doses of THC by some users.[208] This year, to avoid confusion and a connotation of either good or bad, another class was determined for marihuana and other drugs including coffee, cigarettes, alcohol, and tranquilizers. The class put these and other drugs in a group called psychoactive drugs, which is, "... <u>any substance capable of modifying mental performance and individual behavior by inducing functional or pathological changes in the central nervous system</u>."[209] [Italics in original.]

There has been no real agreement in what drug class cannabis should be placed or if it should be in any single class or more than one. The following will review literature on marihuana to see whether cannabis has aphrodisiac properties which have been attributed to it.

Bromberg thought marihuana caused an increase of sexual fantasies and illusions and because of this it might be seen as an aphrodisiac.[210] Adams, the following year, wrote that in itself marihuana is not actually an aphrodisiac.[211]

Truth is not always fact, but what is perceived as being the truth becomes fact to some. Studies done in Africa, Morocco, and India support this point on marihuanas' perceived aphrodisiac qualities. In North Africa the feeling that marihuana creates, preserves, improves, and maintains sexual potency was one of the many reasons given for beginning the use of cannabis. In Chopra's sample of 1,200 in India, 10 percent gave this reason for its use. Yet, these authors actually claim prolonged, heavy use leads to impotence.[212] In some religions in the past cannabis was used by monks and ministers to aid them in abstaining from sexual activity.

In two U.S. Army studies it was concluded that marihuana produced both homosexual and heterosexual activities.[213] How this was accomplished was not explained by these sources. William McGlothlin stated, "Whatever aphrodisiac qualities cannabis may possess, virtually all investigators agree these are cerebral in nature and due to the reduction in inhibition and increased suggestibility."[214]

Marihuana in itself is not an aphrodisiac according to most researchers. For a more complete history of the sexual effects of cannabis, Lester Grinspoon's book, Marihuana Reconsidered,[215] goes into depth on this point.

Little was stated about marihuana's possible mental, physical, or loss of motivation potential in the conclusions of the LaGuardia commission report. To ignore these areas would be disastrous. In trying to present a complete picture of research conducted on marihuana it becomes necessary to include perceived and actual dangers which could be attributed to cannabis. This section is divided into five separate yet intertwined areas of concern. First is the myth that only the female plant contains intoxicating properties. Next the safety of the drug in the context of a lethal dose and then the possible loss of motivation on the part of users. In the area of physical effects damage to the fetus of a pregnant user or possible chromosome effects and mutations will be discussed. Last there will be a presentation of physical or mental difficulties which have been attributed to cannabis use.

In the past most individuals thought that only the female plant contained psychoactive properties. After some extensive research this has been disproved by two separate studies.[216] In each it was found that the male plant contains cannabinoids, but not as many as the female. Also, another belief was that the unfertilized female plant was more potent than one which had been fertilized. This has been disproved. According to research, both contain an equal amount of resin.[217]

The LaGuardia commission report mentions lethal dosage. This was placed at varying doses from 2.3 to as high as 60 mg./kg., depending on the animal experimented with and the synthetic used.[218] The safety level of marihuana was seen to be about 40,000 times that required to cause intoxicating effects.[219] It will not be debated in this paper whether this figure is high or not, but many investigators feel the dosage level is extremely high. The secretary of health, education, and welfare saw marihuana in regard to lethal dosage as one of the safest drugs in widespread use today. He also stated that even with very high doses death was a rarity.[220]

On the subject of death caused by marihuana, the next year, the secretary in his report to Congress restated his finding,

> Death from an overdose of cannabis is apparently extremely rare and difficult to confirm. This is consistent with animal data which indicates the margin of safety with cannabis or its synthetic equivalents is quite high.[221]

Weil, in reference to a Chopra study, reported the lethal dose or LD_{50} (this means that at a given dose 50 percent of the subjects died) for cats when compared to a man would be about 0.7 kg. for a human weighing 70 kilos. Weil cautioned that this might not be a totally valid comparison to make though.[222]

In another animal study conducted an LD_{50} for higher species, dogs and monkeys, was not obtainable and the lowest possible dose to cause death was 1 gm/kg orally administered.[223] In the report just released by the National Commission on Marihuana and Drug Abuse it was concluded that no conclusive

evidence existed to prove human deaths were caused from even very high doses of marihuana. The commission also found that recent animal studies showed a large margin between doses producing euphoric qualities and those producing physical and behavioral toxic and lethal doses.[224] From these statements, marihuana and its derivatives seem to be extremely safe, at least when speaking of lethal dosage.

It has been reported in countries where cannabis use is centuries old that its heavy, long term use leads to apathy and the loss of social interaction. This same point in the United States was made by Bromberg when he wrote, "... the drug does induce apathy, indifference to current social values, and neglect of ordinary goals of industry and competitive striving."[225] With the recurrence of these findings a label was developed to depict this loss of motivation. It is called an "amotivational syndrome." This syndrome has come to be known as the loss of the desire to work, to be competitive, to face challenges, lethargy, instability, and social deterioration, with only one goal, that being the use of Cannabis sativa and its by products.[226]

Even with the continued occurrence being mentioned in countries such as India there are a number of researchers that feel this may be an oversimplification of the situation. Some feel that it is rather difficult to show whether this social culture existed prior to marihuana use and surfaced after its inception or if it is the result of marihuana use per se.[227] If we confine the use of the term, "amotivational syndrome," to users in the United States it becomes extremely difficult

to draw a causal relationship between cannabis use and this syndrome.[228]

The secretary of the Department of Health, Education, and Welfare in 1972 makes a strong point against marihuana causing this syndrome when he noted;

> The fact that heavy marihuana users may have a high incidence of pre-existing psychopathology raises the question of whether or not any decreased interest and motivation observed in them may be a function of the psychopathological condition rather than of the drug.[229]

Looking at the findings of the National Commission on Marihuana and Drug Abuse a number of definite points should be mentioned. One study conducted for the commission, which shall be called the Boston free-access study, found that no reduction of motivation was found in short term, high dose users or those who had been high dose users before the study.[230] Some psychiatrists sense clinically that heavy users undergo subtle personality and life-style changes which involve these users in a subculture where drug use and untraditional behavior are acceptable.[231] Accordingly these long time, heavy users were seen to be present oriented and not worried so much about the future. "They appear alienated from generally accepted social and occupational activities, and they tend to show a reduced concern for personal hygiene and nutrition."[232]

Other behavioral scientists take a different approach to answer this phenomena. They see impressionable adolescents using marihuana and with the increased state of suggestibility, these young users adopt new values and behavioral patterns to coincide to the subculture which has grown up around marihuana

use. "Although the United States does not, at the present time, have a large number of such persons within its population the incidence is too frequent to ignore."[233] A conflict arises when we look at the findings of two intensive studies being conducted in Greece and Jamaica where heavy cannabis use has a long history. Findings there show a contradiction because these users maintain a job and a family and show no deterioration of their ability to function in society. It was stated that their life-styles were a result of socio-economic factors and not a result of cannabis use.[234] These same results were noted in Afghanistan too, that no physical or psychosocial deterioration resulted because of cannabis use.[235]

One of mans' constant worries is whether a given drug will cause either genetic, chromosome, or damage to the unborn child of a pregnant female. This subject has been studied by some investigators and their conclusions will be presented now. First, any possible chromosome or genetic damage which could be attributed to marihuana use will be discussed. In one study using rats, it was concluded that there was no difference in the number of chromosome abnormalities between rats exposed and a control group which was not exposed to a marihuana preparation.[236] A study using human leucocyte cultures found no structural chromosome damage when exposing them to the effect of Delta-8 and Delta-9-THC, but did notice a decrease in the cellular division rate.[237] With no chromosome damage it is logical to assume that no genetic changes are likely either.[238]

A study of long term, heavy marihuana users in both Greece and Jamaica failed to find any genetic or chromoseme damage and some of these users took as much as several ounces a day for up to 41 years.[239]

> In all its studies, the commission found no evidence of chromosome damage or teratogenic or mutagenic effects due to cannabis at doses commonly used by man.[240]

When considering difficulties associated with marihuana and pregnancy, there have not been any teratogenic difficulties reported even with the number of females using the drug.[241] Even though one study did show fetal damage in rats after injections of large quantities of cannabis, researchers have been unable to duplicate it. They have now concluded that no evidence exists to indicate human fetal difficulties from marihuana use.[242] According to the National Commission on Marihuana and Drug Abuse it was felt that fetal damage could not be ruled out and because of this fact they did not think it should be used during pregnancy.[243]

Next to be discussed will be any possible physical or mental problems which have been or could be attributed to marihuana use. Physical damage will include possible effects on organs and any cause of bodily diseases which might develop from short or long term use of cannabis. As for mental problems, marihuana psychosis has already been discussed so this will not be covered here. Any other mental difficulties which have been studied will be presented to complete research in this area.

According to the National Commission on Marihuana and Drug Abuse there were no meaningful physical, mental, or

biochemical aberrations which could be solely caused by the smoking of marihuana.[144] The commission also reported that even with very high doses no conclusive findings were able to show any physical damage which was caused exclusively by marihuana.[245] Neither Eastern nor Western researchers have reported any deleterious physical effects from light to moderate use of marihuana, except for a very rare allergic reaction. Yet, moderate to heavy long time cannabis use has been noted to create some physical harm.[246]

Some of the studies which have been conducted in countries where heavy, long term use exists have supported the above information. An example is a Jamaican study which conducted an intensive medical, mental, and psychological survey of heavy, long duration users of hashish. This study found that this use did not result in birth defects or physical damage.[247] In a similar study in Greece few abnormalities were noted.[248] Another project in Boston concluded that no harmful effects of bodily, motor, or mental functions could be noted. This study, though, was of a short duration, high dose nature which could reduce its credibility.[249]

Despite reports of no or very few physical abnormalities, there have been adverse physical effects found by some investigators. Chopra, in a 1957 report, stated that chronic bronchitis had been noted in heavy cannabis users. Also, he found a higher incidence of tuberculosis, various digestive ailments, and chronic use resulted in defective nutrition and a failing of health in

general.[250] The Council on Mental Health and the Committee on Alcoholism and Drug Dependence in a joint statement concluded that smoking marihuana over a long term induced chronic respiratory disorders.[251] This point is debated by the secretary of the Department of Health, Education, and Welfare, which recognizes these respiratory complaints but wonders if it is caused by marihuana use or if it is caused by the mixing of tobacco with cannabis when smoked.[252]

Chronic bronchitis, enlarged livers, and poor dentition is reported in an investigation of Greek subjects. It is noted that further clarification of alcohol and tobacco use in this population is needed, as well as the general life-style, before definite conclusions can be made.[253] Liver damage has been mentioned prior to the above study; but upon closer examination it is normally found to be caused by alcohol use and not the use of cannabis.[254] In still yet another study of heavy hashish users no liver dysfunction could be found.[255]

"... there is no credible evidence that marihuana leads to any cellular damage to any organ..."[256] is stated by Lester Grinspoon. The National Commission on Marihuana and Drug Abuse found similar results of experimental and intermittent users, that is, there is no organ damage.[257] Yet, the commission did state that with heavy use, "organ injury, especially diminuation of pulmonary function, is possible."[258] Pulmonary function abnormalities have been noted in some heavy and very heavy potent marihuana smokers; but with clarification this same effect is noticed

no matter what the substance is that is smoked. Yet, it should be noted that pulmonary abnormalities are an indication of possible chronic lung disease.[259]

"One other investigation recently completed uncovered no abnormalities in lung or heart functioning of a group of non-cigarette smoking heavy marihuana users."[260] There is another area in which marihuana smoking and cigarette use has been investigated, that being possible lung cancer, caused by smoking Cannabis sativa. One source concluded that heavy use does not cause any carcinogenic effects nor produce cancer.[261] A cigarette smoker increases his chances of getting lung cancer by 20 percent after smoking 10 or more cigarettes a day for 15 or more years. For an individual to obtain similar results from marihuana smoking he would have to stay completely intoxicated to the point of anesthesia, for this same period of time. Because of this it would be next to impossible to link cannabis smoking and lung cancer.[262]

As far as the nervous system is concerned, its general efficiency is not impaired because of the 100 percent compensation attributed to cannabis.[263] Blood circulation difficulties in the legs of some North African users and arterial changes have been noted in young U. S. multi-drug users; but it is unclear as to what role cannabis plays in these difficulties.[264] In both the Greek and Jamaican study, the National Commission on Marihuana and Drug Abuse reports that no deterioration of either mental or social functioning could be accredited per se to chronic

heavy marihuana use.[265] Also, neither experimental nor intermittent users showed physical or psychological harm from the use of this drug.[266]

A couple of sources report that slurred speech, a staggering gait, fine hand tremors, deminishing of muscle strength, problems with depth perception, and a decreased sensitivity to pain are some physical features noted in young users. But they had also used other drugs which reduced the role of cannabis.[267] So far we have dealt only with possible physical abnormalities, with occasional mention of mental irregularities. Cerebral difficulties will be covered now.

Effects on brain waves have been shown through the use of an electroencephalograph but as to what this means remains unclear.[268] A recent British work, using radiographic techniques, has noted evidence of cerebral atrophy. One limitation is encountered because 80 percent of the subjects had previously used amphetamines, which is thought to cause organic brain changes.[269] Whereas, another source states, "No objective evidence of specific pathology of brain tissue has been documented. This fact contrasts sharply with the well-established brain damage of chronic alcoholism."[270] This statement is followed by the lack of outstanding deficiency noted in psychological tests, psychiatric interviews, or coping patterns documented in other countries.[271]

Using daily oral doses, up to 100,000 times the minimal dose required to produce euphoric effects in humans, in rats, and monkeys for 3 months has produced some interesting

results even though it would be extremely difficult to correlate these findings to human use. Both rats and monkeys showed severe central nervous system depression with some deaths produced among the rats. The monkeys showed a mild hyperactivity but returned to normal shortly with the development of a tolerance to these effects. There was also reported hypocellularity of bone marrow and spleen and in some a hypertrophy of the adrenal cortex, but the exact significance of these findings is unclear.[272]

Now that both physical and mental effects have been analyzed this report will consider marihuana and its effects on automobile drivers. Yearly, at least 50 percent of all auto fatalities are caused directly or indirectly by drivers under the influence of alcohol. If marihuana were to be legalized, could we expect an increase in accidents caused by drivers "high" on marihuana? What is now known about this will be disseminated to draw us closer to an answer, if one exists.

In 1953, if we were to accept Harry Anslinger's and William Tompkins' statement, "... a man under its influence at the wheel of an automobile is capable of leaving a trail of fatal accidents in his wake,"[273] marihuana use would never be condoned. In the year following the above statement, G. R. Wendt published a study of automobile performance of subjects under the influence of marihuana synthetics. He reported performance was not impaired but ability to shift attention was reduced to a degree.[274]

Crancer, et. al., in 1969 wrote in Science that their

subjects while under a "social marihuana high" made significantly more errors in speedometer checks; but no greater mistakes were noted in accelerator, signal, steering, brake, and the total number of errors made when compared to subjects under controlled non-high simulator driving. A qualifying point was made, that when using a simulator the speed of the film which is shown to the participant cannot be controlled. Because of this the speedometer checks are not speeding errors but errors in the amount of time spent watching the speedometer.[275]

The secretary of the Department of Health, Education, and Welfare cautions about findings of early driver simulator results which indicated only slight impairment on drivers.[276] Two studies tend to support this warning. One, after oral administration of marihuana found a dose-related increase of braking time.[277] The other noted a marked increase of glare recovery time.[278] Another author cautions against any conclusions which might be arrived at from laboratory driving simulators only and at the same time shows the difficulty of assessing any drug affects on highway accidents.[279]

The National Commission on Marihuana and Drug Abuse devoted a short section to this issue of "Marihuana and Driving." They found from all available simulator studies that even though marihuana may produce interference of certain motor or mental abilities these effects are readily overcome with caution and reduction of speed. Most of these simulator tests have found no actual relationships between marihuana and driving disabilities.[280]

One controversial study cited by the national commission concluded that low marihuana doses were less detrimental than alcohol at the legally prohibited blood level of .10 percent when it comes to driving performance.[281] It was also reported that daily users become more conservative when making decisions which could involve risk.[282] Even though existing research in this area has not shown impairment of driving performance the national commission stated, "... that driving while under the influence of any psychoactive drug is a serious risk to public safety...."[283]

This ties into the next section because without some reliable technique to measure the level of marihuana intoxication it is difficult to tell how impaired a driver is at the time of an accident or traffic violation. Presently a solution to this problem does not exist but some inroads have been made toward a simple test analogous to the presently used blood alcohol test. In studies using radioactive labeled THC it has been shown that these metabolites stay for days and even weeks after use of a large single dose in the excretion of feces. If a simple test can be developed to use this information, then marihuana could be detectable for longer periods of time than alcohol presently is.[284]

Recently the Insurance Institute for Highway Safety reported that they had found a urinalysis test which would be fast and dependable in identifying a marihuana user. But, because of fairly sophisticated equipment it was not possible to use this test in the field.[285] If this test proves to be successful and it can be made available to police departments

throughout the nation, then one of the problems of research in this field will be solved.

Summary

A presentation of research conducted to date has been made in hopes of showing what information exists. Even though a good percentage of the findings support use of marihuana, more research is needed in almost every area because of inconclusive information. The problem with cannabis is that even if it can be proven that it is harmless, the moral and social questions remain. This problem may even be ingrained deeper than the fear of marihuana's possible physical or mental difficulties. Not only must fear be dealt with but also moral stigma which has been linked to marihuana. A summary of this chapter can be found in Chapter 4 along with those areas where further investigation is needed.

Chapter 2

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Chapter 3

COST OF ENFORCEMENT

There is a presentation of legal penalties for possession in both federal and state cases. The federal penalties for possession since the passage of the 1937 Marihuana Tax Act is provided to update this legal history (Chapter 1). A complete list of states and their possible penalties is provided with what information exists at this date. After this brief presentation, research conducted using two police department's arrest records (Michigan State Police Post Number 35 and the Flint Police Department) to discern the cost of enforcement of marihuana possession and use laws was covered. Comparison to existing research in this area, limited as it is, will be used for verification of this study's findings.

CURRENT LEGAL PENALTIES

Federal penalties have changed a number of times since 1937 as the popularity of marihuana use increased in the United States. As this popularity of marihuana use increased, so did the penalties for its possession as is exemplified by the 1951 and then 1956 federal laws. These laws made the minimum sentence for the first offense of possession two years. For the second offense the minimum

sentence was five years. The third or subsequent offenses were ten years. Besides a prison sentence, a possible $20,000 fine could be levied. For the first offense of possession parole or probation was available, but not for any further offenses.[1]

The federal law was again changed in 1970 after the passage of the Comprehensive Drug Abuse Prevention and Control Act. This law was passed after much of the current research had been conducted and many of the myths surrounding marihuana use were destroyed. Even though the act did reduce some of the punishments for possession, use, and sale they still remained rather severe. Actual possession and casual transfers, giving away small quantities of marihuana, was reduced from a felony to a misdeameanor with minimum sentence requirements abolished and left to the discretion of the judge. Both possession and casual transfers still carry one year imprisonment and/or a $5,000 maximum fine. Second and subsequent offenses are still punishable by three years imprisonment with a maximum fine of $10,000. For distribution or sale, even for a trivial sum, to anyone under 21-years-old the first offense can bring 10 years imprisonment and/or a $30,000 fine. For any offenses after the first one the punishment is 15 years and/or a $45,000 fine. One improvement was that an individual under 21 and a first offender can be placed on probation and if he/she fulfills the probation requirements all records are expunged.[2]

In Appendix B the state penalties for first offenders convicted of possession as of July 1, 1971 are listed. As will

be noted, some states' statutes are as stringent as the present federal laws and a few even more severe. One state, Texas, still carries a penalty of two years to life for the first offense of possession. A number of the states passed new laws covering marihuana after the publication of the Task Force Report: Narcotics and Drug Abuse, in 1967. In most situations the penalties were reduced. An example is Alabama. Before, for first offenders, the penalty was 5 to 20 years and/or $20,000. The state of Indiana reduced their penalty of 2 to 10 years and/or $1,000.[3] From this and the recent national commission report which stated, "By June, 1970, 24 states and the District of Columbia had reduced the penalties, although 34 states and the district still classified marihuana as a narcotic."[4] Also;

> ... 42 of the states and the District of Columbia classify possession as a misdemeanor or have adopted special provisions so classifying possession of small amounts of marihuana. In half of the remaining eight jurisdictions, the courts have discretion to sentence possessors as misdemeanants.
>
> In 11 jurisdictions, casual transfers are treated in the same manner as possession, and in 27 jurisdictions, conditional discharge is available to certain classes of offenders.[5]

Since this study was conducted in the state of Michigan a revision of this state's marihuana laws since July 1, 1971, is necessary. On December 21, 1971 the state of Michigan passed the Controlled Substances Act of 1971[6] which went into effect April 1, 1972. In this act, the unlawful possession of two ounces or more of marihuana can be held as presumptive, prima facie, evidence of intent to deliver or sell unless disproved by the defense lawyer. The casual transfer of marihuana for no profit by an individual

over 18 to one under 18 who is greater than five years younger than himself is guilty of a misdemeanor punishable by not more than 1 year in the county jail and/or $1,000. Anyone convicted of marihuana "use" is, "... punishable by imprisonment for not more than 90 days in the county jail or by a fine of not more than $100.00, or both."[7] An individual convicted of "possession" is, "... punishable by imprisonment for not more than 1 year in the county jail or by a fine of not more than $1,000.00, or both."[8] Both of these offenses are classified as misdemeanor crimes. Whereas, the sale or intent to sell marihuana is a felony punishable by up to 4 years in prison and/or up to a $2,000 fine.[9]

COST OF ENFORCEMENT AND OTHER FACTORS

This study was conducted in an attempt to close the gap in information on costs in tax money to enforce marihuana laws. Not only will the cost be shown but a breakdown of this cost, whenever it was possible to obtain it, is presented. The age, sex, and race, as well as the normal or usual disposition is presented. Wherever possible any information which collaborates this study's findings are presented. There are a number of limitations inherent to this type of study which are also discussed.

Another purpose of this study was to produce information which presently does not exist and to provide an understanding of how productive, if at all, enforcement is in terms of convictions and social gain. Because of the

many limitations in deriving costs directly attributable to any arrest, and even those costs which could be found to exist, somewhat limits this study's effect.

Basic Study Outline

Study was accomplished by reviewing arrest records and other available police files in the Michigan State Police Post Number 35 and the Flint Police Department. Other expenses, court and prosecutors, were ascertained through interviews with these agencies representatives. There are expenses which were inobtainable and the ones which were available but could not be directly attributed to a case because of the lack of information to show the percentage or quantity of these expenses. In either case they will be discussed.

Police records studied included the total sample of one complete year of marihuana arrests for the State Police Post and one year and four months records of the Flint Police Department. To gain dispositions for all cases collected it was necessary to use records of previous years. The State Police sample included those arrests from January to December 31, 1971. Whereas, the cases reviewed in the Flint Police Department cover from January 1, 1970 to April 30, 1971. There were a total of 380 individuals arrested for possession and use of marihuana by these two departments.

Those cases which involved the sale of marihuana are not included in this sample because their costs might increase astronomically the average expenses and usually the enforcement

and arrest of individuals for possession or use happens by accident or spontaneously after another offense has been committed. This is supported, in reference to possession cases, by the national commission report in which it was stated, "... 69% of all marihuana arrests arose from spontaneous or accidental situations where there had been no investigation at all."[10] If cases involving sale were included, the possible investigation and use of informants would certainly increase the cost of all cases in general.

This seemed like one way to glean information from the increased number of arrests nationwide. From 1965 to 1970 state arrests increased by 1000 percent for marihuana possession. The Bureau of Narcotics and Dangerous Drugs, whose primary responsibility is the enforcement of sale cases, only increased by 80 percent from 1965 to 1968.[11] With the greatest increase in possession cases, research in this area seemed more profitable and easier to obtain than that involving sale.

Most of the findings will be shown by their comparison to the total sample and/or the results from one department as compared to the other. Average costs will be shown for each department on a case basis with each case cost divided into expenditures, on the average, for each individual. This average expenditure will then be separated into police costs and "other" costs. "Other" expenditures include those of the courts, prosecutor's office, and probation.

Probation in this sample is divided into two distinct forms. One being circuit court or adult probation and the

other being the Citizen Probation Authority (C.P.A.). The C.P.A. is a form of probation which arises after arrest and usually prior to any actual court activities. This special program allows expenses to decrease in many cases which might otherwise result in court action. C.P.A. is limited to first offenders and is a program of no record, meaning after satisfying one year of probation all records are expunged.

Limitations

The greatest limitation of a study of this nature is an ability to present all expenses, no matter how trivial they may seem. In this particular study a number of costs which were available were not included because of an inability to show connection between each case and this expense. First those costs which could not be derived will be presented because of the lack of resources and time to gather them or the lack of records from which they could be gleaned. This will be divided into police, court, jail, and miscellaneous expenses. Miscellaneous expenses encompass the cost to society for care of the family of an individual arrested and convicted for use or possession of marihuana. Also included in this category are any possible expenses to the individual arrested such as lawyer fees, lost wages, and social stigma. Then expenses which were obtained for each of these same classifications but could not be assigned to each case because of the lack of records or the time to review existing records are presented.

As can be seen by the above statement, time and available resources for this study were limited. By including the total number of individuals arrested for possession or use, a random sample was not necessary so this problem did not occur. Because of a lack of research on the cost of enforcing marihuana laws a limitation is formed in that varification of most of the findings is unavailable. Other information will be presented to collaborate or contradict the findings of this study.

Uncorrelated Expenses

Costs which were not available or extremely minimal in themselves may be substantial when totaled together. This would include the cost of the dispatcher who radioed or received communications about the arrest and the time expended. Next is the expense of the storage of all records from the running tally for the yearly Federal Bureau of Investigation report, fingerprint cards, officers dailies, and complaint records. Building maintanence, depreciation, electrical, heating, and phone service, even though only remotely related, are other factors taken into account. Also, a police station to store, assemble, disseminate, and maintain a location for the gathering of law enforcement officers and those arrested. Secondary services, such as secretarial and non-enforcement individuals who might in some way become involved with a particular case are another consideration.

Expenditures not traceable in the court system include not only those building costs already mentioned but in most cases others too. Courts maintain a record section of case

dispositions and provide services required by law, such as bail and bonds for those offenses in which these are necessary, marihuana being one. Records available for this study did not show if any individual was released on bail or bond so this expense was not available. Usually the exact amount of court time spent on a case was not available either (this will be covered shortly).

Next is jail costs incurred by an individual after arrest. Again building costs are involved along with records and secondary services. Uniforms and training which are initial expenses are other factors which include not only turnkeys but also the police department. With the city jail operated by the city of Flint Police Department and the county jail by the Genesee County Sheriff Department many expenses are shared by each law enforcement agency. It could, therefore, be inferred that similar untraceable expenses exist.

Miscellaneous costs are those which are incurred because of the arrest and are not attributable to the police, courts, or jails. This involves other agencies. If the individual cannot afford bond or bail, then he would have to stay in jail until he went to court. By being in jail he is unable to support his family, if there is one, and lost wages are considered as costs. If the individual is convicted and must serve time either in the county jail or in a state prison, then society must provide support for his family. This support could be by way of aid to dependent children, welfare, food stamps, or a combination of these programs.

Also, society indirectly pays when an individual's

productivity and ability to earn a living and pay taxes are diminished. If because of arrest one should lose his job, even if he is not guilty, then society will probably pay for any aid he might receive. An arrest may also create a stigma which increases the difficulty of the person to gain employment after release from jail or dismissal of the case. If the individual is later released and exonerated, the effects could be felt by society anyway.

If the individual should go to court, he would need a lawyer to represent him. A lawyer can be obtained by two methods. Either the individual obtains an attorney on his own, which means personal expense or the court appoints a lawyer to represent him, which means public expense. Court appointed lawyers will be further discussed later.

The primary police cost which occurred in the majority of cases was that of seeking a warrant. In the State Police sample, a record of overtime was maintained by the post which was made available for this study. In this manner it was possible to figure overtime pay on each case, but when none was paid a difficulty was encountered. The problem was determining time spent on seeking a warrant and finding the average number of man hours spent by the arresting officers in court. By looking at overtime pay it was found that normally no less than two hours per arresting officer was spent in court. In cases where other information did not indicate the amount of court time, two hours for each officer was used. This same approach was necessary when figuring expended man hours when an officer sought a warrant

from the prosecuting attorney's office. The minimum was usually two hours spent by the senior officer in attempting to procure a warrant. Police costs in every case may not be as high as they were in reality but because of the lack of records it was necessary to approach the problem in this manner.

The Flint police sample was handled in a similar manner. No overtime records were available so it was necessary to use only minimum man hour expenditures for both seeking a warrant and court time in all cases. One exception is when it was noted on the complaint record or officer's daily record the amount of court time spent or time spent seeking a warrant was used. Shift changes were limitations which would have made a difference on whether overtime was paid. The State Police change shifts on a rotating basis, but because of a record of when overtime was paid on a case no problem was encountered. Whereas, the Flint police remain on the same shift yearly, so no difficulties were present in computing police expenses once man hours expended were known. Also Flint police receive shift differential pay but because they remain on the same shift this did not create any problem.

Court expenses were not obtainable for any case so it was necessary to use the average costs for marihuana cases. In district court where the preliminary hearings are held the cost for the court officer, judge, and court stenographer are lumped into one average figure. The total cost according to the district court officer varies from $200 to $300,[12] of which the lesser was used. In a situation where an individual

was released by the district court judge for some reason this cost was reduced to $100 to avoid an overestimation of expenses.

Another expense which was obtained but could not be directly associated with a case in the preliminary hearing was that of a court appointed lawyer. Because it was not possible to tell which individuals were provided with a lawyer at this stage, it was necessary not to include this cost in the compilation of total costs for this study. Even though this expense is not used it should be noted and the frequency with which a lawyer is appointed should also be noted. If an attorney is assigned, an expenditure of $50 is incurred. It was found, according to the court officer whose duty it is to assign attorneys to indigent individuals, that 9 out of every 10 individuals arrested for marihuana possession or use must be provided with an attorney.[13]

The next court expense is that of circuit court which averages $300 to $350 and includes the court officer, judge, and court stenographer.[14] In this situation the study uses the lower of the two figures, $300. In all but two cases the cost for a jury in this study was $90. This figure was used because in a trial for marihuana use only six jurors are needed at the expense of $15 a day.[15] The two cases where a full jury of 13 was needed for marihuana possession the cost was $190. This amount was used in two cases only because in all but these two cases it could not definitely be shown that the case being tried was for marihuana possession.[16] Other costs not included that do exist and are involved with a jury trial are the expense to the court for mileage traveled by

each juror and the cost of feeding them if a trial should extend past the noon recess. Mileage traveled is covered at the rate of ten cents a mile and if lunch is provided the amount for the jury varies from $25 to $28.[17]

The cost of a court appointed lawyer, in the case of a circuit court trial of the public defender, was found to average $300.[18] Again because records which show who did receive the services of the public defender were not available, this cost was not included in the total expenses shown by this study. Along with the above circuit court expense it is necessary to provide non-expert or non-police witnesses for a trial of this nature. On the average there is only one, which would mean another $12 for a court appearance and 10 cents a mile for distance traveled.[19]

Considering those costs for incarcerating an individual also produced a problem. Usually an individual goes to court the very next day so the only city jail cost is for one day or $12. But if he is arrested late on a Saturday or just prior to a holiday then he is held in the city jail until the following Monday or until the district court convines after the holiday. This would add one day under one circumstance and up to three days under the other depending on when court reconvines. This would mean an additional cost of $12 to $36 which could not be added to a case because of the lack of available records.

There is also the cost of confining the individual in the county jail if he is not released on bond or bail. It was found that, if the individual is not released, then it is a

minimum of 7 days or a maximum of 12 days before he would appear in circuit court, if no extensions are asked for by the individual's lawyer.[20] This means an additional cost of $84 to $144 if no extensions occur. Again this expense is not included in the total cost shown by this study.

If it would have been possible to obtain the records showing each of these expenses in every case and time would have been available to include them, the average case cost for each individual arrested, when applicable, would have been substantially higher. There could have been an additional cost to the public in tax dollars of up to approximately $568 and this is just those costs which were available excluding those which were too difficult to determine (mentioned earlier in this section). So in a sense, by excluding these expenditures this study's findings are limited. Those which are included can be substantiated.

Costs Included In Sample

Those expenditures which were used include time in service and distance traveled for each case by the arresting officers. Other expenses involving the arresting officers included are wages paid while seeking a warrant and any court time involved. Also if those arrested talked to a detective, which is termed investigation, or were fingerprinted, these costs were included. Benefits paid by a police department over and above wages were included also, even though it is an indirect cost. Both city and county jail costs are tallied as well as any probation which an individual might have to serve.

Prosecutor and court costs encountered during a case, figure into total case cost. An expense included, whenever applicable, is that of a laboratory check to identify the substance confiscated and if a technician was required to appear in court this was also added. A breakdown follows of how each of these expenses were tabulated and where they are standard costs it will be noted.

Beginning with State Police arrest costs, in each case the number of officers involved and the time in service for that case was obtained. Also the distance traveled to lodge those arrested in the city jail was tabulated and a vehicle cost was totaled. The State Police vehicle cost per mile was found to be four cents, this excludes the purchase price of the vehicle.[21] The same process was employed in obtaining initial costs for the Flint Police Department sample. The only difference being that vehicle costs per mile for this department was six cents, which included the purchase price of a cruiser.[22] For both police agencies, when a warrant was sought, the amount of time expended in obtaining one was tabulated. If the exact amount of time was not available, an average time was used, that being two hours.[23]

Continuing from here, if the individual(s) arrested went to court, the amount of time spent in court, when available, by the arresting officers was obtained from the officer's daily work sheet. If this information was not in the daily work sheets, an average was used that being two hours per officer.[24] Other police expenses which are constant

for each case included fingerprinting and mug shots. For the State Police every individual released was fingerprinted and photographed at an expense of $2.66. This rate increased to $3.99 for those who had to be escorted to district court. In the Flint sample, a constant cost was obtained of $4 per person for printing and mug shots. This did not vary if those arrested were released or went to court.

In the State Police sample the only time an investigation cost was incurred was when an officer, other than the arresting officer(s), became involved in the case. This was very rare, but when it did occur man hours spent and wages paid were added into the total case cost. Yet, in every case under the Flint sample there was an investigation cost. Each individual arrested for marihuana possession or use was required to talk to a detective in the narcotics bureau. This discussion lasted on the average of 15 minutes with a cost of $1.45.[25] Benefits paid by the police departments over and above wages on a percentage basis in comparison to every dollar in wages paid, Flint pay 23 cents or 23 percent and the State Police pay 25 cents or 25 percent for benefits.[26] Examples of benefits are health, accident, life insurance, sick pay, holiday pay, and uniforms. These are only a few of a long list of benefits provided to give an idea of what is meant by this cost. (Benefits for county employees; prosecutors, judges, probation officers, and court officers were not available at the time a total cost was tabulated. It was found later to be 25 percent and this would have to be added later to obtain a more accurate cost.)

Expenses from a case, which were incurred by the prosecutor's office, were tabulated for each phase of the legal structure. It was computed that the amount of time spent by a prosecuting attorney in reference to a warrant was 30 minutes or $7.17. If a warrant was issued, this increased the cost to $17.94 over and above the warrant cost. This covers the preliminary exam, preparation, negotiation, and going to district court if plea bargaining is not successful. If circuit court arraignment becomes necessary, then the total cost is brought to $39.46. If a case goes beyond the arraignment stage but does not go to trial, the prosecutor's expended time increases by another six hours to a total of $125.56. When the case goes to trial, the amount of time for preparation and trial jumps the total by another 12 hours or up to a cost of $290.58. Even at this total expense it was felt marihuana cases were one of the cheaper cases to process.[27]

Next court costs were derived for both district and circuit courts. As was explained earlier, the district court cost used was $200 and the circuit court expenditures were $300. Also as previously stated, jury expenses used are $90 for all but two cases and in these two possession cases $190 was used.

City jail monitory disbursement costs $12 a day, as does the county jail.[28] Because of the lack of records to show how many days an individual spent in either the city or county jail it was necessary to take minimums. With every individual, except juveniles, transported to the city jail it was possible to charge each person with at least $12. By not

having county jail records available it became necessary not to give any person a cost in this area. One exception being, if a county jail stay was part of an individual's court disposition then this was computed and added to the total cost.

Probation was another expense which could be computed and was included in the form of a case and individual related cost. In Genesee County there are two different kinds of probation. One is the basic adult probation which can be found in any county throughout the state of Michigan. The other is a select program, Citizen Probation Authority, (C.P.A.), where an individual must be a first offender. This program usually comes into effect prior to any court or during the plea bargaining session prior to a circuit court trial. In this program a first offender receives one year probation and a $100 fine. In talking to the director of the C.P.A. the total cost was figured out as $165 for this one year probation.[29] Whereas, the cost for adult probation was formulated at $125 a year.[30]

It should be noted that in the case of an individual being released by the C.P.A. a $100 fine was levied and in most cases no expenses were incurred by other agencies after the seeking of a warrant. When an individual is placed on adult probation, he or she may receive a court cost charge which is returned to the probation department and an oversight fee is charged. An oversight fee amounts to a charge of $5 a month to each individual for probation services and this helps defer some of the costs of this type of probation.

In both the State Police and Flint samples a laboratory check may be conducted to decide whether the material confiscated was marihuana. This cost varied depending on whether an expert technician was required to appear in court or not and whether it was for the Flint Police Department or the Michigan State Police. Taking the State Police first the supposed marihuana had to be transported to Lansing for analysis and if a court appearance was necessary the time spent for preparation, appearance in court, and travel by a technician had to be computed. This same process was identical for the Flint Police Department, except, because of a difference in vehicle mileage cost the expense was increased.

The average amount of time spent in actual analysis was one hour at an expense of $6.50. To transport the substance to Lansing, a distance of approximately 50 miles one way, computes to $19.50 for officer wages and $4 for the State Police and $6 for the Flint Police Department for vehicle mileage costs. If no court appearance is necessary, the expense to the Flint Police Department amounts to $32 and to the State Police $30. If a court appearance becomes necessary, additional expenses of four hours for preparation, court time, and travel time amounts to $30. Also secretarial wages for this court appearance and the filling out of forms adds another $1.75. This would bring the total cost for a laboratory check and court appearance for Flint or the State Police to $63.75 and $61.75 respectfully.

When an individual did go to court and received a

court fine or court cost or was put on C.P.A. probation this was noted and used to gain a clearer picture of case costs. Collected along with the above information was the age, sex, and race of each individual arrested. This information was used to show if any relationship existed between this and other studies where this type of information was collected.

RESEARCH FINDINGS

The total sample included 380 individuals involved in 105 State Police and 130 Flint police cases. Of these 380, 203 were arrested by the State Police with the remaining 177 being picked up by the Flint police. In the process of tabulating State Police case costs it was necessary to exclude one case because of the nature behind the arrests. There were a total of 12 police officers involved in the arrest of 14 individuals. These people were lodged in another county jail, and because it was not possible to obtain either the other jail's costs or officer's wages this case is excluded.

This decreased the State Police sample to 189. The study was also required to exclude juveniles in case costs because of a difference in the handling of them as required by state law. To avoid confusion in the totaling up of costs it was easier to exclude juveniles. Juveniles will share in costs of a case because even though they are under 18 years of age they still shared in the officer's time and the cost this time represented. After reducing the sample of

juveniles the final product amounted to 178 for the State Police and 155 for the Flint police for a total of 333.

Individual Results

As will be noted by Table 1, almost twice as many individuals, percentage-wise, were released without going to court in the Flint sample than from the State Police group. This could be explained by a number of factors. The State Police always seek a warrant in every case, whereas Flint does not. Also, a factor which neither department can control is that of the prosecuting attorney's office and the attitudes held by these 19 attornies. These factors may have in some manner created this difference even if it cannot be shown. The national commission reported in one of its studies that, "Of the entire sample of arrests, both adult and juveniles, 33% of those apprehended were ultimately sentenced..."[32] The slight difference, 29.4 percent and 33 percent, could possibly be because of this study's exclusion of juveniles; yet this 4 percent variation is not so definite that findings of the study can be dismissed.

Table 1

Disposition Breakdown

M.S.P.	Individuals Dismissed	68	38.2%
	Individuals Court	60	33.7%
	Individuals C.P.A.	50	28.1%
F.P.D.	Individuals Dismissed	96	61.9%
	Individuals Court	38	24.5%
	Individuals C.P.A.	21	13.5%
Combination	Individuals Dismissed	164	49.2%
	Individuals Court	98	29.4%
	Individuals C.P.A.	71	21.3%

Another study found that, "At least 48% of the cases were terminated in the defendant's favor...."[33] If we combine dismissals with individuals who were placed on probation under C.P.A. as being favorable, this study's combined total of 70.5 percent exceeds the above mark extensively. Even by considering only the combined number of individuals dismissed, 49.2 percent these results are very similar in the final analysis.

Costs

When showing case costs, the sample was divided into three definite subsections which are titled "no court," "any court," and "C.P.A." "No court" is rather self-explanatory, whereas "any court" should be discussed to give a clearer picture of the results in Table 2. Any case that went to court whether it involved district court only or circuit court is included in this group of the sample. The only exception being those cases where a person was put on probation under the C.P.A. because some of these cases did involve individuals who started the court process. So, the C.P.A. group includes those cases where the persons apprehended were at some point sent to the C.P.A.

The range of no court M.S.P. cases, Table 2, is from $82.55 to $213.70 and Flint's varied from $43.32 to $185.38. The reverse is true for any court cases, where Flint's case costs ranged from $465.18 to $4,398.65 with the high being more than that found for the M.S.P. average, from $310.32 to $3,338.15. This difference explains the lower average court cases in the State Police sample (see

exclusion bottom of Table 2). In C.P.A. cases the M.S.P. sample again is higher with a range from $255.93 to $1,254.86, whereas, Flint's range is more limited being from $212.21 to a high of $677.73. Flint's C.P.A. high is almost half of the State Police high and therefore more consistent and meaningful when looking at the average.

Table 2

Average Case Cost

M.S.P.	No Court	$ 127.36	7.1%
	Any Court	1,180.31*	65.0%
	C.P.A.	509.18	28.0%
	Total Average	$1,816.85	100.1%
F.P.D.	No Court	$ 104.56	5.6%
	Any Court	1,440.43	77.7%
	C.P.A.	309.18	16.7%
	Total Average	$1,854.31	100.0%
Combined	No Court	$ 115.96	6.4%
	Any Court	1,310.37	71.4%
	C.P.A.	409.25	22.3%
	Total Average	$1,835.58	100.1%

*Less an extreme case of $6,882.75 - otherwise the average would be $1,319.40.

To this researcher's knowledge there are no reports existing that have attempted to arrive at the average cost of each case. In the State Police sample the cost of an average court case is almost $300 less than the Flint average. Some explanation may be necessary to bring this variation into proper perspective. More persons were apprehended in a group of two or more by the State Police than by the Flint police. This effects the average because by involving more persons the

average cost is reduced. As a whole, (Table 3), more individuals were arrested separately in this sample than in a group of two or more. This is not consistent with the findings of the national commission which stated, "Offenders at the state level were generally arrested in groups.

.29% were arrested alone
.24% were arrested with one other person
.43% were arrested with two or more other persons..."[34]

Table 3

Size of Group Apprehended

Alone	65.8%
Two People	20.5%
More Than Two	13.7%

Returning to Table 2, if the combined court cost can be taken as representative of other departments, it would be possible to decrease our expenses markedly if more individuals were put into Citizen Probation Authority agencies or similar organizations instead of going to court. By the use of this type of program, expenses could be reduced by more than half, according to the combined averages shown in this table.

As shown by Table 1, it should be noted that with almost 50 percent of those individuals apprehended being released, the average case cost could be somewhat misleading. So, looking at Table 2 with this perspective does make a strong impression. With laws nationwide putting marihuana possession in the same class as other felonies and with almost 50 percent of this sample being released after arrest then a large expense is encountered which may not be necessary.

With the average case court cost being $1,310.37 a large amount of money is being spent without any actual results. This is evidenced by a nationwide increase in marihuana use even when penalties are rather stiff in some states. Expenditures of this amount seem to be somewhat of a waste when we consider that in 1970 more than 188,000 persons were arrested in the United States on the state level.[35]

Taking the average amount of an individual's cost in a case (Table 4) which ends in release without any court appearance, a staggering figure of almost $13 million is realized. If, of these 188,682 persons the percentage of those who go to court were to remain consistent throughout the United States with this report's findings, this $13 million is only a fraction of the actual cost.

Table 4 breaks down case costs in a similar manner as was done in the second table. A difference being that all persons apprehended and released, even though another member of their group goes to court, is included in the "no court" sample. This same approach is used in reference to cases where one individual goes to court and another is accepted by C.P.A. Even though there is a variation between the two samples, costwise, there seems to be a similarity when looking at the percentage of costs on an individual basis. On all three counts where individual costs are figured they vary only a few percentage points, which in itself tends to validate the findings of this study.

Table 4

Average Individual Cost

M.S.P.	No Court	$ 64.74	5.4%
	Any Court	852.02	71.6%*
	C.P.A.	273.19	23.0%
	Total Average	$1,190.02	100.0%
F.P.D.	No Court	$ 70.12	4.3%
	Any Court	1,283.15	79.6%
	C.P.A.	259.68	16.1%
	Total Average	$1,612.95	100.0%
Combined	No Court	$ 67.43	4.8%
	Any Court	1,067.62	76.2%
	C.P.A.	266.44	19.0%
	Total Average	$1,401.49	100.0%

*Less an extreme case, $6,022.08 - otherwise it would be $952.46.

In Table 4 the sweep of cost varied from $36.65 to a high of $213.70 for the Michigan State Police sample and for Flint Police Department, a low of $32.44 to a high of $140.34 for the "no court" group. Even with the differences in each sample's high, the average percentage is just a little more than 1 percent in the final analysis. This shows the closeness of these two samples. In looking at the variation of the any court sample between the State Police and Flint, low of $275.23 to a high of $1,669.08 and from $248.92 to $4,398.65 respectively, it will be noticed that the lows are very similar. The difference in highs needs an explanation. The high for the M.S.P. given is actually the second highest cost with the actual cost being $6,022.08.

Because this was the only case of this magnitude it unbalanced the whole average by more than $100 a case, so this extreme case is excluded. Yet, in the Flint sample, there were a number of individuals whose cost were $2,500 or more, so the high of $4,398.65 is not out of proportion with the rest of the sample.

When taking the high and low of C.P.A. cases and computing a total on an individual basis, it should be remembered that every person who received this type of probation pays a $100 fine. This $100 fine has not been subtracted in the above total, Table 4, but it will be in a later one when discussing court dispositions. The high for the Flint sample is $632.93 with the low being $212.21. The State Police group is almost identical, from $213.36 to $671.04, which lends validity to this cost, even with the differences of police wages.

This brings us to the next total, Table 5, that being the average police case cost incurred from making an arrest, seeking a warrant, appearing in court, jail expenses, investigations, fingerprinting, and any laboratory analysis. Again, using the same classifications of no court, any court, and C.P.A. it is shown how police expenses vary from one type of case to another.

As can be seen, the average cost for both "no court" and C.P.A. cases some individuals actually went to district court before being accepted by the C.P.A. program. This, in some instances, increases the cost for officers appearing in court and has an effect on the total police cost.

In both the State Police and Flint sample cases were excluded. This was necessary to balance costs because, in each sample those cases deleted would have weighted the other cases and presented a completely different picture of actual costs. In the State Police group of cases the high is $206.53 to a low of $75.48 and the Flint sample is $178.21 to $36.15 when checking the no court sample. The any court group varied from $1,466.53 to $133.38 and $1,950.40 to $126.67 for the Flint and State Police sample respectively. Also in the C.P.A. sample a variation of range is noted for Flint, $40.04 to $175.56, and the State Police, $83.78 to $269.31 which explains the greater expenditure by State Police in C.P.A. cases.

Table 5

Average Police Case Costs

M.S.P.	No Court	$120.19	21.7%
	Any Court	295.01	53.3%*
	C.P.A.	137.88	24.9%
	Total Average	$553.08	99.9%
F.P.D.	No Court	$ 97.50	21.5%
	Any Court	263.35	58.3%**
	C.P.A.	91.24	20.3%
	Total Average	$452.09	100.1%
Combined	No Court	$108.85	21.7%
	Any Court	279.18	55.3%
	C.P.A.	114.56	22.9%
	Total Average	$502.59	99.9%

* Exclusion of extreme case, $5,995.00 - otherwise $434.03
**Exclusion of two extreme cases, $2,885.90 and $2,840.31 - otherwise $420.91

The one remaining area is that of what is called "other costs." Other costs in this study include the courts, prosecutor's office, and both adult probation and the C.P.A. expenses. When reading Table 6 it is obvious that "other costs" in "no court" cases are extremely small because in a "no court" case the only cost incurred is the $7.17 for the prosecutor's time when a warrant is sought. As could be expected, the major "other costs" are found in the any court sample. This is rather self-explanatory when considering this is when the court and prosecutor's office become totally involved in a case.

Table 6

Average Other Case Costs

M.S.P.	No Court	7.17	00.6%
	Any Court	885.36	69.4%
	C.P.A.	382.40	30.0%
	Total Average	$1,274.93	100.0%
F.P.D.	No Court	$ 7.17	00.6%
	Any Court	1,028.61	82.1%
	C.P.A.	217.36	17.3%
	Total Average	$1,254.14	100.0%
Combined	No Court	$ 7.17	00.6%
	Any Court	956.99	75.7%
	C.P.A.	299.88	23.7%
	Total Average	$1,264.04	100.0%

The range of any court State Police cases is from $1,632.75 to $125.10 and C.P.A. cases vary from $985.55 to $172.17. As will be shown by the average of C.P.A. cases,

not many cases were close to the upper extreme, but enough were close that an exclusion of the high was not felt to be necessary. The Flint any court sample ranged from $1,512.75 to $325.55 and the C.P.A. group from $502.17 to $172.17. Again, of the C.P.A. cases the larger percentage were closer to the lower than the higher of the case bounds.

In Tables 7 and 8 a comparison will be made between the percentage of the average case costs representative of expenditures made by the police or other agencies. The first of these tables (7) will deal with the police and the latter (8) with other agencies. By doing this, it is possible to see who is spending most in the three separate types of cases deliniated by this study. The percentages were arrived at by taking the average case costs and dividing them into the average police or other costs.

Table 7

Average Police Costs Compared to Average Case Costs*

M.S.P.	No Court	$120.19 of $127.36	=	94.4%
	Any Court	$295.01 of $1,180.31	=	25.0%
	C.P.A.	$137.88 of $509.18	=	26.1%
F.P.D.	No Court	$97.50 of $104.56	=	93.2%
	Any Court	$263.35 of $1,440.43	=	18.3%
	C.P.A.	$91.24 of $309.32	=	29.5%
Combined	No Court	$108.85 of $115.96	=	93.9%
	Any Court	$279.18 of $1,310.37	=	21.4%
	C.P.A.	$114.56 of $409.25	=	28.0%

* As mentioned on Tables 2 and 5; less extreme cases.

Table 8 shows the opposite side of the picture by comparing the average case costs with the average other

costs, which in both C.P.A. and court cases represents the total of expenditures.

Table 8

Average Other Costs Compared to Average Case Costs

M.S.P.	No Court	$	7.17	of $ 127.36	=	5.6%
	Any Court	$	885.36	of $1,180.31	=	75.0%
	C.P.A.	$	382.40	of $ 509.18	=	75.1%
F.P.D.	No Court	$	7.17	of $ 104.56	=	6.8%
	Any Court	$1	,028.61	of $1,440.43	=	71.4%*
	C.P.A.	$	217.36	of $ 309.32	=	70.6%
Combined	No Court	$	7.17	of $ 115.96	=	6.1%
	Any Court	$	956.99	of $1,310.37	=	73.0%
	C.P.A.	$	299.88	of $ 409.25	=	73.3%

*Discrepancy of percentage caused by exclusion of 2 cases in Table 7.

Court Dispositions

Another area of interest derived from this study's findings is the variation in court dispositions. Normally, the disposition in State Police court cases (58) involve either court fine and court cost (19) or court fine, court cost, and probation (26). In both these types of sentences the court fines varied from $25 to $360 and the court cost from $18 to $164. Court probation was for either one or two years with 10 individuals receiving one year and 16 receiving a two year probation. Of the 58 cases that went to court, a fine was levied in 46 of them. Most of the fines (37) were between $100 to $350. As far as court costs are concerned, almost half (21) were for $54 and in nine cases the court cost was $18. The remainder (28) ranged from $19 (1) to $164 (1).

In the Flint police sample, 10 out of 38 court

dispositions ended either with dismissal or were Nolle Prossed. Only one of these 38 cases was actually fined and that was only $38. But there were two individuals who were sentenced to 4 to 10 years in the Jackson State Prison for possession of marihuana. (These were the two cases excluded in the Flint cost tables and were the only two to receive a $190 jury cost.) Of the remaining 25 cases, dispositions ranged from 30 days in the county jail to 6 months in the county jail and five years probation. Eighteen of these 38 individuals who went to court were placed on two or three years probation, making up the largest single percentage of court cases.

Table 9

Average Case Costs Minus Average Fines and Fees

			High	Low
M.S.P.	Any Court	- $936.54*	$2,680.15**	$310.32
	C.P.A.	- $364.74	$ 854.86	$155.93
F.P.D.	Any Court	- Only in one case was there a fine ($38)		
	C.P.A.	- $192.65	$ 532.93	$112.21

* Exclusion of extreme case - otherwise $1,054.64
**Exclusion of extreme case - otherwise $5,778.75

Why only one Flint court case received a fine can only be conjectured but a possible explanation for the difference in circuit court dispositions may be answered by a closer look. The two departments studied used different circuit courts; therefore, the judges were not the same. Each judge has his own philosophy of how the enforcement of the state marihuana laws should be carried out. Since the judge may exercise

discretion on the minimum or maximum penalty to be imposed, a large variation is naturally evident. This is the only feasible explanation of why more than one-fourth of Flint's court sample and only slightly more than one-eighth of the State Police sample were dismissed in late court stages.

It should be remembered that any time a marihuana arrest is made the State Police always seek a warrant. Yet, even with the Flint police not attempting to obtain a warrant on a number of occasions they still had more cases dismissed later in the court process than did the State Police. The only reason evident is the difference of judicial philosophy, as mentioned above. It might be asked if warrants issued may have been faulty to begin with; but, it should be pointed out that both departments used the Genesee County prosecutor's office and therefore were involved with the same attornies. So it would seem that the percentage of warrants that did not hold up in court would have logically been somewhat consistent.

It might be reasoned that a greater degree of preparedness on the arresting officer's part may have been a factor. This point could be legitimate because, as is evident by Table 10, the State Police averaged more time per case than did the Flint police. But it is not totally clear how much weight can be placed on this fact; therefore, it does not elucidate the matter.

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Table 10

Average Man Hours Expended Per Case

		High	Low
M.S.P.	No Court = 6.556 hours	21.0 hours	2.5 hours
	Any Court = 13.925 hours	39.5 hours	5.5 hours
	All Cases = 11.106 hours	39.5 hours	2.5 hours
F.P.D.	No Court = 5.924 hours	12.0 hours	3.0 hours
	Any Court = 11.979 hours	22.0 hours	5.5 hours
	All Cases = 7.707 hours	22.0 hours	3.0 hours

In Table 10, the average man hours expended by the Flint police in all cases is quite low because a larger percentage of the total sample was released with no court time having been incurred (Table 1). The State Police, on the average, spent more time per case than did Flint. As was stated, this may have been a factor in the number of court cases dismissed, but it is not a primary one.

Speaking of dispositions, the National Commission on Marihuana and Drug Abuse in its report found on a national basis, "Of those convicted for possession of marihuana, 24% were incarcerated,..."[36] In this sample, of both possession and use convictions, only 13.5 percent were ultimately imprisoned. On the whole, though, of all the cases where a disposition was available, the national commission found that, "... 6% of those apprehended were ultimately incarcerated."[37] Again, this sample was lower. At only 3.9 percent of those apprehended actually being incarcerated, some consistency is evident. In this sample a good many cases never passed the arrest stage. A comparison of this sample with the national sample reveals many things which do not appear on the surface,

such as, current penalty in the arresting state, attitude of judges and prosecutors, and even the perception of the community on the danger or lack of danger which marihuana represents.

Age, Race, and Sex

This study's final section will discuss findings about the age, race, and sex of those apprehended. First, some preliminary information is needed on the total population and the racial breakdown of the city of Flint and Genesee County. According to the 1970 census, the total population of Genesee County is 444,341, (60,338 or 13.58 percent of which is black). Of the remaining citizens, only 1,794 or 0.4 percent are classified as members of other races.

Flint, a city within the county of Genesee, has a total population of 193,317. Of these total city residents 54,237 or 28.06 percent are black and 1,015 or 0.52 percent are in the other races classification. When the population of Flint is subtracted from that of Genesee County, it is found that only 6,101 or 2.43 percent of the remaining 251,024 are black. Also, only 779 or 0.31 percent of these residents can still be classified in the other races population.

What is produced, then, forms part of Table 11 with the rest being the number and percentage of those arrested who fit the above classifications by the two sample departments. Comparing the State Police sample with the percentages of the county population and Flint police sample

with that of the city of Flint, it is found that in both situations a lower percentage of whites are arrested than blacks or other races. A limitation which should be noted is that in today's transient population these comparisons may not be totally valid. Still, 20.7 percent is so much greater than 2.43 percent and 55.4 percent greater than 28.06 percent, that the laws of probability could not have produced these differences.

Table 11

Whites, Blacks, and Other Races Arrested and Total Population

	Whites	Blacks	Other Races
Genesee County	244,144 = 97.26%	6,101 = 2.43%	779 = 0.31%
City of Flint	138,065 = 71.42%	54,237 = 28.06%	1,015 = 0.52%
M.S.P.	160 = 78.8%	42 = 20.7%	1 = 0.5%
F.P.D.	73 = 41.2%	98 = 55.4%	6 = 3.4%
Combined	233 = 61.3%	140 = 36.8%	7 = 1.9%

Possibly another explanation is that a larger group of blacks and other races use marihuana than do whites. This concept loses validity if statistics published by the National Commission on Marihuana and Drug Abuse are to be believed, "Of those arrested at the state level:... 77% were white; 21% were black; 2% were Spanish speaking..."[38] In comparison to these totals, the State Police sample is rather similar while Flint's is completely out of proportion.

A problem here is that we are dealing with individual officers who, on the whole, may concentrate on the minority sections of the city or with a larger percentage of the department's officers saturating these sections thus

resulting in the arrest of more minority individuals. Yet another explanation is that the officers themselves are prejudiced. Whatever the reasons, this area may need further study in reference to other crimes to see if similar results are obtained.

In one study it was found that, "Of those arrested at the state level:... 85% were male; 15% were female..."[39] A very close approximation of these findings are arrived at in this study with 89.5 percent males and 10.5 percent females being apprehended. Since this study's results correspond on this point and partially correspond on others, it becomes somewhat safe to believe the entire results.

An area remaining to be shown is that of the ages of the individuals apprehended in these two samples. The youngest age of an individual arrested by the State Police was 15 and then only one. At age 16 the State Police arrested 11 and from this point on the number increases until age 20, when it begins to decrease.

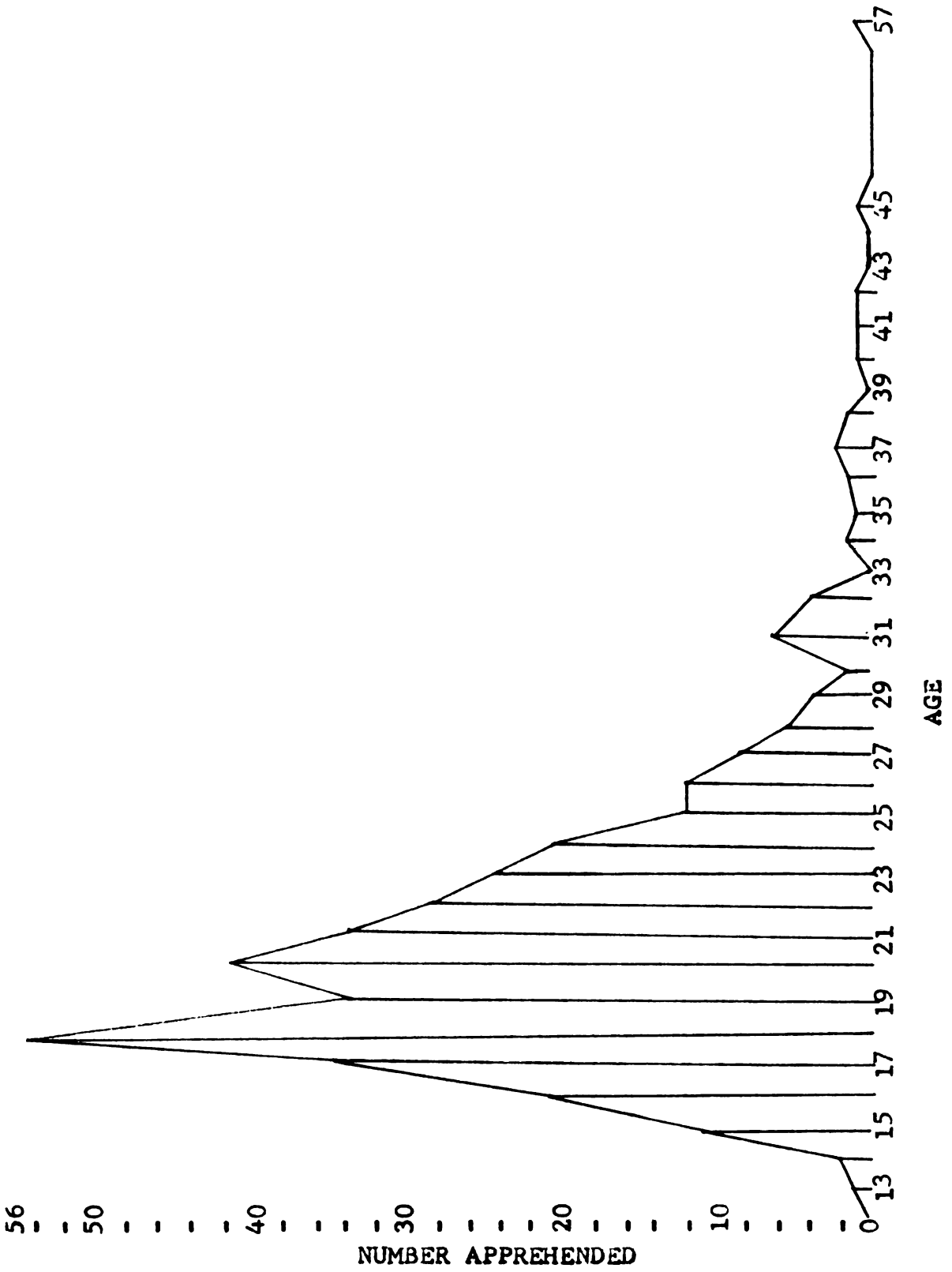
An explanation for no juveniles below 15 years of age and then so many at age 16 could be that those arrested were either driving or passengers of a motor vehicle. Since the legal age in this state to drive is 16 years of age, it could be conjectured that a youth of this age would not hang around with others much younger than himself.

The Flint sample includes a 13-year-old and two 14-year-olds who were arrested at local schools for having marihuana in their possession. By combining these two samples, Figure 1 is arrived at and from this table some

conclusions can be drawn. A study which has already been mentioned states, "Of those arrested at the state level: 58% were under 21; 30% were between 21 and 26; 10% were over 26 (2% unknown)..."[40] This study's figures are: 52.4 percent under 21, 35.5 percent between 21 and 26 and 11.1 percent 26 or older. Not only do these figures basically agree with the above national survey on this point but they also agree on the fact that experience and number of users increases and peaks in the 18 to 25 age group and then drops off sharply,[41] as is indicated in Figure 1.

Figure Number 1

AGE AND NUMBER APPREHENDED



Conclusions

A major part of this report cannot be confirmed or validated because of a lack of corraborating research in this area. Yet, some conclusions can be drawn from the cost section:

1. The cost of enforcing the marihuana laws is a definite consideration when seeking an answer to whether legal penalties should be reduced.

2. If the costs of enforcement derived from this study were multiplied by the number of individuals arrested in 1970, the cost to citizens of this country becomes a major factor. The cost, at a minimum, would be more than $13 million.

3. According to Table 4, if a choice is made between taking an individual to court or placing him in a program similar to C.P.A., it would be possible to reduce expenses by more than 75 percent. Another advantage of use of C.P.A. is that after successful completion of probation a person's record is expunged and the social stigma of a marihuana arrest is avoided.

4. It is also possible to conclude that costs between departments and individual cases can vary extensively and with more research gaps in the ranges could be filled to give a clearer picture.

5. More study is needed in this area and studies which are able to gain a truer cost by the inclusion of costs this study was not able to obtain or that were available but could not be directly related to each case and individual.

By looking at those statistics which had been compiled in other studies it was possible to lend validity to some parts of this research study. Those were:

1. Even with fewer individuals being incarcerated after convictions and a smaller percentage of the total sample apprehended actually being sent to jail or prison, clarification is needed. It should be noted (Table 1) that better than 60 percent of the Flint sample was released after arrest, with no warrant being issued. This is 20 some percent higher than the State Police group and this difference may account for the discrepancy between this study and the national study mentioned (see quotes 37 and 38).

2. Also, the State Police sample is extremely close to the national group, when it comes to the racial comparison made earlier (see quote 39).

3. Another point of agreement is on the percentage of males versus females apprehended by this study in comparison to other studies (see quote 40).

4. This study is consistent with the fact that marihuana use peaks in the 18 to 25 age group with a sharp reduction of use on both sides of this age group (see quote 42).

5. As far as the entire age groups of under 21, 21 to 26, and over 26, this sample is almost identical (see quote 41).

6. If the previous five conclusions are taken into consideration, it would seem safe to partially assume that the complete study is extremely close to reality and would compare favorable in other sections of the country.

Some of the limitations which would need to be considered before comparing costs and population factors are:

1. The difference of wages: (police, court, and prosecutorial) and the population being studied are factors. If wages and racial population are divergent, then a deversity would be inevitable.

2. The attitudes of police officers, prosecutors, and judges even though not discussed in this study, would need to be checked for any variations. Also, the attitudes of the population in general could be a factor on the amount of pressure placed on law enforcement agencies to execute their duties in this legal area.

3. More thorough research would raise diverse questions which may only be answered after many cross references were made between one study and another. Yet, this study does provide a base from which to build. Only further studies can confirm or disprove this study's findings and even new studies will leave room for questions.

4. An advantage of this kind of study is that other enforcement costs can be deciphered in a similar manner and until this is done many pieces of this jig saw puzzle will remain vacant.

Summary

It is rather difficult to deliniate what kinds of answers will come from this study but it is certain that it has shown one thing, that being, the cost to the citizen in tax money is not a small sum. If the potential dangers of marihuana and its use cannot be shown to be more hazardous than evidence now indicates, the entire country may be better off to reduce marihuana penalties.

As was mentioned earlier in this chapter, this cost is substantial enough and the amount of man hours expended does not seem to be decreasing the growing population of users. By taking the least amount of average time spent on a case (Table 10) that procedes no further than arrest and multiplying this by the number of those arrested in 1970 it would be possible to save over 1.1 million man hours. Devoting this time to the enforcement of other narcotics laws or even in just preventive patrol would seem to have a great effect on reducing the commission of crime on the streets of this country, than does the enforcement of felony marihuana laws.

Much more research on the cost of enforcing marihuana laws is needed, as well as research on the cost of enforcement of other victimless crimes. Hard narcotics would be an exclusion to this idea of victimless crimes because to support a habit the procuring of an ever-increasing amount of money is necessary and this is usually accomplished by some form of theft which produces a victim. Still, even research in the enforcement costs of hard narcotics laws should be attempted and combined with the cost of stolen merchandise another

approach in this area may be in line. But, in reference to marihuana and the stigma placed on its use, coupled with the legal penalties, little success is evident in discouraging continued experimental use.

Chapter 3

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5. Ibid.

6. Michigan, Controlled Substance Act of 1971, Act No. 196 (1971).

7. Ibid., Sec. 41, 5d.

8. Ibid., Sec. 41, 4d.

9. Ibid., Sec. 41, 1c.

10. The Commission, 1972, p. 110.

11. Ibid., p. 106.

12. Statement by Sergeant Pettrill, Flint Police Department, Court Officer, personal interview, March 17, 1972.

13. Ibid.

14. Statement by Lofty Carlton, Circuit Court Officer, personal interview, March 23, 1972; see also statement by Iver Jones, Public Defender, personal interview, March 22, 1972.

15. Carlton, March 23, 1972.

16. Carlton, March 23, 1972.

17. Carlton, March 23, 1972.

18. Jones, March 22, 1972.

19. Statement by W. Chapman, Genesee County Prosecuting Attorney, personal interview, March 23, 1972.

20. Pettrill, March 17, 1972.

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22. Statement by Paul Sniderhand, Chief Mechanic, Flint Police Department, personal interview, March 16, 1972.

23. Statement by Trooper James Collins, State Police #35 Court Officer, personal interview, February 4, 1972.

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26. Statement by Flint City Accountant, Flint Police Department, personal interview, June 28, 1972.

27. Chapman, March 23, 1972.

28. Statement by Sergeant M. Steele, Jail Section, Flint Police Department, personal interview, March 16, 1972.

29. Statement by B. J. Wright, Director of Citizen Probation Authority, personal phone interview, March 16, 1972.

30. Statement by L. Press, Director of Adult Probation for Genesee County, personal interview, March 17, 1972.

31. VanStratt, February 17, 1972.

32. The Commission, 1972, p. 112.

33. Ibid., p. 111.

34. Ibid.

35. Ibid., p. 106.

36. Ibid., p. 112.

37. Ibid.

38. Ibid., p. 111

39. Ibid.

40. Ibid.

41. Ibid., p. 81.

Chapter 4

THE MARIHUANA PROBLEM: NOT YET ANSWERED

In this concluding chapter a summary of preceding chapters will be included. A model is developed which includes prior information obtained from literature and research as supportive evidence. This is the primary reason why each chapter was not summarized before. The model will show how to bring uniformity to state laws dealing with marihuana. With uniform laws and consistent penalties the public would know what to expect in regards to enforcement of these laws. A similarity is accomplished by a reduction of penalties that is more homologous with our present knowledge of marihuana's possible dangers.

Information which argues against legalization is presented to show why the reduction model does not seek complete legitimacy. Because of these points of debate and with restrictive laws being ineffective, it was not felt a model favoring legalization was of present value. An open mind is still a requirement when reviewing the legal reduction model because it does change existing law.

With the presentation of the knowledge above, further facts will be shown to support the hypothesis expressed at the beginning of the thesis: The present legal penalties for marihuana possession or use are

unrealistically harsh in view of existing information about its effects on the human being. It should be noted that some effects are realized in reference to long term, heavy use and this is why some reservation is used in the development of the reduction model.

Recommendations derived from this thesis are also presented followed by suggestions from other studies. These suggestions deal basically with the legal aspects surrounding marihuana and the way this problem should be handled. Needs for further research are also discussed. In this section new research in all areas is presented to show where our knowledge is incomplete.

Summary of Findings

Each chapter's summation is brief highlighting the major points. Beginning with the historical section in Chapter 1 it was pointed out that this problem or espoused problem is nothing new. Cannabis sativa dates back to about 2737 B.C. when it was first mentioned in writing. It seems logical to deduce that its history dates back even further or its importance would not have developed to the point of actually being worth mentioning. The Latin name, Cannabis sativa was assigned in 1753 by Linnaeus as a botanical name which is still used.

Marihuana in its different forms, has passed from country to country and continent to continent as the knowledge of medicinal and euphoric uses were carried by both conquerors and traders. It has met with total acceptance in some countries even to the point of becoming part of

religious practices. In other places the reception has been rather hostile if in nothing more than verbal abuse. Both of these points are supported by the names which came to connotate marihuana, "Liberator of Sin," "The Delight Giver," "The Heavenly Guide," and "Poor Man's Heaven."

As marihuana passed from place to place it was surrounded by only the legend and knowledge of possible therapeutic and euphoric effects; but also its many industrial and commercial uses. Some of the harvesting techniques were included to give a perspective on the diverse history which surrounds cannabis. Even though methods to reap and produce products of varying potencies is not of major concern, it demonstrates man's ingenuity in dealing with those commodities which can induce pleasurable feeling. The same could be said about man and his development of various alcoholic beverages.

Hemp, a derivative of cannabis, was used for cartage as far back as the rise of the Roman Empire. Not only was it harvested and manufactured for rope but also for fine napkins, flags, and an exceptionally fine paper used in Bibles. Yet, its major commercial uses consistently were for rope and products of this nature. Later in its chronology it was found that hemp seed was an excellent bird seed, containing high levels of protean.

Today most of marihuana's therapeutic and commercial uses have been discontinued. This is not because possible adoption of cannabis for these purposes does not exist but because of a lack of research to develop further utilizations for the future. Even with the reductions of medical and

industrial products its euphoric properties have caused an explosive upturn of use in this country and in countries worldwide. In the process, "The stereotype of the marihuana user as a marginal citizen has given way to a composite picture of large segments of American youth...."[1]

Chapter 2 is separated into two major sections. The first included surveys and opinions. Prior to mentioning the second primary section, it is noted that the mayor's committee or LaGuardia commission, as known in this paper, provides the outline around which the second section is written. The use of this report's outline brings continuity and direction to the diverse knowledge in this portion of the chapter. An update of this commission's findings is attempted and areas of new information opened up.

Not only does marihuana have a long history, but also a large population of users. The growth of interest in the United States, started around the turn of the century and by 1920 had reached a low level. But by 1960 marihuana had achieved a place of recognition among drugs considered dangerous by society. With this increase of interest came surveys and public opinion polls to discern who, the number, and the types of people using marihuana.

Each yearly survey reported an increase in the number of people who had tried marihuana at least once. By 1972, this figure had risen to an estimated 24 million one time users, with about 2 percent of this group being heavy-long time marihuana users. The age groups affected reach into high school age children and in some cases, even down to

elementary school age. The ages of the largest number of cannabis smokers is concentrated in the 18 to 25-year-old group. In some colleges the percentage of first time users exceeded half with 50 and 60 percent stating they have tried marihuana.

Opinions of experts or individuals known as experts shows a large range of conclusions drawn from similar information. Some feel that marihuana is a menace while others see cannabis as being one of, if not the safest drug, our society uses. In 1967, the Task Force Report: Narcotics and Drug Abuse stated, "... such information as is available indicates that there is a great gap between the known facts and risks of marihuana and the reputed facts and risks."[2]

It was also felt that many times professionals and researchers differed on their opinions of effects of cannabis on the individual. Usually researchers were better informed and held fewer reservations about cannabis and its possible dangers being reported. Researchers were more apt to favor reduction of penalties or legalization than were professionals.

One opinion, not previously mentioned, stated in an all encompassing manner:

> Many spurious claims and charges have been made by the Federal Bureau of Narcotics and Dangerous Drugs. All of these allegations have been disproved by research. Marijuana does not alter basic personality. Marijuana is not causally related to crimes of violence. Marijuana does not lead to increased sexual activity. Marijuana does not lead to the use of other drugs.[3]

From this report's standpoint, both feelings of fear and repression of cannabis use and legalization of

marihuana are shown. The young, educated, middle-class, white user was shown to be the prevalent user today with males being a larger percentage of samples than females.

Leading into section two of Chapter 2, the many limitations which have and are being encountered are disclosed. These restrictions on research vary from experiments not meeting strict controls necessary to satisfy the scientific community to a lack of collaborating studies. It was felt more controlled studies are needed with humans as subjects.

Limitations mentioned include problems caused by the set and setting, which in many studies was not similar to street use. Also, comparisons to animal studies and their findings were found not to be totally valid. Some reasons for this finding included the high dosages used, the method of administration, and the varying types of synthetics used. Another area of comparison that might create invalid conclusions is between foreign countries with their cannabis habits and that of the United States.

Some of the limitations noted in animal research pertain also to human studies. Those restrictions mentioned were the differences of administration and the varying potencies of natural Cannabis sativa and its synthetics. By failing to keep constant the potency and route used, differences in findings resulted prompting much debate. Because of these limitations and restrictions, modern techniques and standard research designs are needed which were lacking in past studies.

By the use of the LaGuardia commission's outline the remainder of the chapter is developed on the basis of six subsections. In attempting to update existing research the areas discussed are sociological, medical, psychological, addiction and tolerance, possible therapeutic applications, and new areas of study or interest.

Briefly each of these sections will be reviewed at least on verification or denial of the LaGuardia commission's conclusions and summaries. First the sociological study concluded that members of minority classes made up the majority of users. This was found to be consistent with other findings of that time but has since changed, as stated earlier in this chapter. Another conclusion drawn was that the sale of marihuana is not controlled by organized crime and this holds true today. A statement that cannabis does not lead to harder drugs has generally been supported by researchers. One report though, (Ball) did conclude that there is a causal relationship between marihuana and heroin.

The next conclusion was that cannabis was not a determining factor in the commission of crime. For many years this was considered true but, it is now found incorrect. It was also felt that use among school age children was not widespread. Unfortunately, with increased distribution of marihuana use has now reached not only older youth but also elementary school age children. In a collateral statement it was found that cannabis is not associated with juvenile delinquency. Not much was found on this point in later studies but it seems logical to

assume that if crime is not associated with marihuana then neither is juvenile delinquency. This point is discussed later in reference to the "amotivational syndrome."

Moving to medical symptoms and behavior as well as organic and systemic functions, the mayor's committee summary and conclusions will be touched on. Present research agrees with this 1944 study on the effects of oral administration. The speed in which cannabis takes effect and the duration of its effects when taken orally begin generally later and last longer than when marihuana is smoked. Those symptoms disclosed in 1944 have consistently been reported with the possible exclusion of the reason for the reddening of the eyes. It is now contributed to the effects of cannabis and not the smoke irritating the eyes.

One area where much debate has existed is whether marihuana use results in aggressive actions. Many reports have been made by the Federal Bureau of Narcotics and Dangerous Drugs that marihuana can and does on occasion cause aggressive actions. Two sides exist to this argument. One states that through the relaxing or reduction of inhibitions that underlying aggressive feelings surface and result in physical actions. The other side of this debate concludes that through the use of and because of the symptoms developed that even though inhibitions are relaxed there is nothing which would otherwise be alien to the individual. It was also pointed out that marihuana tends to cause an individual to become less physically active and more restrained.

Another area of debate is whether marihuana causes toxic episodes or psychotic states. Both sides of this debate are presented to give a clear picture of the difficulties faced when attempting to show a causal relationship. Each side presents studies and medical results which favor their point of view. It has generally been concluded that experimental or intermittent use does not cause psychotic episodes. Heavy, long term use may and possibly does cause some toxic reactions and episodes but the relationship is still unclear.

Organic and systemic functions are affected but few are of a hazardous nature. This should be qualified because marihuana inhalation or ingestion does cause an increase of the pulse rate and as a result people with bad hearts could be affected. The reactions of the body and its organs have been researched and they conclude almost identically with those reported by the LaGuardia commission. A number of recent studies have noticed some corrosive effects on long term, heavy users in this and other countries. These studies are still in the process of verifying the findings. But it is not felt that experimental or intermittent use is hazardous to the functioning of the human anatomy.

The psychological effects of marihuana include reactions which are subdivided into three separate areas. These areas include psychophysical, intellectual, and emotional, general personal functioning and reactions. Psychophysically those reactions espoused by the LaGuardia commission are consistent with present findings. Some of these are the decrease of speed, agility, visual, and auditory reactions.

Abilities to measure time and distance are also affected. These effects depend much on whether the user is naive or experienced, on the amount of the dose and route of administration.

The above mentioned fact holds true for intellectual functioning in reference to experience and dosage. This area is extremely close to psychophysical reactions. Mental functioning is inhibited to a slight degree primarily in the area of short term memory. Performance of intelligence tests have not shown any substantial deleterious effects. It was noted that an experienced user was less disturbed by marihuana when taking mental and intellectual tests. Very little, if any, intellectual impairment was found. This finding has been supported by recent research. Some impairment was noticed depending on the complexity of the task being performed and the size of the dose. This was of short term duration and usually completely subsided after the effects of the drug had worn off.

Greater loss of ability to function was noticed and has continually been found to exist among novice and inexperienced users. But this also disappears after a short time. To date in support of the LaGuardia report, no mental atrophy or deterioration of the mind contributed to cannabis use has been found. Increased research in this area is now attempting to gain conclusive evidence showing what the mental effects are.

Emotional reactions and general personality were found not to change as a result of marihuana use. An

exception will be discussed later in this section. Increased feelings of relaxation, disinhibition, and self-confidence was found to occur by the LaGuardia commission and has been substantiated by many researchers since that time. Vocal and oral activities are seen in greater quantities than physical actions, even sometimes to the point of an extreme relaxation leading to long restful sleep.

Inhibitions are relaxed and in the process some individuals do not seem to be themselves. It was felt in 1944, and has been verified since, that those latent thoughts which are released are not totally alien to individuals. Some studies have gone so far as to say that when a psycological problem does arise that it existed prior and surfaced after marihuana use. These marginal persons using cannabis are felt to be predisposed to drug use, be it Cannabis sativa, alcohol, or other drugs.

In 1944 the results reported were that both pleasant feelings and feelings of anxiety are experienced when using this drug. Sometimes these feelings of anxiety reach an extreme that creates a state of depression which has been misinterpreted as a psycotic state. In the process of study, researchers have substantiated and built on this point. Marihuana, when used normally, is done so in a setting of social relaxation and an atmosphere condusive to the making of social contacts. Repeatedly this has been reported and legitimacy offered in substantiation of the fact. Because of this many introverts are drawn to marihuana

to bolster their courage. Along with these people there are some borderline psychotics and those with mental difficulties seeking possible medicinal aid. This has been seen as an answer to personality defects and mental reactions brought out by the release of inhibitions.

Addiction and tolerance are topics which have created controversy and contradictions. The LaGuardia commission concluded that addiction does not occur with cannabis use. For many users this was not true according to some studies. Some reported that addiction did exist while others disagreed. Today, it is generally accepted by all that the use of this drug is not physically addictive. Reports of possible psychological dependence of marihuana have gained much legitimacy. If a psychological dependence exists, as many have stated, an explanation could be the users predisposition toward drugs in general. In essence a psychological habit actually does exist and is prevalent among heavy long-term users.

Marihuana tolerance was seen in 1944 not to occur and this has been agreed upon by the majority since. But a "reverse tolerance" has been reported by some in the process of their study. Debate surrounds this point with some explanations being that a learning process is incurred after some continual use. This learning process is offered also to explain a lessening of intellectual and learning impairment felt by experienced users. In research completed just recently it was found that by the use of radioactive THC the human system holds for an extended period of time certain

active ingredients of marihuana. Further study is in progress to support these findings and if successful tolerance to a minimal degree will be found, not "reverse tolerance."

The LaGuardia commission report concluded that possible therapeutic applications of cannabis and its synthetic drugs existed. Study has been slow and spasmodic in this area. Some synthetics have been employed in the treatment of mental disorders with somewhat poor results. Cannabis synthetics utilized in the treatment of drug addicts, addicted to alcohol, heroin, and morphine compounds for example, with somewhat better success. Epileptic children have also shown some improvement after treatment with marihuana derivatives. One of the major concerns is that too little research has been conducted in attempting to ascertain possible therapeutic applications of marihuana and its synthetic derivatives.

Areas of concern which were not in the LaGuardia commission report included chemical classification, possible physical complications, aphrodisiac qualities, the operation of a motor vehicle, and attempts to develop a test similar to that used to identify a person's blood alcohol level.

Cannabis sativa has been put in many different chemical classifications. The problem is that marihuana does not fit the total effects of any one class. Cannabis has drawn comparisons to the atropine class, the depressant class of drugs, the stimulants, and others. No agreement seems to exist to date with further research necessary for a definite conclusion.

Possible physical difficulties have been purported in some studies. Chromosome damage has not been found to occur from marihuana use. Nor have any relationships been found between cannabis use and fetal damage. The lethal dose of marihuana, in reference to humans, has been found to be extremely high. Marihuana has even been rated as the safest drug man uses and in most instances much safer than alcohol and nicotine.

A possible "amotivational syndrome," has provoked much controversy among researchers as to its existence. The loss of motivation on the part of some users is announced by some studies. This, on the other hand, is felt not to be a problem which can solely be attributed to Cannabis sativa. A loss of motivation to gain and develop sociatal norms is noted more often in very young marihuana users. This fear has produced a push for more research to decide if this syndrome actually occurs as a direct result of marihuana use.

As to whether cannabis is an aphrodisiac or not, a majority of existing research has found none of these qualities. A qualification being that in some foreign countries the reason for its use is because of a believed sexual stimulation. Many still consider this to be so. This belief of aphrodisiac qualities is attributed sometimes to a lowering of inhibitions. Whereas, it was also stated that its use can actually cause impotency. Even with these exceptions of opinions cannabis preparations are not seen as providing sexual advantage.

In the operation of motor vehicles a similar

controversy exists as in other areas of research. Most early studies found no reduction of abilities to operate a motor vehicle. Later, studies using a simulator, produced errors in judgment, breaking time, glare recovery, and reaction time impairment. Still it is not conclusive as to how marihuana affects driving performance especially with the lack of on the street operation and it will be necessary for future research in this area.

An attempt to develop a test similar to the blood-alcohol one in use today, has still not been accomplished. One report stated that it has developed such a test but this was not affirmed. This is an area in which an actual test, if found, would aid law enforcement agencies.

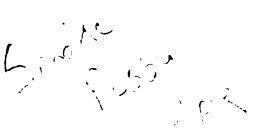
Chapter 3 is basically new research in the area of enforcement costs incurred in arresting, jailing, trying, and convicting an individual for marihuana possession and use in the state of Michigan. Again prior to the statement of findings, research limitations are mentioned. In this study many costs which could not be obtained are summarized to show points at which it was impossible to give complete and total costs. This inability to gather all costs down to the smallest ones is seen as a limitation. Also, another major restriction is costs that were obtained but could not be dealt out to each case and individual when applicable. These were the major limitations which existed in the study.

A presentation of those costs to the citizens in tax money is disseminated. These costs are broken into the average expenses of the two departments studied, Flint Police

Department and the Michigan State Police, on each case and individual expenses. Also the expenses are divided between police on one side and court, prosecutors office, and probation departments on the other. The average number of police man hours expended on a case and the number of members in a group apprehended is given too.

Generally it was found that costs expended had minimal effect because almost 50 percent of those apprehended were released and only 3.9 percent of those apprehended actually were incarcerated. The ages, race, and sex of each person arrested were used to develop some understanding of who, how old, and what sex the offenders were. It was found that males and those in the 18 to 25-year-old group were usually arrested. Those arrested in this group consisted of about twice as many whites as blacks, with a small percentage of other nationalities (usually Spanish speaking). Even with the costs being high and the gains so low it is still believed some basic laws should remain in force. This idea is developed in the following section. Only one more thing remains to be stated before leaving this section that being;

> We recognize the short-sightedness of an absolute assumption that the criminal law is the necessary tool for implementing a social policy opposed to marihuana use. But equally short-sighted is the opposing contention which attempts to analyze the law separately for its underlying social policy objective. This argument assumes that if the law isn't working, or if the costs of enforcing the law outweigh its benefits, the law should, therefore, be replaced.[4]



Penalty Reduction

This assumption is not totally valid but some merit does exist and that is why a model is developed for the reduction of penalties in this section. To begin with the model will be shown followed by supportive sources. Each source may not deal directly with the entire model but will be related in some way even if it just states penalties that should be reduced. After supportive evidence for reduction of legal penalties is presented it shall be shown why a legalization model is not attempted. If legalization does occur in the future, at that time the evidence presented here will be of aid in the development of a program.

The program is based on the facts which have already been presented in this chapter and previous ones. Cannabis not being addictive, no real tolerance existing, not a causal factor in crime, and the lack of any actual physical damages which can result from marihuana use are all points in its favor. Also in its favor is the fact that no actual lethal dose exists or that it is so extremely high that marihuana could be one of the safest drugs used by man.

If a uniform act of this type is adopted, then the penalties will be consistent throughout the United States. By doing so, then those who do use marihuana will know what the penalty will be no matter where they are.

Uniform Reduction Model

Marihuana for this model will constitute all the natural parts of the Cannabis sativa L. plant, whether growing

or not. The natural parts include the resin extracted from either male or female plants from any section of this plant; the seeds, the flowering tops, stems, or leaves. This also includes any and every compound manufactured: synthetic derivative, salt, or any mixture of the natural plant with these compounds, including resin and seeds. It does not include the mature stalks from which fiber is produced, or the sterilized seeds which are used to produce oil or cake. Also not included are any compounds manufactured: salts, derivatives, mixture and preparations that exclude the natural resin of the plant. Material that is part of the mixture which could be considered filler, this being straw, hay, natural grass, or alfalfa is also excluded.

When dealing with sale, it is unlawful for any person to grow, manufacture, deliver or possess with intent to manufacture or deliver any of those marihuana substances listed above. An exception is a licensed manufacturer, physician, researcher, or scientist who has been given permission to grow or use marihuana pursuant to or during the process of their experimentation. An individual(s) who does so is guilty of a felony and upon conviction may be imprisoned in a state penitentiary for not more than three years and/or fined not more than $1,000 for a first offense. For the second and any subsequent offenses the penalty and fine can and may be doubled, but not to exceed six years and/or $2,000 fine even for multiple convictions. An exception being the casual transfer of a small quantity, under one-half ounce, not for remuneration, or an insignificant

remuneration not involving profit or personal gain is not to be considered under the section dealing with sale and is not an offense.

An alternate to the exception of a casual transfer is a penalty under a city, village, or town ordinance not to exceed ten days in the city or county jail and/or a $50 fine. Included in the original law and the alternate is that the possession of more than five ounces of marihuana is prima facie evidence with intent to deliver for manufacture or sale. Excluded from these five ounces are any fillers, as mentioned previously.

In reference to possession, it is unlawful for any person knowingly or intentionally to possess marihuana unless obtained directly from, or pursuant to, a valid prescription or by the order of a practitioner while acting in the course of his professional practice such as a physician, a researcher, and a state or federal controlled farm for the production of marihuana. Any person who does unlawfully possess marihuana is guilty of a misdemeanor punishable by imprisonment in a city or county jail for not more than six months and/or a fine not to exceed $250 for a first offense. For second and any subsequent offenses the penalty and fine can and may be doubled, but not to exceed one year and/or $500 even for multiple convictions. An exception to this is the possession of less than five ounces for personal use in the privacy of one's own home, or private establishment, such as a rented apartment, room, or building which is normally used as a place of residency. This would not include a

room rented temporarily in a hotel or motel which has been occupied for less than 72 hours.

In reference to use it is unlawful for any person to use marihuana unless obtained directly from, or pursuant to, a valid prescription or by order of a practitioner while acting in the course of his professional practice: such as a physician, a researcher, and a state or federal controlled farm for the production of marihuana. Any person who does unlawfully use marihuana is guilty of a misdemeanor punishable by imprisonment in a city or county jail for not more than 30 days and/or a fine not to exceed $50 for a first offense. For second and any subsequent offenses the penalty and fine can and may be doubled, but not to exceed 60 days and/or $100 even for multiple convictions. An exception to this is personal use in the privacy of one's own home or private establishment, such as a rented apartment, room or building which is normally used as a place of residency. This would not include a room rented temporarily in a hotel or motel which has been occupied for less than 72 hours.

In reference to sale, possession, and use any person convicted of these offenses can and may be placed on probation through a court, public or private organization for the first offense. Any person convicted of possession or use for second and subsequent offenses still remains eligible for probation through a court, public, or private organization. Yet, an individual(s) convicted for sale for second and subsequent offenses of amounts of marihuana exceeding, by

totaling the amount of each conviction, 3 pounds is no longer eligible for probation. An individual(s) convicted of sale for the first offense are eligible for parole. Again, for convictions of sale for second and subsequent offenses of amounts of marihuana exceeding, by totaling the amount of each conviction, three pounds is no longer eligible for parole. In each of these offenses the judge can use his discretion on whether probation should be offered. Parole for sale of marihuana would also fall under the judge's discretion.

Probation for sale, possession, and use will be one of no record. If the person placed on probation successfully completes the terms of his/her probation, all records will be destroyed and no conviction will result. In this manner the social stigma is erased and a record will not be held against the person for the rest of his/her life. If probation is not successfully completed, then the court process can proceed with possible conviction as a result.

A plea of marihuana intoxication for any criminal offense or act is not acceptable as a defense even if the criminal act was committed under the influence of marihuana. Proof of intoxication is not grounds for negation of specific intent. This is because marihuana intoxication cannot be shown to be a causal factor in the commission of crime other than the offense of sale, possession, or use in itself.

In this way the possession of marihuana for personal use or distribution in private of small amounts not for profit would no longer be an offense. Possession in public

could be found as contraband and confiscated for destruction by the police with no penalties arising, or the individual could be charged with possession in public and convicted under the section set up to handle such offenses.

Under these penalties it would be possible to bring penalties in line with what is known about the physical effects of marihuana. Further steps which could be taken, if it were considered wise, would be to follow the recommendations of the National Commission on Marihuana and Drug Abuse. These are for states:

> Cultivation, sale or distribution for profit and possession with intent to sell would remain felonies (although we do recommend uniform penalties).
>
> Possession in private of marihuana for personal use would no longer be an offense.
>
> Distribution in private of small amounts of marihuana for no remuneration or insignificant remuneration not involving a profit would no longer be an offense.
>
> Possession in public of one ounce or under of marihuana would not be an offense, but the marihuana would be contraband subject to summary seizure and forfeiture.
>
> Possession in public of more than one ounce of marihuana would be a criminal offense punishable by a fine of $100.
>
> Distribution in public of small amounts of marihuana for no remuneration or insignificant remuneration not involving a profit would be a criminal offense punishable by a fine of $100.
>
> Public use of marihuana would be a criminal offense punishable by a fine of $100.
>
> Disorderly conduct associated with public use of or intoxication by marihuana would be a misdemeanor punishable by up to 60 days in jail, a fine of $100, or both.[5]
>
> [All capital letters in original.]

These changes are similar to those proposed in this chapter but in places are not as lax. Not that the recommendations mentioned by the national commission lack merit, they are actually more in keeping with what is known about the possible dangers which can be attributed to marihuana. It should be realized that it would be extremely difficult to pass the model act of this report let alone those of the national commission.

This author perceives of two approaches when dealing with legal penalties for marihuana. One being an idealistic concept, meaning what should be done and the other a realistic approach, meaning what can be accomplished. Idealistically marihuana should be legalized, but with public concern about drugs in general and the nonacceptance of marihuana, it is unrealistic at this time to urge legalization. This is the primary reason for presenting legalization. This is the primary reason for presenting a reduction model.

In addition to a reduction of present legal penalties there is a need for an educational program to disseminate knowledge on marihuana. This should be accomplished by a two step process. First, professionals and para-professionals should be educated as to the effects of marihuana. Professionals include researchers, physicians, psychiatrists, and individuals of this nature. Whereas, para-professionals are teachers, preachers, policemen, and politicians. The reason for beginning with individuals in the professional and para-professional class is because they are the more likely to be contacted by a citizen if his child is found

using marihuana.

After educating this first class so there is a good understanding about cannabis, the next step would be to present the same information to the public through available agencies. Using such organizations as the Parents Teachers Association, Rotary Club, Veterans of Foreign Wars, and the schools in general it would be possible to present the public with present knowledge. It should be realized that only honest portrayal of the facts is what is recommended here. As will be shown later in this chapter, scare tactics similar to what are used presently cause more harm than good. By the creation of myths the credibility of all drug information is threatened. This, itself produces one of the greatest difficulties in reducing drug use.

One of the most difficult sections of either the reduction model or the national commission's recommendations is in reference to no penalty for possession for private use. But, continually the Supreme Court has found that the right of privacy is one of those protections guarded under the penumbra of several constitutional rights.[6] The right to privacy is covered under the first, third, fourth, fifth, eighth, ninth, and the fourteenth amendments.[7]

Eventually, a court case involving marihuana possession is going to result in the overturning of present laws at which time models similar to these are going to be used. To back up their recommendation for legal private use,

> the commission is of the unanimous opinion that marihuana use is not of such a grave problem that individuals who smoke marihuana... should be subject to criminal procedures.[8]

Another reason which has been given against total prohibition and in favor of private use when comparing marihuana to the Volstead Act is that only five states actually prohibited possession for personal use.[9] Ramsey Clark puts it this way,

> The penalties fixed for the sale and possession of marihuana by federal law and the laws of most states are unrealistic and unjust.... The evidence to date does not support criminal sanctions against the use of marihuana.[10]

This same feeling was espoused by the Task Force Report: Narcotics and Drug Abuse in this statement;

> Marihuana does have a potential for abuse. Consequently, it should be controlled, distribution prohibited, and use discouraged. It is not believed, however, that the possible dangers of use are great enough to make it necessary to use the criminal law to condemn the marihuana user solely for his use.[11]

Another source followed this same line when it concluded, "The idea that the drug problem can be solved within the existing legal framework cannot be accepted by anyone who looks critically at the present state of affairs."[12] In reference to total prohibition the question of whether it is a suitable or an effective means of discouraging use or if it inhibits the treatment of those heavy, long term users is seen as a possible problem. The national commission feels that total criminal prohibitions frustrate and hinder effective operation in these areas.[13]

In support of both probation and parole for marihuana use, possession, and sale and the return of discretion to

judges of when to use these tools, the President's Task Force Report: Narcotics and Drug Abuse wrote;

> Mandatory provisions deprived judges...of the ability to base their judgments on the seriousness of the violations and the particular characteristics and potential for rehabilitation of the offender. There is a broad consensus among judges...that discretion should be restored.[14]

This same commission also concluded later in their Task Force Report that;

> There should be no mandatory minimum sentences for marihuana offenders and no prohibition of probation and parole. The courts should have the discretion to impose a fixed maximum sentence (with eligibility for parole), and to suspend sentence, or to impose an indeterminate sentence. The Commission is opposed to mandatory minimum sentences, even in the case of multiple offenders.[15]

As a closing remark before moving on to the next section of total legalization, "We have little doubt that the substantial majority of users, under any social control policy, including the existing system, do not and would not engage in irresponsible behavior."[16] With this thought in mind, the next section will show why total legalization is not and should not be approached at this time.

Why Not Legalization?

One of the most convincing points against legalization was presented recently by the National Commission on Marihuana and Drug Abuse;

> Advocates of legalization of marihuana are often inclined to propose a licensing scheme or an 'alcohol model' without offering a specific program of regulation taking all the variables into account. Responsible policy planning cannot be so cursory.... On the basis of our inquiry, we are convinced that such a step should not be taken unless a realistic assessment of the efficacy of

> existing schemes and their potential application to marihuana indicates it would be successful....
>
> The regulatory approaches which this nation has used in the cases of alcohol and tobacco have failed to accomplish two of their most important objectives: the minimization of excessive use and the limitation of accessibility to the young.[17]

Prior to reading the above, a model for legalization was developed following the "alcohol model" mentioned. But after thorough review it was felt that to do so would be of little value without better knowledge of circumstances involving regulatory control. So rather than repeat an ineffective program, such as that of both alcohol and tobacco, it is better to present reasons against legalization.

In one area though, legalization is somewhat attractive, if we look at tax revenue gained in 1970 from taxes paid to the federal government on alcohol and distilled spirits. In 1970, the second highest source of federal revenue was for "alcohol taxes," which amounted to more than $4.7 billion.[18] If marihuana was legalized and it could be controlled and taxed, then revenue from this source could amount to a substantial sum; but, that is if it could be controlled.

Many times in an argument for legalization individuals continually say we can regulate the sale and potency of marihuana. It seems hard to conceive of a regulatory agency that could prevent home-grown marihuana. Even if it were allowed for just personal use, because of the ease of growing cannabis, an over-production would be inevitable. This same regulatory agency would have an extremely difficult time preventing sale to children, because it could easily be passed

down from an 18-year-old. This same point is exemplified by a unanimous opinion expressed by the national commission in 1972, "... such a scheme, no matter how tightly it might restrict consumption, is presently unacceptable."[19]

When talking about a comparison to alcohol and this type of regulation in 1967 it was felt,

> ... there is clearly a risk of unknown proportion that increased marihuana availability, as for example with its legalization, might lead to increased dependency and dangerous outcomes of the sort associated with alcohol itself, the latter unquestionably being a 'dangerous' drug in the social rather than legal sense.[20]

One of the major defenses used against legalization is the present incompleteness of knowledge. It is known that few, if any, difficulties result from experimental or intermittent use even over a long period of time. But possible physical damage which could result from heavy use over a long term is still in debate with more research needed. Our present state of knowledge argues for a reduction of penalties to prevent socially scarring our youth and young adults. Yet, in the same sense it argues against present legalization.

Many feel that it is unjust to prevent an individual from expressing himself in the manner he wants to, as long as no harm comes to others. This general argument is very convincing but if it were shown that long term, heavy use does cause physical or mental deterioration or the loss of motivation, then a question is raised. Does one have the right to place upon a society the choice of taking care of him, if he does not wish to work or because of motivational

loss or self inflicted physical damage, as might happen with long term, heavy use? The answer here is, of course, no. To this statement the common response heard is: what about alcoholics, haven't they done what has been shown to be harmful? The answer is yes, but because alcohol is legal it does not mean that marihuana should be legalized before its effects are fully investigated.

Whether, in actuality, a new problem would be thrown on society is debatable and until research can show a degree of safety which is necessary for legalization, then we as a country should be cautious. We should not condone one drug known to be dangerous, alcohol, and condemn one which has been shown to be safe, marihuana. By a gradual acceptance, along with an ability to cope with the drug, its use will not pose the same negative reaction that it presently does. This approach carries with it an added advantage, if we couple reduction of penalties with education on a national scale the path to conscious, realistic use may occur. This point will be discussed later in this chapter under recommendations for further research.

Many points of argument which could be presented for a reduction of penalties and against legalization will be included in the following section when proving the hypothesis of this thesis. This will explain why some points have been passed over. In reading the next section all which has come previous should be remembered for it will also support the hypothesis even though it may not be reiterated.

Hypothesis Support

The basic hypothesis is that the present legal penalties for marihuana possession or use are unrealistically harsh in view of existing information about its effects on the human being. In the process of defining and providing supportive evidence for the "reduction model" many points that satisfy this hypothesis were stated, yet further sources will be presented to verify it.

Support for this hypothesis is presented from two current major studies conducted in this country. One reporting in 1967, is the president's Task Force Report: Narcotics and Drug Abuse. The other was just released in March 1972 by the National Commission on Marihuana and Drug Abuse. By using these two sources a trend of opinion can be shown in their endorsement of this basic postulate of legal reduction. (Rather than repeating each title the date will be used to delineate between the two reports.)

In 1972 it was reported, "The existing social and legal policy is out of proportion to the individual and social harm engendered by the use of the drug."[21] To carry this same idea one step further this report stated,

> Marihuana's relative potential for harm to the vast majority of individual users and its actual impact on society does not justify a social policy designed to seek out and firmly punish those who use it.[22]

Even back in 1967 the regulation of marihuana under narcotic laws in association with heroin, was opposed. "While the dangers of the drug are not negligible, it should be recognized that marihuana is not a particularly dangerous

drug."[23] As a recommendation, this study then decided,

> Should the Commission be of the opinion that prohibitions against either use or simple possession of marihuana are desirable, it is recommended ... that use, simple possession, and acquisition should be treated either as civil violations carrying no possibility of deprivation of liberty, or, at most, as misdemeanors.[24]

By following up this idea of a reduction of penalties, it should also be quoted as written in 1967,

> There also appears to be good reason to moderate present punitive legislation so that penalties are more in keeping with what is now known about risks; that is, they are acquisition and possession becomes a misdemeanor only would not seem inappropriate.[25]

Since that time, with further research and a closer deciphering of the results of these projects a conclusion was drawn in 1972 that,

> The active attempt to suppress all marihuana use has been replaced by an effort to keep it within reasonable bounds. Yet because this policy still reflects a view that marihuana smoking is itself destructive enough to justify punitive action against the user, we believe it is an inappropriate social response.[26]

With the release of the 1972 study many ideas were presented, followed by recommendations to reduce and delineate between personal and public offenses in reference to marihuana (see page 180). By using this approach it was felt that what seems like a fad would eventually recede substantially with the passage of time as long as we did not institutionalize and legalize marihuana.[27] This same study took their recommendations one step further to cover areas previously thought of but without any consideration of how to deal with them. These recommendations were:

> Operating a vehicle or dangerous instrument while under the influence of marihuana would be a misdemeanor punishable by up to one year in jail, a fine of up to $1,000, or both, and suspension of a permit to operate such a vehicle or instrument for up to 180 days.
>
> A plea of marihuana intoxication shall not be a defense to any criminal act committed under its influence nor shall proof of such intoxication constitute a negation of specific intent.
>
> A person would be absolutely liable in civil court for any damage to person or property which he caused while under the influence of the drug.[28]
>
> [All capital letters in original.]

Further Research Necessary

It should not be felt that all the answers are available and that we should go no further. As has been stated throughout this thesis further research is needed. Rather than go back and repeat each of these studies it seems easier to approach this field with a fresh start. Not only should further research be conducted but a way of disseminating this information to the public in an honest and straight forward manner is needed. So, first this area, that of education, will be touched on before discussing research areas lacking sufficient data.

Education has been an effective tool since the end of the Dark Ages for moving civilization ahead and delivering its populations into the realm of enlightenment. This concept is believed so strongly in this country that mandatory state education has been a requirement for a number of years. We are extremely educationally minded which provides us with a definite aid which should be used. In 1963 the president's Advisory Commission on Narcotics and Drug Abuse voiced the opinion, "that public and professional

education in the field was inadequate. It found the problem clouded by misconceptions and distorted by persistent fallacies."[29]

Four years later when the Task Force Report: Narcotics and Drug Abuse completed its report their conclusion was that misinformation was still prevalent and any attempts to correct this by the federal government was limited and sporadic. What was needed, according to them, was a single agency to distribute factual material to those sources wishing it.[30] In an attempt to correct this deficit a review of literature being used and interviews with youth who were receiving this material resulted in the conclusion that this information was, "... not only out of date and blatantly incorrect, but also conducive to ridicule and consequent counterreactions among the now often well-informed youngsters."[31]

This same report expressed the opinion that not only should students in this country's school systems be educated but also, parents, professionals, policymakers, and the public in general. Only through honest and straight forward presentation of known gains and risks can we expect any kind of self-control involving drugs.[32] It would seem we would learn from experience but in the area of drug education, marihuana included, we have not achieved any measurable progress.

This fact is exemplified by an article in Time Magazine, 1971, which presents the findings of the National Coordination Council on Drug Abuse Education and Information. They,

> ... revealed that the films are so eager to scare kids away from drugs that they undermine the credibility of their messages. Too often the films distort what is scientifically known about drugs and ignore the many uncertainties.[33]

This same article discussed how these films and teaching aids were rated,

> ... the council found that 36 were 'scientifically unacceptable' ... including four of those distributed by the Pentagon and the armed services. Even those rated acceptable contained many inaccuracies.[34]

Helen Nowlis who worked on this program concluded that the problem was that extreme reactions were presented that did not correspond with actual experience.[35] By presenting marihuana information in this manner those drugs that are harmful are preceived in the same way. In essense kids, after using marihuana with no side effects are then beginning to question whether other drugs are as harmful as purported to be. So in an attempt to find out, many actually try harder drugs and are hurt, either by addiction or physical damage.

Education is not the only answer. This can be seen with the use of an example; cigarette education caused many to quit smoking but many people ignored it and continued to use this drug. We can take and educate the entire country and yet not change anything. Some people will strongly favor legalization of marihuana after they have heard the facts and others will strongly oppose legalization, each forming their opinions on the same information. We must also come to the realization that we may be treating the symptom and not the problem. The real problem being the entire society's overuse or abuse of one drug or another, be it coffee, cigarettes,

alcohol, or marihuana.

This leads us to the next area, that being research needed to understand the effects marihuana has on man. In one general statement this could be covered. Research is necessary in all areas. This study would have to be able to explain why intoxication is caused, how this intoxication effects man physically, mentally, and socially, and what possible damages, if any, could result from long term use. What is needed now is more specific statements of research which have already been planned and ones proposed.

Employees of the U.S. Public Health Services in 1970 in a letter to President Nixon wrote:

> We also urge laboratory and clinical studies on the efficacy of this drug. If its use as a tranquilizer, sleeping pill and muscle relaxant are confirmed and no new side effects are found, it would be much safer than present medications. Furthermore, a search of medical literature reveals that it may have uses as an analgesic, appetite stimulant, anti-epileptic, anti-spasmodic, anti-depressant, anti-asthmatic, anti-tussive, anti-biotic, childbirth anesthetic and withdrawal agent for opiate and alcohol addictions.[36]

With a possibility of these many therapeutic uses it can be understood why marihuana and its derivatives are looked at with hope of success. First, complete and thorough study is needed to conclude whether marihuana is totally safe, or at least safer than present medication. Then it will have to be tried in each situation to see how effective it is. Each of these studies will have to be conducted in a strictly scientific manner, using standard doses and control groups. It will also have to be studied in reference to on the street reactions, where the atmosphere is not

controlled nor the dosage.

In a report to Congress the secretary of the Department of Health, Education, and Welfare stated in 1972 that further study was needed in the area of different potencies and made of action on the biochemistry of the body.[37] More intensive research of large populations of chronic users is necessary to determine the long term effects which do not surface over a short time span.[38] An effort is needed to understand the effects of marihuana's different properties, along with better standard supplies of both natural and synthetic compounds.[39] Studies on the neurological effects are needed to better understand how the brain reacts and causes other bodily functions to react.[40]

It is also recommended that research continue in attempting to find a test similar to the existing blood-alcohol test.[41] Risks to older people should be understood in order to know what to expect with increased use and as the population of users becomes older.[42] Detailed research to judge the base rates of adverse physical or psychological reactions is needed.[43] Studies to understand why certain people use marihuana and not others would be of great aid.[44] The effects under industrial and work conditions on performance and safety should be looked at.[45]

Further study is needed on the effects resulting during the operation of a motor vehicle.[46] Also needed is study in the area of treatment for "soft" drug users, like marihuana, in hopes of developing effective behavioral modification techniques.[47] As can be seen, much remains to

be known about marihuana before legalization can be attempted. This source was not the only one released recently which requested future research, another was the National Commission on Marihuana and Drug Abuse.

In 1972 this source requested the coordination and dissemination of all research information under one agency.[48] It also recommended funding of foreign studies on heavy and very heavy marihuana users.[49] This source wants further study for therapeutic uses,[50] community-based treatment programs,[51] and training programs for professionals.[52] So with this understanding about the areas of knowledge which remain still inconclusive it can be seen why the marihuana problem still remains unanswered.

Chapter 4

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APPENDICES

APPENDIX A

LaGUARDIA COMMISSION

All which is stated below was in New York (City) Mayor's Committee on Marihuana, known as LaGuardia commission. No changes in wording have been made by the author. A brief outline of the introduction is given so as to make it possible to understand the reasons for the research. After this brief outline the summary and conclusions are given for each section of the research. Some of the summary sections may be outlined. The pages included will be found in the footnotes. All of the following is a direct quotation.

Introduction
E. H. L. Corwin, Ph.D., Secretary

On September 13, 1938, The New York Academy of Medicine was informed of Mayor LaGuardia's concern about the marihuana problem and of his desire

> that some impartial body such as The New York Academy of Medicine make a survey of existing knowledge on this subject and carry out any observations required to determine the pertinent facts regarding this form of drug addiction and the necessity for its control....

This Subcommittee, consisting of Dr. George B. Wallace, Chairman; Dr. E. H. L. Corwin, Secretary; and Drs. McKeen Cattell, Leon H. Cornwall, Robert F. Loeb, Currier McEwen, B. S. Oppenheimer, Charles Diller Ryan, and Dudley D. Shoenfeld, reviewed the existing literature

on the subject. On the basis of this review, the Subcommittee could come to no conclusion regarding the effect of marihuana upon the psychological and physiological functions of the human being. Nor were attempts to learn the extent of the use of marihuana in New York City any more successful....

The Subcommittee therefore came to the conclusion that, in view of the possibility that marihuana smoking might constitute an important social problem, it was time that a study of its effects be made based upon well-established evidence, and prepared an outline of methods of procedure for the study of the problem. It recommended that such a study should be divided into two parts: (1) a sociological study dealing with the extent of marihuana smoking and the methods by which the drug is obtained; in what districts and among what races, classes or types of persons the use is most prevalent; whether certain social conditions are factors in its use; and what relation there is between its use and criminal or antisocial acts; and (2) a clinical study to determine by means of controlled experiments the physiological and psychological effects of marihuana on different types of persons; the question as to whether it causes physical or mental deterioration; and its possible therapeutic effects in the treatment of disease or of other drug addictions.

The Committee on Public Health Relations adopted the report of its Subcommittee and recommended to Mayor LaGuardia that he appoint a special committee to carry out the proposed study....

This Committee studied the broad outlines of the proposed plans for about a year before work was actually begun. At its first meeting in March 1939 two subcommittees were appointed: one consisting of Drs. Shoenfeld, Ryan, and Corwin to plan the sociological study, and the other composed of Drs. Cattell, Bowman, Cornwall, and Loeb to work out the details of the clinical study. Drs. Bowman and Wechsler were appointed as special advisors for the clinical study and Dr. J. Murray Steele and Dr. S. Bernard Wortis as the supervisors of this study.

The studies were made possible by the financial support of three Foundations, the Friedsam Foundation, the New York Foundation, and the Commonwealth Fund, each of which donated $7,500.... The Research Council of the Department of Hospitals undertook the financial supervision of the clinical study and The New York Academy of Medicine that of the sociological study.

The sociological study proceded under the active direction of Dr. Dudley D. Shoenfeld and was carried out by six police officers who were trained by Dr. Shoenfeld as social investigators. In acknowledgment of the great help rendered to the Committee by these officers, the Committee passed the following resolution at its meeting on March 28, 1941.

> Now that the sociological study of the marihuana problem in New York City has been completed, the Mayor's Committee on marihuana wishes to record its appreciation of the Mayor's interest in this problem and his placing at the disposal of the Committee the services of the Narcotic Squad Division of the Police Department.
>
> ... The four men and two women assigned to us

made painstaking observations and reports, acted as investigators and social workers and not as police officers, and brought to the performance of this task a native intelligence, specialized training, and civic interest. The thanks of the Committee are due to them and through them to their superiors.

The clinical study consisted of two parts, -- medical, including psychiatric, and psychological. Dr. Karl M. Bowman directed the medical and psychiatric part of this study and Dr. David Wechsler the psychological part. The members of the Committee closely supervised the work during the course of the study. The staff of the clinical study included:

Samuel Allentuck, M.D. - Psychiatrist, who was in charge.
Louis Gitzelter, M.D., Frank Anker, M.D. - Assistant physicians.
Robert S. Morrow, Ph.D., Florence Halpern, M.A., Adolph G. Woltmann, M.A. - Psychologists.
Miss Rose Horowitz who was the secretary-stenographer and bookkeeper.

. . . . . .

At the suggestion of Dr. Cattell a pharmacological study was done in the Department of Pharmacology of Cornell Medical School by Dr. S. Loewe. Dr. W. Modell collaborated in this work. We are indebted to Dr. Roger Adams, Professor of Chemistry at the University of Illinois, and to Dr. H. J. Wollner, Consulting Chemist of the United States Treasury Department, who supplied some of the active principles of marihuana which were used in the study . . . .

. . . . . .

. . . In the judgment of the Committee, this painstaking study should be of considerable value from a scientific and social viewpoint.[1]

The Sociological Study
Dudley D. Shoenfeld, M.D.[2]

Conclusions

From the foregoing study the following conclusions are drawn:

1. Marihuana is used extensively in the Borough of Manhattan but the problem is not as acute as it is reported to be in other sections of the United States.

2. The introduction of marihuana into this area is recent as compared to other localities.

3. The cost of marihuana is low and therefore within the purchasing power of most persons.

4. The distribution and use of marihuana is centered in Harlem.

5. The majority of marihuana smokers are Negroes and Latin-Americans.

6. The consensus among marihuana smokers is that the use of the drug creates a definite feeling of adequacy.

7. The practice of smoking marihuana does not lead to addiction in the medical sense of the word.

8. The sale and distribution of marihuana is not under the control of any single organized group.

9. The use of marihuana does not lead to morphine or heroin or cocaine addiction and no effort is made to create a market for these narcotics by stimulating the practice of marihuana smoking.

10. Marihuana is not the determining factor in the commission of major crimes.

11. Marihuana smoking is not widespread among school children.

12. Juvenile delinquency is not associated with the practice of smoking marihuana.

13. The publicity concerning the catastrophic effects of marihuana smoking in New York City is unfounded.[3]

Medical Aspects
Symptoms and Behavior
Samuel Allentuck, M.D.[4]

Summary

In the study of the actions of marihuana in respect to subjective and objective symptoms and behavior, the marihuana was given a number of times to each of the subjects in the form of the concentrate taken by stomach. The amount given ranged from 2 to 22 cc., in most cases from 2 to 5 cc. After marihuana was taken, the systemic action became evident in from one-half to one hour and the maximum effects were seen in from two to three hours. They passed off gradually, usually in from three to five hours, although in some instances they did not completely disappear until twelve or more hours.

Of the symptoms occurring, a feeling of lightness in the head with some dizziness, a sensation of floating in the air, dryness of the throat, hunger and thirst, unsteadiness and heaviness in the extremities were the most frequent. Tremor and ataxia, dilation of the pupils and sluggishness in responsiveness to light were observed in all subjects.

From observations on the behavior and responses of the subjects, it was found that a mixture of euphoria and apprehension was generally present.... If the apprehension developed into a state of real anxiety, a spirit of antagonism was shown. However, any resistance to requests made to the subjects was passive and not physical and there was no aggressive or violent behavior observed. Erotic ideas or sensations when present took no active expression.

Six of the subjects developed toxic episodes characteristic of acute marihuana intoxication. The dosage varied from 4 to 8 cc. of the concentrate, and the episode lasted from three to six hours, in one instance ten hours....

The doses given were toxic to the individuals in question but not to others taking the same or larger ones. Once the drug had been taken the effects were beyond the subject's control.... A corresponding toxicity did not occur from cigarettes....

In three of the subjects a definite psychotic state occurred, in two shortly after marihuana ingestion, in one after a two-week interval. Of the first two, one was an epileptic and the other had a history of heroin addiction and a prepsychotic personality. The third was considered a case of prison psychosis. The conclusion seems warranted that given the potential personality make-up and the right time and environment, marihuana may bring on a true psychotic state.[5]

Organic and Systemic Functions
Samuel Allentuck, M.D.[6]

Summary

The most consistent effect of marihuana observed in this division of the study was an increase in pulse rate which began shortly after the taking of the drug, reached a peak in about two hours, and gradually disappeared. In a few instances a temporary sinus tachycardia or sinus bradycardia was noted, but except for these there were no

abnormalities in rhythm. The increase in pulse rate was usually accompanied by a rise in blood pressure.

There was in general an increase in the blood sugar level and in the basal metabolic rate,...

An increase in the frequency of urination was often observed....

Hunger and an increase in appetite, particularly for sweets, was noted in the majority of the subjects,... Nausea and vomiting occurred in a number of instances, diarrhea only during psychotic episodes.

On the other hand, the blood showed no changes in all count, hemoglobin percent, or the urea nitrogen, calcium and phosphorus figures. The figures for the circulation rate and vital capacity and the results of the phenolsulfonphthalein test for kidney function and the bromsulfalein test for liver function were not different from those of the control period. The electrocardiograms showed no abnormalities which could be attributed to a direct action on the heart. In the few observations on gestric motility and secretion no evidence of marihuana action on these functions was obtained.

The positive results observed, increase in pulse rate and blood pressure, increase in blood sugar and metabolic rate, urge to urinate, increased appetite, nausea and vomiting, and diarrhea, were not intensified by an increase in dosage, for they could occur in an equal degree after the administration of any of the effective doses within the range used. All the effects described are known to be expressions of forms of cerebral excitation, the impulses

from this being transmitted through the autonomic system. The alterations in the functions of the organs studied come from the effects of the drug on the central nervous system and are proportional to these effects. A direct action on the organs themselves was not seen.[7]

Psychological Aspects
Psychophysical and Other Functions
Robert S. Morrow, Ph.D.[8]

Summary and Conclusions

1. The effect of marihuana on the psychomotor functions depends primarily on the complexity of the function tested. Simpler functions like speed of tapping and simple reaction time are affected only slightly by large doses (5 cc.) and negligibly, if at all, by smaller doses (2 cc.). On the other hand, the more complex functions like static equilibrium, hand steadiness, and complex reaction time may be affected adversely to a considerable degree by the administration of both large and small doses of marihuana.

2. The function most severely affected is body steadiness and hand steadiness. The ataxia is general in all directions rather than predominant in any particular axis.

3. The effects produced by larger doses (5 cc.) are systematically, though not necessarily proportionately, greater than those brought about by small doses.

4. The time required by the drug to exert its maximum effect varies somewhat with the function and size of dose, but, on the whole, time curves for both functions and dosages have similarity of form. The effect of the drug begins from one to two hours after ingestion and reaches its peak at the fourth hour, after which it declines so that by the end of the eighth hour most of it is dissipated.

5. When marihuana is taken in cigarette form the psychomotor effects are similar in character and trend to those observed after the ingestion of the drug but they occur much sooner and taper off more quickly.

6. The effects seem to be essentially the same for women as for men, except that women are sometimes affected maximally at the second or third hour after the drug is administered. In women the return to the normal condition is in some instances quicker and more abrupt than it is in the men.

7. Non-users generally seem to be more affected by the drug when it is ingested than are users.

8. Auditory acuity is not affected by marihuana.

9. There is no evidence that musical ability, of non-musicians at least, is improved by marihuana.

10. The ability to estimate short periods of time and short linear distances is not measurably affected by the ingestion of marihuana.[9]

Intellectual Functioning
Florence Halpern, M.A.[10]

Conclusions

1. Marihuana taken either in pill or in cigarette form has a transitory adverse effect on mental functioning.

2. The extent of intellectual impairment, the time of its onset, and its duration are all related to the amount of drug taken. Small doses cause only slight falling off in mental ability while larger doses result in greater impairment. The deleterious effect is measurable earlier with large doses than with small ones, and the impairment continues for a greater length of time with large doses than with small ones.

3. The degree of intellectual impairment resulting from the presence of marihuana in the system varies with the function tested. The more complex functions are more severely affected than the simpler ones.

4. In general, non-users experience greater intellectual impairment for longer periods of time than the users do. This suggests the possibility of an habituation factor.

5. The falling off in ability which occurs when an individual has taken marihuana is due to a loss in both speed and accuracy.

6. Indulgence in marihuana does not appear to result in mental deterioration.[11]

Emotional Reactions and General Personality Structure
Florence Halpern, M.A.[12]

Conclusions

1. Under the influence of marihuana the basic personality structure of the individual does not change but some of the more superficial aspects of his behavior show alteration.

2. With the use of marihuana the individual experiences increased feelings of relaxation, disinhibition and self-confidence.

3. The new feeling of self-confidence induced by the drug expresses itself primarily through oral rather than through physical activity. There is some indication of a diminution in physical activity.

4. The disinhibition which results from the use of marihuana releases what is latent in the individual's thoughts and emotions, but does not evoke responses which would be totally alien to him in his undrugged state.

5. Marihuana not only releases pleasant reactions but also feelings of anxiety.

6. Individuals with a limited capacity for affective experience and who have difficulty in making social contacts are more likely to resort to marihuana than those more capable of outgoing responses.[13]

Family and Community Ideologies
Adolph G. Woltmann, M.A.[14]

Summary and Conclusions

Eighteen subjects who participated in the marihuana study were subjected to the play situation with the idea of seeing whether the pattern of play or the ideas investigated were materially altered in consequence of the ingestion of the marihuana. Among the ideologies which were appraised were: (1) attitude toward family setup; (2) attitude toward different occupations; (3) attitude toward income;

(4) attitude toward situations ordinarily calling for aggression, namely an attempted burglary of his home and sexual infidelity on the part of his wife; (5) attitude toward authority.

In general the subject's attitude toward family and community ideologies as manifested in play did not change markedly as a result of the ingestion of marihuana. The subjects (in play) were not intolerant of infidelity or aggressive toward lawbreakers either before or after the ingestion of marihuana. On the whole the initial passive reactions already observed in other parts of the study were likewise observed in the play situation experiment. The only very definite change as a result of the ingestion of marihuana was in their attitude toward the drug itself. Without marihuana only 4 out of 14 subjects said they would tolerate the sale of marihuana while after ingestion 8 of them were in favor of this.

Another significant manifestation in the play situation pertains to the construction of the community set-up. In general the community was less orderly and well organized when the subjects had had marihuana. It is possible that this poor organization may be ascribed to the generally indifferent attitude and lack of motor coordination already observed in the more controlled studies.

On the whole, the experiment with play technique gave less information as to the effect of marihuana on subjects than had been hoped for. This may have been due to the incompleteness of the method employed or possibly to

the fact that this technique is designed to give data about the basic personality of the individual rather than such alterations in it as might be caused by pharmacological agents.[15]

Addiction and Tolerance

... Practically all of our group of users stated that they could and often did voluntarily stop the smoking for a time without any undue disturbance from the deprivation....

The evidence submitted here warrants the conclusion that as far as New York City is concerned true addiction to marihuana does not occur.

. . . . . .

... The only conclusion warranted here is that if acquired tolerance does occur it persists for a limited period only.

. . . . . .

The evidence available then--the absence of any compelling urge to use the drug, the absence of any distressing abstinence symptoms, the statements that no increase in dosage is required to repeat the desired effect in users--justifies the conclusion that neither true addiction nor tolerance is found in marihuana users. The continuation and the frequency of usage of marihuana, as in the case of many other habit-forming substances, depend on the easily controlled desires for its pleasurable effects.[17]

Possible Therapeutic Applications[18]

If a drug has well-marked pharmacological actions and low toxicity, as appears to be the case with marihuana, a consideration of special interest is its possible therapeutic application....

... Marihuana possesses two qualities which suggest that is might have useful actions in man. The first is the typical euphoria-producing action which might be applicable in the treatment of various types of mental depression; the second is the rather unique property which results in the stimulation of appetite. In the light of this evidence and in view of the fact that there is a lack of any substantial indication of dependence on the drug, it was reasoned that marihuana might be useful in alleviating the withdrawal symptoms in drug addicts.

At the Riker's Island Penitentiary observations were made on 56 inmates who were addicted to morphine or heroin.... The impression was gained that those who received tetrahydrocannabinol had less severe withdrawal symptoms and left the hospital at the end of the treatment period in better condition than those who received no treatment or who were treated with Magendie's solution. The ones in the former group maintained their appetite and in some cases actually gained weight during the withdrawal period.

Since psychological factors play a large part in the withdrawal symptoms of at least a certain proportion of morphine addicts, there are grounds for the assumption that a drug having the properties of marihuana might be of aid in

alleviating mental distress during the withdrawal period. However, the studies here described were not sufficiently complete to establish the value of such treatment, and before conclusions can be drawn the problem must be investigated under completely controlled conditions.[19]

Pharmacological Study
S. Loewe, M.D.[20]

Summary

1. This review of the pharmacology of marihuana is centered around the chemical and pharmacological identification of the active principles of hemp. Coordination of chemical and pharmacological investigations as a prerequisite to success in the search for unknown principles and of the analysis of the structure-activity relationship of these compounds is discussed.

2. In a survey of the sources of preparations with marihuana activity, hemp seeds are disclosed as a heretofore unknown source of active substances.

3. Varieties of hemp can be distinguished according to genotypic differences of the content of active principles which persist over generations independently of soil and climate.

4. The pharmacological actions of marihuana are analyzed with regard to their specificity and their usefulness as indicators of specific components.

5. Sixty-five substances from the new class of cannabinols and related classes are reviewed, among which are the essential components of the marihuana-active hemp oils. The discovery of this class, the synthesis of these representatives, and their structural elucidation led the way to the discovery of the active substances.

6. Quantitative assay procedures are described for the most important marihuana effects that are observed in the animal experiment. The assay of the ataxia effect in the dog and of the synergistic hypnotic effect in the mouse with refined procedures are shown to be reliable expedients for measuring these two marihuana actions, whereas the areflexia effect in rabbits failed to show the reproducibility required for quantitative purposes.

7. With the aid of these methods the natural tetrahydrocannabinols are shown to be active principles responsible for ataxia in dogs and psychic action in man. They are intermediate products between the two ineffective substances which compose the bulk of hemp oil: a labile excretion product of the plant, cannabidiol, and a stable end-product, cannabinol. The conversion of cannabidiol into active tetrahydrocannabinol by a natural environmental influence has been paralleled by ultraviolet irradiation in vitro.

8. Numerous isomers, homologs, and analogs of tetra and hexahydrocannabinol are shown to possess the specific marihuana action. The potency varies enormously and is highest in natural, optically active--laevogyrous--tetrahydrocannabinols.

9. The significance of many of the structural details of the tetrahydrocannabinol molecule for marihuana activity is elucidated by quantitative determinations of relative potency. Special attention was devoted to a study of the importance of variations in the length of the 3-alkyl side chain of tetrahydrocannabinols. In studying methyl to nonyl homologs of the original amyl derivative occurring in nature, it was found that the maximum potency is not at the amyl, but at the hexyl homolog, and in two out of four homologous series at the representatives with still longer side chains.

10. In addition to the ataxia and the psychic action, other pharmacological attributes of the tetrahydrocannabinols are a decrease in the respiratory and an increase in the pulse rates in the non-narcolized dog.

11. The synergistic hypnotic action of marihuana in the mouse is to be attributed to the otherwise inert cannabidiol.

12. The corneal areflexia action in the rabbit was much stronger in impure distillate oils than in pure tetrahydrocannabinols, which leads to the conclusion that this action is either poorly reproducible or must be attributed to a different, as yet unknown, principle.

13. Only one among the numerous cannabinol derivatives, 7-methyltetrahydrocannabinol, was found to produce a motor stimulant--convulsant--action concomitant with ataxia action. A cannabidiol derivative, tetrahydrocannabidiol, was found to have very specific convulsant action in the dog.

14. A central stimulant (benzedrine) considerably increased the ataxia action of marihuana, whereas a hypnotic (amytal) had no influence.[21]

This commission was made up of,

> ... two internists, three psychiatrists, two pharmacologists, one public health expert, and the Commissioners of Correction, of Health, and of Hospitals and the Director of the Division of Psychiatry of the Department of Hospitals...[22]

Even with this impressive makeup of professionals and the completeness of the study it wasn't exactly accepted. The then director of the Federal Bureau of Narcotics, H. J. Anslinger, wrote, "The Bureau immediately detected the superficiality and hollowness of its findings and denounced it."[23] Also, the American Medical Association in an editorial stated, "Public officials will do well to disregard this unscientific, uncritical study, and continue to regard marihuana as a menace wherever it is purveyed."[24]

Appendix A

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3. Ibid., p. 24, 25.

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8. Ibid., p. 65.

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15. Ibid., p. 138, 139.

16. Ibid., p. 144.

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19. Ibid., p. 147, 148.

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APPENDIX B

STATE PENALTIES FOR FIRST OFFENDERS

Alabama, Maryland, New Mexico, Ohio, and Virginia - 0 to 1 year and/or $1,000 fine.

Alaska - 0 to 1 year and/or $1,000 or rehabilitation treatment by state for 1 year.

Arizona - 0 to 1 year in county jail and/or $1,000 or 1 to 10 years.

Arkansas - 0 to 1 year and/or $250.

California - County jail for not more than 1 year or 1 to 10 years in prison.

Colorado - Under ½ oz., 0 to 1 year and/or $500; over ½ oz., 2 to 15 years and/or $10,000.

Connecticut - 0 to 1 year and/or $1,000 or up to 3 years in custody of commissioner of mental health.

Delaware - 0 to 2 years and/or $500.

District of Columbia - 0 to 1 year and/or $100 to $1,000.

Florida - Less than 5 grams, 0 to 1 year and/or $1,000; more than 5 grams, 0 to 2 years and/or $1,000.

Georgia - Under 1 oz., 0 to 1 year and/or $1,000; over 1 oz., 0 to 2 years and/or $2,000.

Hawaii - 0 to 5 years.

Idaho - 0 to 6 months and/or $300.

Illinois - Less than 2.5 grams, up to 90 days; 2.5 to 10 grams, up to 180 days; 10 to 30 grams, up to 1 year; 30 to 500 grams, 1 to 3 years; over 500 grams, 1 to 5 years.

Indiana - Less than 25 grams, 0 to 6 months and/or $25 to $100; over this amount, 30 days to a year and/or $500.

Iowa - 0 to 6 months and/or $1,000.

Kansas - 0 to 1 year.

Kentucky - 0 to 1 year in mental health facility.

Louisiana - 0 to 1 year and/or $500.

Maine - 0 to 11 months and/or $1,000.

Massachusetts - 0 to 3½ years in prison, or 0 to 2½ years in jail and/or $1,000.

Michigan - 0 to 10 years and/or $5,000.

Minnesota - Under 1.5 oz., 0 to 1 year and/or $1,000; over 1.5 oz., 0 to 3 years and/or $3,000.

Mississippi - 0 to 4 years and/or $2,000.

Missouri - Under 35 grams, 0 to 1 year and/or $1,000; over this amount, 0 to 5 years and/or $1,000.

Montana - Up to 60 grams, 0 to 1 year and/or $1,000; over this amount, 0 to 5 years.

Nebraska - Up to 1 pound, 7 days in county jail (separate from other prisoners) and/or $500; over 1 pound, 0 to 6 months in county jail or 1 year in prison and/or $500.

Nevada - If under 21 and less than 1 oz., 0 to 1 year and/or $1,000 and/or suspension of driver's license; if over 1 oz., 1 to 6 years and/or $2,000.

New Hampshire - Less than 1 pound, 0 to 1 year and/or $500; over 1 pound, 0 to 5 years and/or $2,000.

New Jersey - Under 25 grams, 0 to 6 months; over 25 grams, 0 to 5 years and/or $15,000.

New York - Less than 25 cigarettes or ¼ oz., up to 1 year; 25 to 99 cigarettes or ¼ to 1 oz., 1 to 7 years; over 100 cigarettes or 1 oz., 1 to 15 years.

North Carolina - Less than 1 gram, misdemeanor with fine or imprisonment left to court; over 1 gram, 0 to 5 years and/or $1,000.

North Dakota - 0 to 1 year and/or $500.

Oklahoma - 0 to 1 year.

Oregon - 0 to 1 year in county jail and/or $5,000 or 0 to 10 years in prison and/or $5,000.

Pennsylvania - 0 to 2 years of separate or solitary confinement and/or $2,000.

Rhode Island - 0 to 10 years and $5,000.

South Carolina - Under 1 oz., 0 to 3 months and/or $100; over this amount, 0 to 6 months and/or $1,000.

South Dakota - Less than 1 oz., 0 to 1 year in county jail and/or $500; over 1 oz., 0 to 5 years and/or $5,000.

Tennessee - Commitment to a state-operated drug treatment facility or community mental health center or, at the discretion of the court, up to 11 months, 29 days and/or $1,000.

Texas - 2 years to life.

Utah - 0 to 6 months and/or $299.

Vermont - 0 to 6 months and/or $500.

Washington - Less than 40 grams, 30 days; over 40 grams, 0 to 5 years and/or $10,000.

West Virginia - 90 days to 6 months and/or $1,000.

Wisconsin - 0 to 1 year in county jail and/or $500.

Wyoming - 0 to 6 months and/or $1,000.[1]

Appendix B

REFERENCES CITED

1. Data compiled from information received, NORML, The National Organization for the Reform of Marijuana Laws (Washington: 1237 22nd St., N. W., 1971).