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Hemp & Health

by Robert A. NELSON

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Cannabis sativa, the "True Hemp", is tightly woven into the tapestry of human life. Since earliest times, this great plant ally has provided people with cordage and fabric, paper, medicine, and inspiration. For all the many benefits it bestows, Cannabis hemp is a friendship well worth cultivating. Hemp is many things to many people, and it is known by hundreds of names. Poets and musicians sing its praises, and preachers damn it. Executioners hang condemned men with hemp rope, but sailors and mountaineers hang onto it for dear life. Doctors prescribe it as a versatile medicine, yet prohibitionists proscribe it as a poison. Armies and navies make war with hemp, while lovers use it as an aphrodisiac. It is the warp of the mind's veil of illusion, and the woof of politicians, who "lead us in the manner dogs lead a parade" (Mark Twain). The resinous virtue generates real happiness, enlightenment and entertainment, equal in quality and worth to the similar joys of love, freedom and good health --- and it complements them all, and comforts those without such blessings. Hemp is a most interesting and paradoxical plant, one that defies control and begs understanding. Hemp is one of mankind's best (and few) friends on Earth, yet it is held prisoner within its own cells, bound in a Gordian Knot of laws. Yet again, it is Ariadne's Thread, a guideline out of the labyrinth of bureaucratic tyranny and into a new state of liberty and grace. We should be thankful for Cannabis.

1.
Traditional Materia Medica

Cannabis has been used in medicine since about 2300 BC, when the legendary Chinese Emperor Shen-Nung prescribed *chu-ma* (female hemp) for the treatment of constipation, gout, beriberi, malaria, rheumatism, and menstrual problems. He classified *chu-ma* as one of the Superior Elixirs of Immortality. In the 2nd century AD, the renowned physician Hua Tuo formulated *ma-yo* (hemp wine) and *ma-fei-san* (hemp-boiling powder) as anesthetics for the many surgeries he performed. The 14th century text *Ri-Yong-Ben-Cao* (*Household Materia Medica*) by Wu Rui described the use of hempseed as a medicine.

Chinese herbalists recommend *huo ma ren* ("fire hemp seeds") in doses from 9-15 grams, up to 45 grams, to nourish the Yin (feminine) in cases of constipation in the elderly, "blood deficiency", and to recuperate from febrile diseases. Hempseed is "sweet" and "neutral" and "clears heat". It operates through the channels of the stomach, large intestine, and spleen. It promotes the healing of sores and ulcerations when applied topically or ingested. Excessive, prolonged use may result in "vaginal discharge" or spermatorrhea. **(1)**

Both the ancient Ayurvedic system of Indian medicine and the Arabic Unani Tibbi system make extensive use of hemp for healing. Usually, it is mixed with other vegetable, mineral and animal substances which neutralize the narcotic effects and enhance the therapeutic virtues. The 9th century medical text *Susruta Samhita* describes bhang as an anti-phlegmatic against catarrh. The Sanskrit book *Rajbulubha* recommends hemp for the treatment of gonorrhea. The 10th century treatise *Anandakanda* describes the rejuvenating qualities of cannabis:

"Bahnagini is that which breaks the three types of miseries... gives happiness to mind... gives pleasure, lustre, intoxication and beauty... intoxicates like alcohol... helps to overcome death... helps in the excretion of nectar located at the *Brahmarandhra*... accomplishes the objects of mind... liberates living creatures from the bonds of the world... cures all diseases... has attained *siddhi* [spiritual perfections]... and endows *siddhi* on others."

Ayurvedic physicians regularly use the juice of hemp to treat dozens of diseases and other medical problems including diarrhea, epilepsy, delirium and insanity, colic, rheumatism, gastritis, anorexia, consumption, fistula, nausea, fever, jaundice, bronchitis, leprosy, spleen disorders diabetes, cold, anemia, menstrual pain, tuberculosis, elephantiasis, asthma, gout, constipation, and malaria. **(2, 3)**

The *Materia Medica of the Hindus* (1877) states:

"The leaves of Cannabis sativa are purified by boiling in milk before use. They are regarded as heating, digestive, astringent, and narcotic [sleep-inducing]. The intoxication induced by *bhang* is said to be of a pleasant description and to promote talkativeness. In sleeplessness, the powder of the dried resin is given in suitable doses for inducing sleep or removing pain." **(4)**

The ancient Egyptian Ebers Papyrus (E.821) offers "A remedy to cool the uterus":

"Smsm t [hemp] is pounded in honey and administered to the vagina. This is a contraction."

A mixture of hemp and carob was employed as an enema, or combined with other ingredients for use as a poultice (E. 618). The Ramses III Papyrus (A. 26) offers an prescription that is prescient of the modern use of cannabis in the treatment of glaucoma:

"A treatment for the eyes: celery; *smsm t* is ground and left in the dew overnight. Both eyes of the patient are to be washed with it in the morning." **(5)**

The Greek physician Pedacius Dioscorides (1st cty. AD) described *kannabis emeros* (female) in *De Materia Medica* (3:165, 166):

"The round seed, which being eaten of much doth quench geniture, but being juiced when it is green is good for the pains of the ears... The root being sodden, and so laid on hath ye force to assuage inflammations and to dissolve Oedemata, and to disperse ye obdurate matter about ye joints."

The 16th century humorist Francois Rabelais heaped praise on Pantagruelion (hemp) in giving passing notice of its healing properties in his novel *Gargantua and Pantagruel*:

"I won't stop to tell you how the juice of this marvelous herb, squeezed out and placed in the ears, kills every manner of putrefied vermin that could possibly have bred in there, as well as all other creatures that might have crawled in. Put this juice in a small pail of water and you'll see the water suddenly coagulates like clotted milk --- that's how powerful it is. And this coagulated water is a sovereign remedy for colicky horses, and also those with short breath...

"If you want to cure a burn, no matter whether it be from boiling water or burning wood, just rub on raw Pantagruelion, just as it comes out of the earth, without doing anything else. But be careful to change the dressing, when you see it drying on the wound.." **(6)**

Hemp was a popular remedy in medieval Europe. In addition to the applications mentioned above, the herb was used to treat toothaches, to facilitate childbirth, to alleviate convulsions, fevers, inflammations, jaundice, and reduce swollen joints in arthritis and rheumatism. Cannabis was found worthy of honorable mention as a healing plant in several medieval herbals.

In the 18th century treatise *Hemp* by M. Marcandier, readers are reminded:

"Pliny tells us, the Hemp-seed is of a drying nature, that it weakens the generative powers in men when they eat it to excess. On the contrary, it promotes fruitfulness in fowls, for which reason it is purposely given them in winter time, and is a food to which birds are accustomed. It expels wind; is hard of digestion and disagrees with the stomach; it produces bad humour, and occasions headaches. It was formerly one of those legumes, which are fried for desserts: It was also made into little sweet cakes, to be eaten at collations, and to promote drinking; but at present, this unwholesome ragout is quite banished from our tables: It heats those that it too freely so much, that it occasions very dangerous vapours; so that those who prescribe a decoction of this seed to children that labour under epilepsies, far from procuring them relief, increase and irritate their disorder. The juice of it, squeezed out when it is green, draws insects to it, and brings out all the vermin that enter into the ears, and infest them. Taken in an emulsion, it is good against a cough and the jaundice, and also against the gonorrhea; its oil is recommended as an ingredient in pomatums for the small-pox; and it is laxative. Taken inwardly, or outwardly applied, it has not the dangerous qualities that are ascribed to the whole plant with its leaves; the powder of it mixt with drink, will make those who

use it drunk, dull, and stupid: We are told that the Arabians make a sort of wine of it, which intoxicates, and poor people eat the oil of it in their soup.

"The grain and the leaves being squeezed, while they are green, and applied, by way of cataplasm, to painful tumors, are reckoned to have a great power of relaxing and stupefying... What Pliny assures us, of the great effect which an infusion of Hemp may have in coagulating water, will not appear surprising if we attend to the quality and quantity of the gum, which unites all the fibres of this plant together... It is, doubtless, for this reason, that it is given in drink to cattle to cure looseness. The decoction of green Hemp, with its seed, when well cleared of the dregs, causes the worms to come out of the ground on which it is poured, and the fishermen commonly make use of this expedient to catch them, when they have occasion...

"It abates inflammations, dissolves tumors and hard swellings upon the joints. Beat and pounded in a mortar, with butter, when it is still fresh, it is applied to burns, which it relieves greatly when it is often renewed. The juice and decoction of it, put into the fundaments of horses, brings out the vermin that infest them."

In his *Herbal*, Nicholas Culpepper (1616-1654) advised readers thus:

"An emulsion or decoction of the seed... eases the colic and always the troublesome humours in the bowels and stays bleeding at the mouth, nose, and other places."

Cannabis offers other mercies. In the 1830s, Dr. William O'Shaugnessy administered 2 grains of the resin to alleviate the suffering of a man dying of hydrophobia:

"In reviewing... this interesting case, it seems evident that at least one advantage was gained from the use of the remedy; the awful malady was stripped of its horrors; if not less fatal than before, it was reduced to less than the scale of suffering which precedes death from most ordinary diseases." **(7)**

Cannabis also was reported to be useful with varying degrees of success in the treatment of alcoholism, asthma, bronchitis, constipation, diarrhea, dysentery, dysmenorrhea and uterine hemorrhage, dropsy or edema, epilepsy, insanity, migraine, palsy, rheumatism, anthrax, beriberi, blood poisoning, incontinence, leprosy, malaria, snakebite, tonsillitis, parasites, and a legion of other maladies. **(8-11)**

In the late 19th century, cannabis was included in dozens of remedies available by prescription or over-the-counter. Reports of "cannabis poisoning" began to concern doctors. But V. Robinson noted in *An Essay on Hasheesh* (1912):

"An overdose has never produced death in man or the lower animals. Not one authenticated case is on record in which Cannabis or any of its preparations destroyed life... Cannabis does not seem capable of causing death by its chemical or physiological action." **(12)**

2.
Modern Medical Studies

After it was criminalized by the Marijuana Tax of 1937, cannabis was deleted from the British and US *Pharmacopoeia*, *Merck Index*, etc.. Despite governmental efforts to suppress the plant, people have continued to rediscover the medical benefits of cannabis, and thousands of scientific articles have been published to that effect. Dozens of therapeutic effects have been reported for the major cannabinoids, TetraHydroCannabinol (THC), Cannabinol (CBN), and Cannabidiol (CBD)**(Fig. 2)**

2a.
Glaucoma: --- Several million people worldwide are afflicted with glaucoma, in which the unchecked rise of intraocular pressure (IOP) causes irreparable damage of the retina and optic nerve, resulting in blindness. About 250,000 Americans suffer from glaucoma, and several

thousand people go blind from the affliction each year in the USA. Glaucoma is somewhat controllable with medications, all of which are attended by dangerous side-effects -- with the exemption of cannabis.

In 1971, while conducting an experiment to determine whether cannabis dilated the pupils, R.S. Hepler and I.M. Frank chanced to notice that the smoking of marijuana reduced IOP by about 25% after 30 minutes. In addition, there was a 50% reduction in tear flow and in ocular pulse pressure. Subsequent studies confirmed this effect with THC and cannabis extracts administered orally, intravenously, or by topical application of THC in sesame oil. There is no development of tolerance. **(13-15)**

The mechanism of this effect is uncertain, but it is known that THC increases the outflow facility of the eyes and reduces the secretion of ocular fluid by constricting the blood vessels of the ciliary epithelium. CBD has no effect on IOP. Cannabis is known to produce tears and mild reddening of the conjunctiva, but these effects have little apparent clinical significance.

In a contrary finding, W. Daeson, *et al*., reported that chronic users in Costa Rica had increased IOP and an apparently incorrectable optical acuity deficit. A case of conjugate deviation of the eyes reportedly was caused by cannabis intoxication, according to Mohan and Sood. The effect lasted six weeks. **(16, 17)**

Dr. M.E. West confirmed the Jamaican folk belief that a run-extract of cannabis improves night-vision. Dr. West and Dr. Albert Lockhart eventually prepared a non-pyschoactive substance, called Canasol, which showed a marked improvement on IOP and "significant improvement in night vision." **(18, 19)**

The report by West and Lockhart prompted Keith Green, *et al*., to isolate and test water-soluble extracts of cannabis for IOP-reducing activity. Some compounds were found to reduce IOP by about 60% for up to 60 hours with doses as low as 1 microgram, administered intravenously. Other routes of administration are ineffective, due to the extremely large size of the glyco-protein molecules. **(20-22)**

2b.
Anti-Emetic --- In the 1970s, many patients undergoing chemotherapy for AIDS, Hodgkins disease and other cancers discovered that they suffered less nausea and vomiting if they smoked marijuana before receiving treatment. Subsequent tests by several oncologists showed THC to be superior to chlorperazine as an anti-emetic, but no more effective than metoclopramide or thiethylperazine. In other trials, no difference was found between the anti-emetic effects of THC. The emesis produced by methroxate, duxorubium, cyclophosphamide and flouracil are dramatically reduced by THC. It is less beneficial for patients receiving mustine, nitrosoureas, and cisplatin therapy. The synthetic cannabinoid Nabilone was found to be more effective than prochlorperazine as an anti-emetic in cisplatin treatment. The side-effects of being "high", dysphoric, sedated, etc., are tolerated better by young persons than by elders. The synthetic THC analog Levonantradol is known to possess anti-emetic activity while producing only mild side effects. Sallan, *et al*., found that nausea an vomiting was controlled by THC in 81% of patients. **(23-27)**

Chemotherapy patients who use cannabis as medicine generally prefer to smoke marijuana rather than ingest synthetic THC (Marinol) because they usually vomit before the pill can take effect (up to 3 hours later). Smoking allows the patient to titrate the dose puff by puff, and the drug takes effect within a few minutes. Synthetic THC loses its effectiveness after only a few treatments, and it is expensive. Alternatively, it is a simple matter to prepare an extract with clarified butter. This is administered in suppository capsules with pinholes poked in them.

Harvard University surveyed members of the American Society of Clinical Oncology in 1990, and found that 44% of the 1,035 respondents acknowledged that they had recommended the illegal use of marijuana to at least one patient undergoing chemotherapy. 48% agreed that they "would prescribe marijuana in smoked form to some of their patients if it were illegal." **(28)**

2c.
Asthma --- For the past 3,000 years or more, cannabis has provided welcome relief for countless numbers of asthmatics. It was widely used for that purpose in the 19th century. The inhalation of marijuana smoke causes bronchial dilation lasting up to 1 hour. The bronchodilator effect of orally-ingested THC lasts up to 6 hours, but it is not so powerful as smoking marijuana. THC aerosols are not so effective as smoking marijuana because aerosolized THC has an irritating effect on the air passages. **(29)**

L. Vachon, *et al*., reported that 0.7 mg. THC in a micro-aerosol proved to be up to 60% effective as a bronchodilator, with minimal mental effects and no parasympathetic effects. J. Hartley, *et al*., found that administration of minute doses (50-200 micrograms) of THC by inhalation increased the peak expiratory flow and forced expiratory volume in 1 second in a dose-related manner. The effects last 4 hours. D. Tashkin, *et al*., explored the anti-asthmatic effect of THC, and found it to be useful against the encroachment of emphysema. R. Gordon, *et al*., confirmed the anti-tussive effect. Cannabis also has been used with success in the treatment of whooping cough. In 1955, J. Sirek reported on the importance of hempseed in tuberculosis therapy, but the discovery has been largely ignored since then. **(30-34)**

2d.
Anti-Convulsant --- Cannabis' power to control spasticity and convulsions has been applied in folk medicine for thousands of years. The first European report of this effect was published in the 1830s by Dr. William O'Shaughnessy, who stated that "The [medical] profession has gained an anti-convulsive remedy of the greatest value." Dr. J. Russell Reynolds, who was Queen Victoria's personal physician for 30 years and administered cannabis to her, praised the anti-convulsive virtue of hemp. He wrote that "There are many cases of so-called epilepsy... in which India hemp is the most useful agent with which I am acquainted." **(35, 36)**

Many thousands of victims of all forms of convulsions, spasticity, and epilepsy, and of paralysis --- paraplegia, quadriplegia, Muscular Dystrophy (MD), Multiple Sclerosis (MS), and chorea, etc., and the associated neuralgias --- praise cannabis for its unique power of relaxation. Anecdotal reports of its efficacy prompted clinical studies which showed that Cannabidiol can help some patients to remain nearly free of convulsions without any toxicity or psychoactive side-effects. W.A. Check found a limited effect of smoking marijuana to alleviate the spasticity of MS. Experiments conducted by P. Consroe, *et al*., demonstrated a dose-related improvement of idiopathic dystonias by treatment with CBD. Other researchers have found THC to be useful in the treatment of MD. **(37-40)**

While testing THC for possible immunosuppressive effects, Lyman, *et al*., found that guinea pigs treated with THC developed few or no symptoms of experimental autoimmune encephalitis (EAE), which is used as a laboratory model of MS. 98% of untreated animals died, while 95% of the animals treated with THC survived and had much less inflammation of their brain tissue. **(41, 42)**

The 11-hydroxy metabolites of THC have been reported to be more effective against convulsions than the parent molecule. CBD also possesses anticonvulsant properties without producing behavioral impairment or tolerance, and it works where other drugs are refractory, or in combination with them. The CBD nucleus has been recommended as a template for the development of other anti-epileptic drugs. **(43, 44)**

In 1998, Gilson and Busalacchi reported a new medical use of cannabis, i.e., for the treatment of intractable hiccups. In their letter to *Lancet* (351: 267) the authors concluded:

"Because intractable hiccups is an uncommon condition, it is unlikely that the use of marijuana will ever be tested in a controlled clinical trial, and blinding would be difficult. Despite federal policy which forbids the use of marijuana therapeutically, this report should be considered for hiccups refractory to other measures."

2e.

Tumors--- L. Harris, *et al*., found anti-tumor effects of THC and CBN on Lewis Lung Tumor (LLT), but not in L-1210 Leukemia. THC and CBN inhibited primary tumor growth from 25% to 82% and increased the life expectancy of cancerous mice to the same extent. The anti-tumor activity of THC and CBN is very selective; it reduces tumor cells without damaging normal cells. CBD was ineffective. A. White, *et al*., found that THC slightly inhibited DNA replication, but CBD appeared to enhance the growth of LLT.

A 1975 study of "The Antineoplastic Activity of Cannabinoids" by the Department of Pharmacology and the Medical College of Virginia Commonwealth University Cancer Center reported:

"Lewis lung adenocarcinoma growth was retarded by the oral administration of delta-9-THC... and CBN, but not CBD. Animals treated for 10 consecutive days with delta-9-THC, beginning the day after tumor implantation, demonstrated a dose-dependent action of retarded tumor growth. Mice treated for 20 consecutive days with delta-8-THC and CBN had reduced primary tumor size."

M. Friedma reported that THC and CBD failed to inhibit tumor macromolecular biosynthesis in LLT. **(45-48)**

In 1994, the National Toxicology Program conducted a study which showed that THC protects against malignant tumors. The report was suppressed for three years. According to NTP deputy director John Bucher, the delay was due to a "personnel shortage".

2f.
Antibiotic --- The cannabinoid acids effectively inhibit and kill Gram(+) bacteria such as Staphylococcus and Streptococcus. An alcoholic extract of cannabis has been recommended as a topical application and for use in the treatment of penicillin-resistant organisms. The preparations of cannabis can be applied to the skin or mucous membranes as a salve, poultice, or spray.

J. Kabelic, *et al*., reported a case in which a pathologist injured his thumb during a dissection. It became severely infected and was absolutely resistant to other antibiotics. Amputation was imminently necessary, but the infection was defeated by the last resort of cannabis extract.

Herpes labialis (acute viral inflammation of the skin), otitis media (inflammation of the middle ear), and second degree burns have been treated successfully in the same way.

Krejci, *et al.*, identified the active substance as 3-methyl-6-isopropyl-4'-n-pentyl-2',6'-dihydroxy-1,2,3,6-tetrahydrodiphenyl-3'carbonic acid. It was prepared as follows:

"The comminuted drug was extracted with petroleum ether, light benzene, or benzine, a water-soluble salt made by treatment with NaOH, acidified with Hcl, th precipitated resin extracted with ether, and this distilled off. Such a purified extract showed anti-bacterial activity against *Mycobacterium tuberculosis* even when the extract was diluted to 1:150,000. Gram-negative organisms of the coli-typhus group... were not affected... Blood, blood plasma, and serum partially inactivated the anti-bacterial substance, reducing the antibiotic effect... Sodium salts of the isolated amorphous substance showed increasing activity with increase of pH from 5 to 7.5; whereas crystallized acetyl derivatives (acids) showed increasing activity when pH decreased from 8 to 5..." **(49-52)**

Cannabidiolic Acid (CBDA) in a concentration of 1:200,000 in tomato juice inhibits the growth of *Leuconostoc mesenteroides* without changing the flavor of the drink. CBDA may be treated at 60° C. for 2 hours without affecting its antibiotic activity. CBDA also inhibits lactic acid bacteria which grow along with yeast in fruit juices. CBDA is ineffective in raw fruits. **(53)**

2g.
Arthritis--- Pliny the Elder recommended cannabis in the treatment of arthritis. In his *Treatise on Hemp*, M. Marcandier mentioned this:

"The root of it boiled in water, and applied in the form of a cataplasm, softens and restores the joints or fingers or toes that are dried or shrunk. It is very good against the gout, and other humours that fall upon the nervous, muscular, or tendinous parts."

In 1994 *The Times of London* reported:

"The demand for marijuana among British pensioners has stunned doctors, police and suppliers... The old people use the drug to ease the pain of such ailments as arthritis and rheumatism. Many are running afoul of the law for the first time in their lives as they try to obtain supplies." **(54)**

2h.
Anxiety --- Most users of cannabis find that it produces calm, relaxed feelings, and some persons use it specifically to alleviate anxiety. Some inexperienced people become anxious or panicky over the side-effects (dizziness, dissociation, etc.), which usually can be minimized by lying down and being reassured that there is no danger. Cannabis or THC does not provide consistent relief from anxiety for clinical purposes. Cannabis can precipitate psychotic episodes in clinical schizophrenics. L. Hollister, *et al*., have shown that oral administration of low doses of cannabis preparations have a sedative and tranquilizing effect without producing psychoactivity. THC alone has been shown to induce anxiety; the effect is blocked by CBD. **(55, 56)**

2i.
Depression--- As early as 1843, Jacques-J. Moreau de Tours extolled the value of hashish in the treatment of melancholy. In his *Observations on Hashish and Mental Illness*, Moreau wrote:

"One of the effects of hashish that struck me most forcibly and which generally gets the most attention is that manic excitement always accompanied by a feeling of gaiety and joy inconceivable to those who have not experienced it... It is really happiness that is produced." **(57, 58)**

In 1943, Dr. George Stockings reported on the synthetic cannabinoid Synhexyl as "A New Euphoriant for Depressive Mental States", particularly neurotic depression. This is the most common psychiatric condition encountered in clinical practice. Stocking concluded:

"The results... suggest that we have in this class of compounds a promising therapeutic agent for the treatment of chronic and intractable depressive states... Synhexyl... has the advantages of low toxicity, minimum of side effects, ease of administration, and chemical stability. Its use is not contra-indicated by the presence of coexisting organic disease, and it is suitable for out-patient practice. Its use does not interfere with other therapeutic measures, such as occupational therapy or psychotherapy. It is free from risks and disadvantages of the more drastic forms of treatment..." **(59)**

The results of more recent clinical studies with THC have been inconsistent. W. Regelson, *et al*., reported a significant reduction of depression in cancer patients with THC, but J. Kotin, *et al*., found no significant anti-depressant activity in several bipolar and unipolar depressed patients. Ablon and Goodwin obtained a positive response with bipolar (manic) depressives, but not with unipolar patients. Be that as it may, many depressed out-patients who do not respond well to standard treatments find respite in marijuana. **(60-62)**

A survey Richard Warner, *et al.* (*Amer. J. Orthopsychiatry,* Jan. 1994) of substance abuse among the mentally ill found that patients who used marijuana enjoyed greater relief from their symptoms (anxiety, depression, insomnia) and suffered fewer hospitalizations. Most patients who used alcohol reported that it worsened their problems.

2j.
Inflammation --- The soothing effect of hemp on inflammatory disorders has been known for centuries. In modern times, cannabis has received recognition from physicians after some patients began reporting that smoking marijuana gave them relief from conditions such as pruritis and atopic dermatitis, an allergic reaction distinguished by severe itching and patches of inflamed skin. The problem can become life-threatening and disfiguring when it is complicated by infection.

Conventional treatments have only limited effect.

R. Turner, *et al*., have shown that THC has an anti-histamine effect. Mishra and Sahai found that an alcoholic extract of cannabis potentiates the anti-pyretic action of aspirin. D. Kosersky, *et al*., showed that oral administration of THC is 20 times more powerful that aspirin and twice as potent as hydrocortisone in its power to inhibit edema. CBD was found to produce over 90% inhibition of erythema at a dose of only 100 micrograms, whereas THC produced only 10% inhibition. **(63-66)**

Another treatment of burns, bedsores, and other skin afflictions is described by B. Carty, *et al*., in US Patent 4,917,889, comprising an aqueous mixture of calcium hydroxide and hempseed oil. **(67)**

2k.
Analgesia --- From ancient times to date, cannabis preparations have been used to relieve pain. Several modern studies have shown analgesic effects of cannabis and its derivatives and analogues in animals, but the human model gives conflicting results. S. Miletin, *et al*., found that cannabis smokers have increased tolerance to experimental pain. To the contrary, Hill, *et al*., failed to detect analgesic action with another type of experimental pain. A study of cancer patients by R. Noyes, *et al*., found THC to be effective in reducing pain, while W. Regelson, *et al*., reportedly found no significant analgesia. The variable and non-specific analgesic effects of THC are accompanied by mental obfuscation, so it is unlikely to become clinically useful for this purpose. Research continues with synthetic analogues of THC. Fairbairn and Pickens showed that an ethanol extract of cannabis will potentiate the effects of pethidine and other analgesics. J. Barrett, *et al*., subsequently isolated two new flavenoids, called Canflavons, which exhibit potent analgesia due to their peripheral activity. **(68-72)**

More recent animal studies by several researchers (Univ. California SF., Univ. Michigan, Brown Univ., Univ. Minnesota) have shown that cannabinoids are effective analgesics which are not addictive, nor do they develop any tolerance. The cannabinoids alleviate several types of pain, particularly that of arthritis. Kennth Hargreaves (Univ. Texas) reported that injection of a THC-analog at an arthritic site relieves associated inflammation:

Local administration of the cannabinoid to the site of injury may be able to both prevent pain from occurring and reduce pain which has already occurred without producing side effects.

2l.
Anesthesia --- THC and CBN prolong ether anesthesia, while CBD reverses the effect. When administered in combination with THC and CBN, CBD reverses the effect of CBN, but not of THC. **(73, 74)**

2m.
Alcoholism --- Several women's temperance societies in the 1890s recommended the recreational use of hashish rather than alcohol, because liquor obviously led to wife-beating, while hashish did not. In fact, it was considered to be an aphrodisiac, and experts recommended it for the purpose.

In 1891, Dr. J.B. Mattison recommended cannabis as "the best" treatment for delirium tremens. In 1953, Drs. Lloyd Thompson and Richard Proctor tested the synthetic cannabinoid Pyrahexyl in the treatment of alcohol withdrawal and obtained positive results:

We can report clinical alleviation of the symptoms in 59, or 84.28%. The 11 cases that did not show improvement (or 15.72%) did not differ a great deal clinically from the other 59... Perhaps an individual idiosyncrasy is the explanation, for it is known that individual reactions to other drugs do occur." **(75)**

In 1971, J. Scher proposed the use of cannabis as a substitute for alcohol in treatment of withdrawal and in delerium tremens. Rosenburg found no useful effect from cannabis alone. However, experiments conducted with marijuana as a reinforcer of disulfiram in the treatment of alcoholics did give positive results. **(76-78)**

During the rapid rise in popularity of marijuana among students in the 1960s, Dr. Halleck (Univ. Of Wisconsin) commented in the *New York Times*:

"Perhaps the one major positive effect of the drug is to cut down on the use of alcohol. In the last few years it is rare for our student infirmary to encounter a student who has become aggressive, disoriented, or physically ill because of excessive use of alcohol. Alcoholism has almost ceased to be a problem on our campuses. Many cannabists consider alcohol to be a debasing and degrading drug which they decline to use if marijuana is available."

2n.
Opiate Addiction --- In some cases, cannabis can serve to alleviate the symptoms of opiate withdrawal. As early as 1885, Dr. E. Birch reported the successful treatment of an opium addict and a chloral-hydrate addict by cannabis substitution and slow withdrawal. In 1891, Dr. J.B. Mattison held forth that "It has proved an efficient substitute for the poppy", and he described the case of "a naval surgeon, nine years a ten grains daily morphia taker... [who] recovered with less than a dozen doses. He recommended cannabis accordingly:

"[Cannabis is] a drug that has a special value in some morbid conditions, and the intrinsic merit and safety of which entitles it to a place it once held in therapeutics... Indian hemp is not here intended as a specific. It will, at times, fail. So do other drugs. But the many cases in which it acts well, entitle it to a large and lasting confidence." **(79-81)**

In a study of 49 cases of opiate withdrawal, conducted in 1942 by Drs. S. Allentuck and K. Bowman, cannabis was substituted for opium:

"The withdrawal symptoms were ameliorated or eliminated sooner, the patient was in a better frame of mind, his spirits were elevated, his physical condition was more rapidly rehabilitated, and he expressed a wish to resume his occupation sooner." **(82)**

Prof. Sandra Welch (Virginia Commonwealth Univ.) found that THC has a pronounced potentiating effect on morphine. At a low dose, THC increases the analgesic effect of morphine by 500%. At double the dose of THC, the effect is 10 times greater. The effect is not additive, and is relatively safe:

"One major advantage to a marijuana-morphine combination would be to reduce both the morphine component and a major morphine side-effect, depression of the respiratory system. It has already been confirmed that marijuana has no effect on the medulla, the center of the brain that controls respiration." **(164)**

This singular finding may lead to new methods of treating opiate addiction.

2o.
Diuretic --- H. Shirkey and J. Rodger reported a diuretic effect of cannabis roots; R. Sofia, *et al*., found that it disappears with increasing tolerance to the drug. **(83-85**)

2p.
Insomnia --- In 1890, the British physician J. Reynolds highly recommended cannabis indica for patients with "senile insomnia". The treatment remained effective for years without producing tolerance:

"In this class of cases I have found nothing comparable in utility to a moderate dose of Indian hemp."

CBD induces sleep in insomniacs, with fewer dreams and no side effects. Other conventional hypnotics produce undesirable consequences such as tolerance and addiction. Marijuana decreases slow-wave sleep but does not affect REM sleep. **(86)**

2q.

Herpes --- P. Morhan, *et al*., reported that THC reduces resistance to the herpes simplex virus. G. Lancz, *et al*., on the other hand, have shown that THC binds to the herpes virus and thus inactivates it. Topical application of an isopropyl alcohol extract of Cannabis has been used to provide symptomatic relief of herpes sores. It prevents blisters and makes sores disappear within a day. Cannabis also provided symptomatic relief from gonorrhea and syphilis. **(87, 88)**

2r.
Migraine --- In 1887, H. Hare gave medical testimony to the value of hemp in subduing and preventing attacks of migraine. In 1890, Dr. J. Reynolds stated:

"Very many victims of this malady have for years kept their suffering in abeyance by taking hemp at the moment of threatening, or onset of the attack."

In 1891, Dr. J.B. Mattison asserted that, of all the applications of cannabis, "Its most important use is in that opprobrium of the healing arts --- migraine." He concluded that the drug not only stopped migraine headaches, but also prevented the attacks. In *The Principles and Practice of Medicine* (1913), Dr. William Osler affirmed that "Cannabis is probably the most satisfactory remedy" for migraines. This fact is widely known amongst victims of migraine, but it has not been sufficiently explored by modern science. Z. Volfe, *et al*., reported that THC inhibits the release of serotonin from blood plasma platelets during migraine attacks, but the significance of the finding is unknown. **(89-93)**

2s.
Ulcers --- Stomach acid output decreases after the consumption of cannabis. This fact recommends it for the treatment of peptic ulcers, colitis, ileitis, spastic colon, and gastritis. Preparations of cannabis were used for that purpose in the 1890s. **(94, 95)**

2t.
Gynecology --- Cannabis has been used in the treatment of hyperemesis gravidum, a rare form of morning sickness in which the patient suffers from constant nausea and vomiting. When smoked or eaten during parturition, cannabis reduces pain and increases uterine contractions more quickly than ergot alkaloids. Native women in South Africa stupefy themselves with *dagga* to facilitate delivery. However, a heavily drugged baby might have a slow heartbeat and impaired ability to clear mucus from air passages. Dr. J. Grigor rediscovered the oxytocic properties of Indian hemp in 1852, and stated:

"It is capable of bringing the labor to a happy conclusion considerably within half the time that would otherwise have been required, thus saving protracted suffering to the patient, and the time of the practitioner."

Cannabis also has been used to treat mastitis, dysmenorrhea, and post-partum pain, and to increase lactation. **(96, 97)**

In 1883, Dr. John Brown recommended the use of cannabis in uterine dysfunctions, especially menorrhagia (excessive uterine bleeding):

"There is no medicine which has given such good results; for this reason it ought to take the first place as a remedy in menorrhagia... The failures are so few, that I venture to call it a specific in menorrhagia."

His contemporary colleague Dr. Robert Batho agreed:

"Considerable experience of its employment in menorrhagia has convinced me that it is... one of the most reliable means at our disposal... [Cannabis is] par excellence the remedy for that condition... It is so certain in its power of controlling menorrhagea, that it is a valuable aid to diagnosis in cases where it is uncertain whether an early abortion may or may not have occurred..." **(97)**

2u.

Anti-Oxidant ---Experiments conducted at the National Institute of Health (Bethesda MD) in 1998 showed Cannabidiol to be a potent anti-oxidant, even more effective than Vitamins C or E. The researchers induced ischemic strokes in rats, then treated them with CBD to neutralize free radicals which cause much of the damage associated with such strokes. The Israeli company Pharmos is conducting human clinical trials with the synthetic cannabinoid Dexnibinol to treat damage from strokes. CBD potentially offers an optional treatment (and possible prevention) of stroke, heart attacks, and neurodegenerative conditions such as Alzheimer's and Parkinson's diseases. **(98)**

3.
Hempseed & Nutrition

Legend says that Gautama Buddha ate only one hemp seed a day for six years while he waited for nirvana. Hempseed is eaten by many of India's poor people. A mixture called *bosa* consists of the seeds of Eleusine and hemp, and *mura* is made with parched wheat, amaranth or rice, and hempseed. The seeds are said to make all vegetables more palatable and complete foods. Sometimes it is an ingredient in chutney. *Bhang* and ripe hempseed also is used to flavor or strengthen the formulations of some alcohol beverages.

Hempseed has served as a primary famine food in China, Australia, and Europe as recently as World War Two. Medieval Christian monks ate hempseed gruel every day. Even in modern times, mothers of the Sotho tribe in South Africa are known to feed their babies with ground hempseed in pap. **(99)**

Hempseed now is an ingredient in food products, including flour, cheese, ice cream, yogurt, pudding, milk, spreads, candy, and meat substitutes. Prices are kept high by the cost of shipping, steam sterilization, repackaging, domestic shipping, and old equipment.

Hempseed contains all the essential amino acids and fatty acids, and is considered to be a complete food. The seed or achene contains 26-31% crude protein, 65% of which is globular edestin and albumin that is about 84% digestible. Lysine (the limiting protein in edestin) and other components are destroyed by the heat generated when hempseed is pressed for its oil. Addition of 1% lysine hydrochloride will restore the nutritional balance of heat-treated edestin. The meal also contains about 6% carbohydrates, 5-10% fat, 12% crude fiber, 10% moisture, and 7% ash. **(100, 101)**

T.B. Osborne studied hemp edestin and reported on its isolation and purification in 1892. Until the passage of the infamous Marihuana Tax Act in 1937, edestin was regarded as a standard example of the seed globulins (the third most abundant protein after collagen and albumin). They are vital to the maintenance of a healthy immune system. **(102, 103)**

The globulin edestin in hempseed closely resembles that found in human blood plasma, and it is easily digested, absorbed, and utilized. Hemp edestin is so completely compatible with the human digestive system, that the Czechoslovakian Tubercular Nutrition Study (1955) found hempseed to be the only food that can successfully treat the consumptive disease tuberculosis, in which the nutritive processes are impaired. **(104)**

When hempseed is fed to poultry on a regular basis, the birds do not go "off feed", and they do not require hormones to fatten them. Egg production also is increased. Hempseed meal has an effect analogous to that of grit in chicken diets in as much as the gizzard linings are found to be free of corrugations and erosions. **(105-107)**

In *Systema Agriculturae* (1675), John Worlidge commented:

"Hemp seed is much commended for the feeding of poultry and other fowl, so that where plenty thereof may be had, and a good return for fowl, the use thereof must needs be advantageous..."

4.

Hempseed Oil

Hempseed oil is used in paints, varnishes, inks and lubricants. When exposed to air, the fatty acids in hempseed oil form a hard film which makes it very useful in the manufacture of paints. The cellulose and other organic chemicals in cannabis can serve as feedstock for the manufacture of plastics and other synthetic substances. The oil has excellent surfactant properties which are put to use in several new hygiene products such as soap, shampoo, cosmetics and balms. For example, the SATIVA Gmbh (Germany) manufactures a detergent from hempseed oil and ruptured yeast; it removes stains with high efficiency, due to its very low surface tension. The detergent is used as an industrial cleaner for engines, and to clean petroleum-contaminated soil. It is completely bio-compatible and uses no phosphates, enzymes, or bleaches.

30-35% of the weight of hempseed is oil containing 80% of the unsaturated essential fatty acids (EFA), Linoleic Acid (LA, 55%) and Linolenic Acid (LNA, 21-25%). These are not manufactured by the body and must be supplied by food. The oil also contains about 8% by volume of palmitic, stearic, oleic and arachidic acids. The 80% EFAs in hempseed oil is the highest total percentage amongst the common plants used by man. Flax oil ranks second with 72% EFAs. The EFAs are very sensitive to heat, light and oxygen. For this reason, hempseed oil must be processed and stored carefully (in the cold, dark, and under vacuum) to preserve the potency of the EFAs. The fatty acid composition (% of total oil) of hempseed oil is: 18:3w3 (20%), 18:2w6 (60%), 18:1w9 (12%), 18:0 (2%), and 16:0 (6%).

EFAs are precursors to the prostaglandin series (PGE 1,2, & 3). PGE 1 inhibits the production of cholesterol and dilates blood vessels, and it prevents the clotting of blood platelets in arteries. A. Kemmoku, *et al*., found that a diet of hempseed causes the serum levels of total cholesterol to drop dramatically. Blood pressure also decreases after several weeks of eating hempseed, due to the steady, adequate supply of EFAs. **(108-110)**

U. Erasmus, author of *Fats that Heal, Fats that Kill*, states that the proportions of Linoleic Acid (LA) and Linolenic Acid (LNA) in hempseed oil are perfectly balanced to meet human requirements for EFAs, including gamma-linoleic acid (GLA). Unlike flax oil and others, hempseed oil can be used continuously without developing a deficiency or other imbalance of EFAs. The peroxide value (PV, the degree of rancidity) of hempseed oil is only 0.1-0.5, which is very low and safe and does not spoil its taste. In comparison, the PV of virgin olive oil is about 20, and the PV of corn oil is about 40-60. **(111-116)**

A study conducted by Struempler and Nelson (Univ. of Utah) in 1997 indicates that legal hempseed oil contains enough cannabinoids to produce a positive result with standard urine drug test procedures. Samples continued to test positive for two days after the subject stopped ingesting hempseed oil. This effect has caused consternation in the drug-testing industry, and has led to lawsuits. The drug-testing industry is lobbying to ban hempseed oil. **(116)**

Table 1
Properties of Hempseed Oil

Table 2
Fatty Acid Analysis of Hemp Seed Oil

Table 3
General Analysis of Hemp Seed

Table 4
Typical Minera l Assay of Hemp Seed

Table 5
Typical Protein Analysis of Hemp Seed

5.
Public Health

The public health effects of cannabis consumption have been examined repeatedly by official panels, beginning with the Indian Hemp Drugs Commission in 1893. None of the studies have found reason to proscribe cannabis, and several have recommended that it be legalized.

5a.
The Indian Hemp Drugs Commission (1893-94) --- In the 1870s, it was common practice for government officials in India to blame ganja as a cause of insanity and crime, since users of ganja were poor, helpless, and convenient scapegoats. In 1871, the Indian Secretary of State directed all local administrators to inquire into the ganja problem. After reviewing the correspondence it received, the government duly announced that there was no proof that hemp drugs caused criminal behavior any more than any other drugs, such as opium or cocaine. The government also stated:

"There is no doubt that its habitual use does tend to produce insanity, the total number of cases of insanity is small in proportion to the population, and not large enough [to be of concern] even in proportion to the number of ganja smokers..."

Local officials were not convinced and continued to complain. Another commission was appointed in 1877 to study the issue. It was determined that the only way to reduce consumption was to make "the tax on this article as high as it can possibly bear":

"The policy of Government must be to limit its production and sale by a high rate of duty without placing the drug entirely beyond the reach of those who will insist upon having it."

Eventually the English bureaucrats also began to complain, until The Indian Hemp Drug Commission was established to study the issue. The commissioners did an excellent job, questioning the morality of hemp use, the possibility of controlling its cultivation, the grade of cannabis used (bhang, charas, or ganja), and the problem of admixtures of opium, datura, etc..

The Commission also studied the extent of use of hemp as a drug, its social and religious usage, its physical and psychological effects, and its relation to insanity and crime. When the Commission investigated the "very sketchy" records of insane asylums, they found that cannabis had been scapegoated:

"It is a common practice to enter hemp drugs as the cause of insanity where it has been shown that the patient used these drugs," and to change the reported "cause of insanity" from "unknown" to "ganja smoking"...

"It must be borne in mind that it is impossible to say that the use of hemp drugs was in all [61 of 222] cases the sole cause of insanity, or indeed any part of the cause... Taking these accepted cases as a whole, we have a number of instances where the hemp drug habit has been so established in relation to insanity that, admitting (as we must admit) that hemp drugs as intoxicants cause more or less of cerebral stimulation, it may be accepted as reasonably proved, in the absence of evidence of other causes, that hemp drugs do cause insanity...

"Summary of conclusions regarding effects... It has been clearly established that the occasional use of hemp in moderate doses may be beneficial; but this use may be regarded as medicinal in character. It is rather to the popular and common use of the drugs that the Commission will now confine their attention...

"In regard to the physical effects, the Commission have come to the conclusion that the moderate

use of hemp drugs is practically attended by no evil results at all... The moderate use of hemp drug appears to cause no appreciable physical injury of any kind... As in the case of other intoxicants, excessive use tends to weaken the constitution and to render the consumer more susceptible to disease... It is but rarely that excessive indulgence in hemp drugs can be credited with inciting to crime or leading to homicidal frenzy...

"Total prohibition of the cultivation of the hemp plant for narcotics... is neither necessary nor expedient in consideration of their ascertained effects... When subjected to careful examination, the grounds on which the allegations [against hemp] are founded prove to be in the highest degree defective." **(117-119)**

5b.
The Canal Zone Studies --- The Republic of Panama prohibited the "cultivation, use and consumption of the herb Kan-Jac" (cannabis) in 1923. At the same time, reports of American soldiers smoking the drug prompted the provost marshal to prohibit its possession by military personnel in the Canal Zone. A formal committee was convened in April 1925 to investigate the issue. Col. J.F. Siler (chairman of the committee), *et al*., observed some soldiers, four doctors, and two police officers smoking marijuana without ill effect. Lt. Col. Chamberlain declared:

"I think we can safely say, based upon samples we have smoked here and upon the reports of individuals concerned, that there is nothing to indicate any habit forming tendency or any striking ill effects. All of the statements to the effect that two or three puffs produce remarkable effects are nonsense, judging from our experience."

In its report to the governor, the committee recommended:

"No steps [should] be taken by the Canal Zone authorities to prevent the sale or use of marihuana... There is no evidence that marihuana, as grown and used is a 'habit-forming' drug in the sense in which the term is applied to alcohol, opium, cocaine, etc., or that it has any appreciable deleterious influence on the individuals using it... The influence of the drug when used for smoking... apparently has been greatly exaggerated. Most of the reports appear to have little basis in fact. There is no medical evidence that it causes insanity... The British [Indian Hemp Drugs Commission] which investigated the effects of Cannabis sativa... came to the conclusion that... most of the effects attributed to it were due to other substances (opium, datura, stramonium, cantharides, etc.) added to the preparations which were used...."

Repeated investigations in 1929 and 1931 produced the same results. Col. Siler's summary of the Canal Zone investigations was published in *Military Surgeon* (November 1933):

"The Committee reached the following conclusions:

"There is no evidence that marijuana as grown here is a 'habit-forming' drug in the sense in which the term is applied to alcohol, opium, cocaine, etc., or that it has any appreciable deleterious influence on the individual using it...

"Delinquencies due to marijuana smoking... are negligible in number when compared with delinquencies resulting from the use of alcoholic drinks which also may be classed as stimulants and intoxicants. **" (120, 121)**

Years later during the Vietnam War, the drug problem certainly did exist for the military, and it was severely complicated by the easy availability of opiates and by the CIA's trafficking of heroin. It was estimated that about 60% of the US soldiers in Vietnam used marijuana to make their situation tolerable.

5c.
The LaGuardia Committee Report --- In 1938, while Frank H. LaGuardia was mayor of New York, he requested that the N. Y. Academy of Medicine appoint a special subcommittee "to make a survey of existing knowledge on this subject [marijuana] and carry out any observation required to

determine the pertinent facts regarding this form of drug addiction and the necessity for its control." In 1944, Mayor LaGuardia's Committee on Marihuana published its report, *The Marihuana Problem in the City of New York*. The study was comprised of sociological, clinical, and pharmacological studies. The clinical study considered medical aspects (symptoms, behavior, and organic and systemic functions, addiction, tolerance, and possible therapeutic applications), psychological and intellectual functioning, emotional reactions, general personality structure, and family and community ideologies.

In its final report, the Committee drew the following conclusions (among others):

"The practice of smoking marijuana does not lead to addiction in the medical sense of the word... 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. Marihuana is not the determining factor in the commission of major crimes... Juvenile delinquency is not associated with the practice of smoking of marihuana. The publicity concerning the catastrophic effects of marihuana smoking in New York City is unfounded...

"Indulgence in marihuana does not appear to result in mental deterioration... 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... [A comparison between users and non-users] accustomed to daily smoking for a period of from two and a half to sixteen years, showed no abnormal system functioning which would differentiate them from the non-users. There is definite evidence in this study that marihuana smokers were not inferior in intelligence to the general population and that they suffered no mental or physical deterioration as a result of their use of the drug."

When subjects were tested for their family values and ideologies while under the influence of marihuana, it was found:

"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." **(122)**

5d.
The Wooton Report --- The British Advisory Committee on Drug Dependence appointed the Hallucinogens Sub-Committee, chaired by Baroness Barbara Wooton of Abinger, to review the literary evidence about cannabis. The *Wooton Report on Cannabis*, issued in 1968, confirmed earlier studies:

"Having reviewed all the material available to us we find ourselves in agreement with the conclusion reached by the Indian Hemp Drugs Commission appointed by the Government of India (1893-1894) and the New York Mayor's Committee on Marihuana (1944) that the long-term consumption of cannabis in moderate doses has no harmful effects." **(123, 124)**

5e.
The Shafer Commission --- The Comprehensive Drug Abuse Prevention and Control Act of 1970 also established the national Commission on Marijuana and Drug Abuse, chaired by former Pennsylvania Governor Raymond Shafer. In summary, the commission concluded:

"WHO USES THE DRUG? At least 24 million Americans over the age of 12 have used marihuana at least once, and at least 8.3 million are current users. Two percent (500,000) of the 'ever-users' can be classified as heavy users and use the drug more than once a day.

"EFFECTS OF MARIHUANA ON THE INDIVIDUAL: There is no evidence that experimental or intermittent use of marihuana causes physical or psychological harm...

"The immediate effects of marihuana intoxication on the individual's organs or bodily functions are transient and have little or no permanent effect. However, there is a definite loss of some

psychomotor control and a temporary impairment of time and space perception.

"No brain damage has been documented relating to marihuana use.

"There is no reported case of a single human fatality in the United States proven to have resulted solely from the use of marihuana.

"No reliable evidence exists to indicate that marihuana causes genetic defects in man.

"Psychosis resulting from marihuana use is extremely rare and such reactions tend to occur in predisposed individuals.

"MARIHUANA & PUBLIC SAFETY: The evidence indicates that marihuana does not cause violent or aggressive behavior or crime.

"Recent research has not proven that marihuana use significantly impairs driving ability...

"MARIHUANA & THE PUBLIC HEALTH & WELFARE: The present level of marihuana use in American society does not constitute a threat to the public health.

"Although some segments of society fear that marihuana use leads to idleness and "dropping out", little likelihood exists that the introduction of a single element such as marihuana would significantly change the basic personality of any person; rather, an individual is more likely to "drop out" when circumstances join to produce psychological pressures which he cannot handle effectively.

"Except for some individuals for whom drug-taking, perhaps including marihuana use, has become a central figure of their lifestyles, the marihuana user is not "sick" or in need of "treatment".

"MARIHUANA & OTHER DRUGS: The overwhelming majority of marihuana users do not progress to drugs other than alcohol, although statistically marihuana users are more likely to experiment with other drugs than non-users. In general, a person willing to experiment with one drug is more likely to experiment with another drug than a person not predisposed to experiment to begin with...

"The weakest link between marihuana use and use of other drugs is between marihuana and heroin; about 4% of those who have tried marihuana have also tried heroin."

In its summary, the Commission noted:

"Once existing policy was cast into the realm of public debate, partisans on both sides of the issue over-simplified the question of the effects of the drug on the individual. Proponents of the prohibitory legal system contended that marihuana was a dangerous drug, while opponents insisted that it was a harmless drug or was less harmful than alcohol or tobacco.

"Any psychoactive drug is potentially harmful to the individual, depending on the intensity, frequency, and duration of use. Marihuana is no exception. Because the particular hazards of use differ for different drugs, it makes no sense to compare the harmfulness of different drugs. One may compare the harmfulness of different drugs. One may compare, insofar as the individual is concerned, only the harmfulness of specific effects. Is heroin less harmful than alcohol because, unlike alcohol, it directly causes no physical injury? Or is heroin more harmful than alcohol because at normal doses its use is more incapacitating in a behavioral sense?

"Assessment of the relative dangers of particular drugs is meaningful only in a wider context which weighs the possible benefits of the drugs, the comparative scope of their use, and their relative impact on society at large...

"Looking only at the effects on the individual, there is little proven danger of physical or

psychological harm from experimental or intermittent use of the natural preparations of cannabis, including the resinous mixtures commonly used in this country. The risk of harm lies instead in the heavy, long-term use of the drug, particularly of the most potent preparations.

"The experimenter and the intermittent users develop little or no psychological dependence on the drug. No
organ injury is demonstrable...

"Total prohibition is functionally inappropriate. Apart from the philosophical and constitutional constraints... a total prohibition scheme carries with it significant institutional costs. yet it constributes very little to the achievement of our social policy. In some ways it actually inhibits the success of that policy.

"The primary goals of a prudent marihuana social control policy include preventing irresponsible use of the drug, attending to the consequences of such use, and deemphasizing use in general. Yet an absolute prohibition of possession and use inhibits the ability of other institutions to contribute actively to these objectives. For example... the illegality of possession and use creates difficulties in achieving an open, honest educational program, both in the schools and in the home." **(125)**

The Commission recommended changes in the Federal law, thus:

"Possession of marihuana for personal use would no longer be an offense, but marihuana possessed in public would remain contraband subject to summary seizure and forfeiture. Casual distribution of small amounts of marihuana for no renumeration, or insignificant renumeration not involving profit would no longer be an offense."

Instead of heeding the sage advise of the Shafer Commission, President Nixon declared "war on drugs" in a message to Congress on June 17, 1971, and we now suffer accordingly.

5f.
The Jamaica Study --- In 1970, the National Institute of Mental Health (NIMH) Center for Studies of Narcotic and Drug Abuse sponsored the Jamaica Study, "the first project in medical anthropology to be undertaken and... the first intensive, multi-disciplinary study of marijuana use and users to be published." **(126-129)**

The Jamaica project staff studied the legislation, ethnohistory, and social complex of ganja, and the acute effects of smoking in a natural setting. Clinical studies were conducted, and examinations made of respiratory function and hematology, electroencephalography, and psychiatric evaluations and psychological assessments ere made of the 70 subjects. The complex ganja culture from which the subjects were drawn pervades and greatly influences the working-class community. In some communities, 50% of the males over 15 smoked ganja regularly, and only 20% were non-smokers.

In his forewords to Vera Rubin and L. Comitas' *Ganja in Jamaica* (1975), Raymond Shafer (Chairman of the Shafer Commission, v.i.) stated:

"While Americans are concerned with the alleged 'amotivational' and drug escalation effects of marihuana, ganja in Jamaica serves to fulfill values of the work ethic; for example, the primary use of ganja by working class males is as an energizer. Furthermore, there is no problem of drug escalation in the Jamaican working class; as a multipurpose plant, ganja is used medicinally, even by non-smokers, and is taken in teas by women and children for prophylactic and therapeutic purposes. For such users, there is no reliance even on potent medicines, amphetamines or barbiturates, let alone heroin and LSD. Further, the use of ganja appears to be a "benevolent alternative" to heavy consumption of alcohol by the working class. Admissions to the mental hospital in Jamaica for alcoholism accounts for less than 1% annually, in contrast to other Caribbean areas where ganja use is not pervasive and admission rates for alcoholism are as high as 55%.

"This study indicates that there is little correlation between use of ganja and crime, except insofar as

the possession and cultivation of ganja are technically crimes. There were no indications of organic brain damage or chromosome damage among the subjects and no significant clinical (psychiatric, psychological or medical) differences between the smokers and controls. The single medical finding of interest, and this is a trend, is the indication of functional hypoxia among heavy, long-term chronic users. Ganja is customarily mixed with tobacco, and ganja smokers are also heavy cigarette smokers... It was impossible to distinguish between clinical effects of ganja and tobacco smoking and cigarette smoking; it is, consequently suggested that smoking per se may be a factor in this finding.

"Despite its illegality, ganja use is pervasive, and duration and frequency are very high; it is smoked over a longer period in greater quantities with greater THC potency than in the United States, without deleterious social or psychological consequences. The major difference is that both ganja use and expected behaviors are culturally conditioned and controlled by well-established tradition. The findings throw new light on the cannabis question, particularly that the relationship between man and marihuana is not simply pharmaceutical, and indicate the need for new approaches."

The Jamaica Study also afforded due respect to the Rastafari religion, in which ganja is regarded as a sacrament and a gift of God:

"In addition, ganja, unlike alcohol, has special symbolic attributes. Rastafarian metaphysics, for example, emphasizes and brings into focus general concepts derived from working-class views of ganja. For them, it is "the wisdom weed" of divine origin, an elixir vitae, documented by Biblical chapter and verse which over-rides man-made proscriptions. Religious authority thus validates and fortifies commitment to its use; there is no need to invoke religious validations of alcohol consumption, which is legally and socially accepted. While drinking in the local bar may enhance feelings of sociability, the sacred ganja permits a sense of religious communication, marked by meditation and contemplation."

Melanie Dreher, an anthropologist at the University of Miami, was a key member of the Jamaica team. In her study, entitled *Working Men and Ganja*, she found that the drinking of ganja tea or tonic extracts is widespread, even by non-smokers and children:

"The health-rendering effects of these preparations are reported for a wide variety of general and specific disorders including the alleviation of symptoms specific to arthritis, rheumatism, gonorrhea, hypertension, asthma, bronchitis, urinary retention, recurrent malaria, impotence, vision problems, dermatological eruptions, pneumonia, colds, and various intestinal complaints. Ganja teas and tonics are particularly recommended for children... The preparations are administered to children to cure marasmus and infant diarrhea, relieve the pain of teething, and in general provide an all-purpose medicine for the young..."

5g.
The Costa Rica Study ---In 1971, the University of Florida and National Institute of Health (NIH) cooperated in a study led by William Carter, *et al*., of *Chronic Cannabis Use in Costa Rica*. 84 cannabis smokers and 156 controls who had never smoked ganja were subjected to a battery of sophisticated medical and psychological examinations. The results were equivalent to those of the Jamaica study, with few notable differences: the similarities outweighed the differences between users and non-users, and ganja smokers generally enjoyed longer-lasting relationships with their mates. The Costa Rica project also examined testosterone levels and immunology as affected by cannabis. No relation was found between cannabis use and testosterone levels, nor were the subjects' immune functions impaired. The neurophysiological functions, intelligence and personality of the subjects did not differ significantly from the matched controls. Chronic cannabis consumption did not impair intelligence or cause any apparent brain damage. In short, the Costa Rica study found no significant health consequences to chronic cannabis smokers.

The NIH refused to accept the report for publication, demanding that it be rewritten three times. Still not satisfied, the NIH then had it rewritten by another editor, and then printed only 300 copies. Fortunately, a copy of the original version was leaked to NORML, which made it public. **(130-132)**

5h.
The Greek Study --- In their study of hashish-smokers in Greece, conducted in 1975, C.N. Stefanis and M.R. Issodorides presented microphotographs of damaged human sperm and suggested that the low arginine content in the sperm nuclei indicated "deviant maturation". However, it was later revealed that the photographs had been retouched; the study was fraudulent. Stefanis and Issodorides were obliged to issue a "correction of misinformation" in the journal *Science*. **(133-136)**

5i.
The Coptic Study --- This 1981 study by two UCLA psychologists, Drs. J. Thomas and Jeffrey Schaeffer tested the physical and mental health of 10 members of the Ethiopian Zion Coptic Church, whose members believe that the use of ganja is a spiritual act. The church has been given official recognition as an organized religion by the governments of Jamaica and Florida. The Coptic Study showed that the IQs of these people actually increased since they began to use ganja. **(137)**

5j.
The Expert Group --- In 1982, the British Advisory Council on the Misuse of Drugs released its *Report of the Expert Group on the Effects of Cannabis Use*, in which it offered the following conclusions:

"1. There is insufficient evidence to enable us to reach incontestable conclusions as to the effects on the human body on the use of cannabis;
"2. But that much of the research undertaken so far has failed to demonstrate positive and significant harmful effect in man is attributable solely to cannabis;

"3. Nevertheless in a number of areas there is evidence to suggest that deleterious effects may result in certain circumstances;
"4. There is a continuing need for further research, particularly of the epidemiological characteristics of cannabis use and on the effects of its long-term use by humans;

"5. There is evidence to suggest that the therapeutic use of cannabis or of substances derived from it for the treatment of certain medical conditions may, after further research, prove to be beneficial." **(138)**

5k.
The Relman Committee --- In 1982, the Institute of Medicine (IOM) of the National Academy of Sciences issued its comprehensive report on *Marihuana and Health* after a 15-month study of the chemistry and pharmacology of cannabis, its effects on the respiratory and cardiovascular systems, brain, and other biological systems, plus the behavioral and psychological effects and cannabis' therapeutic potential. Their specific conclusions are included in the sections following. **(139)**

5l.
The LeDain Commission ---The Canadian government a Commission of Inquiry into the Non-Medical Use of Drugs in May 1969. It was popularly called the LeDain Commission after its chairman, Gerald LeDain (Dean of Osgoode Hall Law School, York University, Toronto). In its 320-page *Interim Report* (April 1970), the commission described the need to legalize the simple possession of cannabis (and other psychoactive drugs) in terms of the cost of prohibition:

"Its enforcement would appear to cost far too much, in individual and social terms, for any utility which it may be shown to have... The present cost of its enforcement, and the individual and social harm caused by it, are in our opinion, one of the major problems involved in the non-medical use of drugs... Insofar as cannabis, and possibly the stronger hallucinogens like LSD, are concerned, the present law against simple possession would appear to be unenforceable, except in a very selective and discriminatory kind of way. This results necessarily from the extent of use and the kinds of individual involved. It is obvious that the police cannot make a serious attempt at full enforcement of the law against simple possession...

"The Commission is of the opinion that no one should be liable for imprisonment for simple

posssession of a psychotropic drug for non-medical purposes...

"Many of the young people who have appeared before us have been critical of the drug education to which they have been exposed. In particular, they have said that the attempts to use 'scare tactics' have 'backfired' and destroyed the credibility of sound information...

"The conclusion we draw from the testimony we have heard is that it is a grave error to indulge in deliberate distortion or exagerration concerning the alleged dangers of a perticular drug, or to base a program of drug education upon a strategy of fear. It is no use playing 'chicken' with young people; in nine cases out of ten they will accept the challenge...

"1. The use of marijuana is increasing in popularity among all age groups of the population, and particularly among the young;

"2. This increase indicates that the attempt to suppress, or even to control its use, is failing and will continue to fail --- that people are not deterred by the criminal law prohibition against its use;

"3. The present legislative policy has not been justified by clear and unequivocal evidence of short term or long term harm caused by cannabis;

"4. The individual and social harm (including the destruction of young lives and growing disrespect for law) caused by the present use of the criminal law to suppress cannabis far outweighs any potential for harm which cannabis could conceivably possess, having regard to the long history of its use and the present lack of evidence;

"5. The illicit status of cannabis invites exploitation by criminal elements, and other abuses such as adulteration; it also brings cannabis users into contact with such criminal elements and with other drugs, such heroin, which they might not otherwise be induced to consider.

"For all of these reasons, it is said, cannabis should be made available under government-controlled conditions of quality and availability."

6.
Physical Effects

Many reports written in the 1970s about the physical effects of THC and cannabis smoke were grossly biased for political purposes, no thanks to the infamous Gabriel Nahas and his coterie of propagandists. Their corruption of the scientific process severely retarded the progress of cannabis medical research at that time and since then. The Nahas scandal is discussed in Section 10 (Propaganda).

6a.
Smoking --- THC is not a respiratory depressant. However, heavy smoking of marijuana (several times daily) causes mild constriction of airways. Smoking can produce inflammation and aggravate existing sinusitis, pharyngitis, bronchitis, or coughing. Antibiotics do not provide relief, but a decrease of consumption does. Light smoking of marijuana has little effect on breathing, except for bronchodilation. Many asthmatics are thankful for this. Ventilatory mechanics and gas exchange remain normal, except for a transient stimulatory effect on oxygen consumption and CO_2 ventilation. Marijuana decreases the salivary flow in the maxillary gland, resulting in a dry mouth. **(140-142)**

Alveolar macrophages, the antibacterial mechanisms of the lung, are slightly affected by water-soluble cytotoxins found in marijuana smoke, but the reported experimental results are conflicting and inconclusive. The heat of the smoke depresses the activity of the ciliated esophageal cells. There is scant evidence of a direct carcinogenic effect of smoke or tar. Some experiments with marijuana tar have produced mutations in several strains of bacteria, and rats which have been painted with the tar have developed benign skin tumors. Marijuana smoke has been found to

contain many of the same carcinogenic compounds as tobacco, but to date there have been no cases of cancer attributed to smoking cannabis. The effect of marijuana seems to accelerate (rather than initiate) malignant changes. The traditional water-pipe (hookah or bong) serves well to mitigate the irritating effects of the smoke. **(143, 144)**

Dr. Paul Donald has presented preliminary circumstantial evidence of 20 cases of upper aerodigestive tract malignancy (squamous cell carcinomas of the tongue, lips, neck, tonsils, etc.) in 20 young patients (average age: 26.2 years) who smoked marijuana. Only four of the group did not also use tobacco, alcohol and other drugs. A few of the cases had used cannabis only occasionally in high school and college. It is questionable if their use of marijuana was the etiological cause of the malignancies. Many of the same irritants in tobacco smoke are found in marijuana smoke, some of them (such as napthalene and benzopyrene) in greater amounts than in tobacco. Biopsies of chronic hashish smokers conducted by Tennant and others have shown cellular abnormalities such as proliferating basal epithelial cells and atypical cells, but no malignancies. **(145-148)**

Vitamin C and cysteine have been found to reverse or protect hamster lung tissue cultures against the atypical growth induced by exposure to marijuana smoke. **(149)**

The most evident and immediate effect of smoking or ingesting cannabis is a rapid increase in heart rate (up to 90 beats/minute) which diminishes within an hour and poses no threat to a healthy individual. Blood pressure rises slightly, and postural hypotension can occur. Premature ventricular contractions have been reported. Chronic use of cannabis produces a consistent gain in plasma volume caused by sodium retention. After a few weeks, smokers develop a tolerance to the cardiac and psychotropic effects of THC. However, people with atherosclerosis or other coronary disease are at risk and should not compromise themselves with cannabis. In a case reported in 1979, a 25 year old man developed an acute subendocardial infarction after smoking marijuana. **(150)**

6b.
Hypothermia --- THC produces hypothermia (lower body temperature) in animals, but experiments with humans have shown little or no such effect except at high doses. Instead, skin temperature, metabolic rate, and heart rate are increased, but core temperature remains unchanged. Marijuana also inhibits sweating. **(151, 152)**

6c.
Chrono-Pharmacology --- E.L. Abel found a chrono-pharmacological effect of THC in conjunction with hypothermia in mice injected with THC in DMSO, morning, noon and night. The greatest change in body temperature occurs in the afternoon, and the least change in the morning and at night. **(153)**

6d.
Toxicity --- Cannabis is non-toxic. No deaths from an overdose of cannabis have ever been verified. A few poorly documented reports have listed cannabis as the cause of death, but closer examination has shown the accusations to be untenable. **(154-15)**

A few near-fatal intravenous injections of a water extract of marijuana have been reported. In 1970, one such foolish person suffered reversible anuritic acute renal failure, hypotension, tachycardia, transient leukopena, fever, pulmonary venous congestion, and an enlarged liver. **(157)**

It has been estimated that it would be necessary to chain-smoke about 800 marijuana cigarettes to kill a human, and even then one would probably receive a lethal dose of carbon monoxide first. In comparison, only 60 mg of nicotine or 300 ml of alcohol can kill a person. The LD_{50} for THC in animals is between 20-40 mg/kg/iv, or 800-1400 mg/kg orally depending on the species. **(158, 159)**

6e.
Driving --- Experimental studies of driving conducted on test courses have shown that performance is impaired by marijuana. Judgment, concentration, and car handling skills are affected, and the influence may persist for a full day afterward. The determination of marijuana intoxication requires

a blood or urine sample; this has made it difficult to study role in driving violations and accidents. Furthermore, the detrimental effects on motor skills may persist for several hours after the subjective euphoria has passed. Comparison of several studies indicates that about 15% of road accidents involve marijuana. Soderstrom, *et al*., found that up to 34.7% of vehicular trauma patients they examined were under the influence of marijuana. **(160)**

In 1993, police in Memphis TN outfitted an ambulance as a "drug van" with a toilet, interview area, and videotaping equipment . They proceeded to make on-the-spot tests of the urine of any reckless drivers who appeared not to be drunk. 150 drivers were sampled; 89 (59%) tested positive for marijuana or cocaine.

Marijuana was implicated in the 1987 crash of a freight train and a Metroliner, resulting in 16 dead and 48 injured persons. Cannabinoids were detected in the blood of the conductor of the freight train, which had run through 3 red signals before the crash. In 1988, a switchman whose error caused a derailment and a train crash was found to have smoked marijuana sometime before the accident.

In 1994, the National Highway Transportation Safety Administration (NHTSA) released a study made by K.W. Terhune, *et al.*, in 1992 on "The Incidence and Role of Drugs in Fatally Injured Drivers" (DOT-HS-808-065). The release of the report was delayed because it apparently contradicted the official federal propaganda that illicit drugs constitute a major danger to drivers. Alcohol was found in 51.5% of 1882 dead drivers. Only 17% showed traces of other drugs. THC was present in 6.7%; cocaine in 5.3%, amphetamine in 1.9%, and tranquilizers in 2.9%, etc. Two-thirds of the drug-using drivers also tested positive for alcohol.

6f.
Antidotes --- Chinese herbalists use the mung bean (*Phaseoli radix*) as an antidote to cannabis intoxication. Hindu Ayurvedic practitioners treat the effects of ganja with purgations, head baths with cold water, unction with sandalwood paste, with fragrant and cooling flowers. Drinks are prepared with sugar, milk and butter, or with lemonade or other sour drinks. Patients are made to ingest betel leaves, camphor, and cloves. Silk clothing should be worn, and sleep is recommended. More recently, it has been found that Magnesium Pemoline (Cylert) neutralizes the mental effects of cannabis. **(161)**

6g.
Potentiation --- The Indian Hemp Drugs Commission reported that the root of *juar* (sorghum) is employed to increase the potency of *bhang* preparations, but is considered to be too powerful to use by itself. The unknown chemical in sorghum reportedly is found only in cold-weather *ringhi* and *shialu* varieties raised in the area of Bombay and in the Central Provinces, and it occurs and disappears "within certain fixed limits of time and locality." More recently, it was claimed that the "aversive odor stimulus" of burning hair added to marijuana increased the "subjective high" and decreased the heart rate in subjects. **(162)**

6h.
Interactions --- The cannabinoids bind to plasma proteins and may interact with other drugs thus bound. Cannabinoids are metabolized by hepatic enzymes and may interact with other drugs (i.e., alcohol, barbiturates, and theophyllin) by competing for the enzyme substrate. **(163)**

Prof. Sandra Welch (Virginia Commonwealth Univ.) found that THC has a pronounced potentiating effect on morphine. At a low dose, THC increases the analgesic effect of morphine by 500%. At double the dose of THC, the effect is 10 times greater. The effect is not additive. Prof. Welch noted:

"One major advantage to a marijuana-morphine combination would be to reduce both the morphine component and a major morphine side-effect, depression of the respiratory system. It has already been confirmed that marijuana has no effect on the medulla, the center of the brain that controls respiration." **(164)**

THC enhances the depressive effects and prolongs the sleeping time of barbiturates. It also produces a significant decrease in heart rate. **(165)**

THC significantly potentiates PCP in a dose-related manner. The LD_{50} values are not affected. THC and PCP interact by potentiating the depressant effects and antagonizing the stimulating effects of each other. The combined effects also are attenuated. PCP sometimes is found as a contaminant of street marijuana, having been added to increase the apparent potency, and hence the sales value, at a low cost. **(166, 167)**

THC and CBD prolong the sleep time with Quaalude. Reportedly, on rare occasions, Quaalude has been smoked with marijuana. **(168)**

Marijuana, tobacco, and alcohol often are consumed together, and their effects are additive, increasing the impairment of psychomotor performance. Nicotine uniformly augments the bradycardia and hypothermia effects of THC . **(169-171)**

The mental and cardio-vascular effects of THC and amphetamines are additive and related to aggregation, not to metabolic process interactions. At lower doses, THC enhances amphetamine stimulation; in high doses it blocks the stimulant action. **(172, 173)**

6i.
Contra-Indications --- Marijuana has been a complicating factor in the emergency treatment of diabetes. In one case, ingestion of marijuana was followed by severe diabetic ketoacidosis. Another patient developed diabetes mellitus following the ingestion of marijuana over a 3-day period. Plasma glucose and insulin levels increase after marijuana use. THC has been shown to impair glucose tolerance in rats, to inhibit the action of exogenous insulin, and to antagonize the release of endogenous insulin. CBD antagonizes the action of insulin. **(174, 175)**

The administration of cannabis smoke to dogs receiving penicillin-G reportedly caused coarse tremors and eleptiform episodes in 90% of chronically-dosed dogs. Humans are advised to avoid this combination.

In summary, marijuana should not be used by children or pubescent youths, pregnant or nursing women, people with chronic heart, lung, or liver disease or who are diabetic, epileptic, or psychotic. Nor should anyone operate motor vehicles or other dangerous machinery while under the influence of cannabis.

6j.
Contaminants --- *Aspergillus niger*, *Salmonella*, *Chaetomium globosum*, and other fungi have been found to contaminate cannabis. *Penicillium chrysogonum* also has been found on hemp; it is pathogenic to hemp seeds and leaves. M. Chusid, *et al*., reported that a 17-year old male was debilitated by pulmonary aspergillosis acquired from smoking marijuana. Outbreaks of salmonellosis in Ohio and Michigan were linked to marijuana use in 1981. The symptoms include diarrhea, fever, and abdominal pain. **(176)**

Some samples of marijuana have been found to be adulterated with other drugs, particularly PCP, which can produce severe psychotic reactions. In one reported case, marijuana was soaked in a solution of scopolomine, dried, and smoked. The result was an acute though brief psychotic episode. **(177)**

The dust inhaled by soft hemp workers (hacklers and scutchers) can cause byssinosis or cannabosis, and otherwise causes more chronic lung disease and lower forced expiratory volume (FEV) than controls of the same age. Chronic respiratory symptoms (cough, phlegm, and dyspnea) develop even after exposure to hemp dust. It is also a mild hemolytic. The degree of hemolysis increases with the pH. Tracheobronchial lymph nodes develop immunoblasts and become swollen with increased lymphocytes. A study of 100 Spanish hemp hacklers showed the average age of death to be 39,6 years, compared to regular farm workers hose average lifespan was 67.6 years. **(178-181)**

The oral administration of diadril (25 mg) and 500 mg ascorbic acid (vitamin C) prevented or restored breathing functions due to byssinosis.

D. Drachler found that several soldiers who shared a hashish-pipe contracted Hepatitis-B. Saliva is a vehicle for transmitting the virus. It is also possible to transmit other diseases in this manner, making it a dangerous practice. **(182)**

6k
Immunology --- THC or marijuana has a mild, transient suppressive effect on the immune system, but hashish has been shown to have a temporary stimulating effect on the immune system. The reason is unknown. Some persons develop antibodies in response to marijuana, sometimes including allergic reactions. Many AIDS patients consume marijuana to stimulate their appetites and to suppress vomiting, but the practice might weaken the immune system in some cases and introduce salmonella, etc.. **(183-186)**

6l.
Male Reproduction --- THC inhibits the synthesis of testosterone in Leydig cells by blocking the cleavage of cholesterol ester. THC produces a mild, reversible effect on sperm production, but does not seem to have a negative effect on male fertility. Various animal and human studies have measured reduced weights of the testes and prostate gland, lower levels of testosterone in blood plasma, and suppressed spermatogenesis after acute or chronic administration of THC or cannabis. **(187)**

A few cases of "pubertal arrest" have been reported, i.e., a 17-year old male who had smoked marijuana several times daily since age 11, yet still had not attained puberty. After a few months of abstinence, his growth accelerated, his sex organ enlarged, and his levels of testosterone and luteinizing hormone (LH) rose to normal levels.

In 1974, R. Kolodny, *et al*., reported that the levels of LH, plasma testosterone, follicle-stimulating hormone, prolactin, and sperm counts of 20 men who regularly smoked marijuana were significantly lower than controls. The report sparked a controversy that has smoldered for years since then. J. Mendelson, *et al*., J. Coggins, *et al*., and other researchers obtained other results, attributed to differences in study designs, routes of administration, the potency and purity of the drug, and bias. Because the hormonal suppression of spermatogenesis takes more than 4 weeks to develop, W. Hembree, *et al*., concluded that the observed short-term effects are caused by direct action upon the seminiferous tubular epithelium. Possibly this could lead to the development of a new type of male contraceptive. **(188-191)**

In the Jamaica project study of subjects' chromosomes, the researchers reported:

"No abnormal configurations, exchanges or dicentrics were seen... Chronic cannabis smoking appears to have no significant effect on the mitotic chromosomes of human peripheral blood lymphocytes in the Jamaican male. The incidence of mild chromatid breakage... was no higher than that found randomly in other studies...

"These findings lend no support to the recent allegation that chromosome damage... even in those who use cannabis "moderately" is roughly the same type and degree of damage as in persons surviving atom bombing..."

A study by Dr. Donald Tashkin, *et al.* (UCLA), published in 1997, found that habitual smokers of marijuana do not suffer a greater annual rate of decline in their lung function than do non-smokers. Their report concluded:

"Findings from the present long-term, follow-up study of heavy, habitual marijuana smokers argue against the concept that continuing heavy use of marijuana is a significant risk factor for the development of [chronic lung didease]... Neither the continuing nor the intermittent marijuana smokers exhibited any significantly different rates of decline... No differences were noted between

even quite heavy marijuana smoking and nonsmoking of marijuana."

In contrast, tobacco-only smokers suffered a significant rate of decline in their lung functions. It was noted that regular marijuana-smokers are more likely to suffer mild bronchitis or wheezing than non-smokers.

6m.
Gynecomysteia --- The enlargement of breast glands in males is a common transient occurrence among adolescents. Gynecomysteia also is caused by cirrhosis of the liver, by testicular, adrenal and pituitary tumors, and by steroids, amphetamines, and other drugs. In 1972, J. Harmon and M. Aliapoulios presented 14 cases of breast development in young men who had smoked marijuana for several years. Other causes were excluded. Three patients enjoyed a decrease in breast development after abstaining from marijuana. A controlled study of 11 gynecomastic US soldiers in Germany found only "a non-association between idiopathic gynecomysteia and chronic cannabis use." Experiments with rats showed that THC stimulated male breast development, possibly by affecting the release of pituitary prolactin. Human studies found a transient increase in serum prolactin concentration. If cannabis does induce gynecomysteia, it may depend on the dosage, potency, frequency of use, and the endocrinology of the individual. **(192-195)**

6n.
Female Reproduction --- Experiments with rats have demonstrated some teratogenic effects (malformations) and decreased conception caused by cannabis, but the results are considered to be of marginal relevance to humans. The route of administration, solvent medium, concentration and high doses used in the experiments were extremely unnatural and unrealistic. Insulin, penicillin, cortisone and aspirin produce the same effects. The Relman Committee report on *Marijuana and Health* concluded:

"Although there is widespread use of marijuana in young women of reproductive age, there is no evidence yet of any teratogenic effects of high frequency or consistent association with the drug. There are isolated reports of congenital anomalies in the offspring of marijuana users, but there is no evidence that they occurred more often in users than in nonusers..." **(196)**

In any case, pregnant women probably should not smoke marijuana.

Jonathan Buckley studied *in utero* exposure to marijuana:

"Maternal use of mind altering drugs prior to and during pregnancy was found to be associated with an 11-fold increased risk (p=0.003) of ANLL [Acute Non-Lymphatic Leukemia] in offspring when compared to offspring of controls... We conclude that, although the association of marijuana exposure *in utero* and subsequent development of ANLL has not been firmly established, the evidence is strong enough to justify further study."

Other investigators have reported that babies born of marijuana-smoking mothers are shorter, weigh less, and have smaller heads, and cry less at birth. **(197)**

A study by M.C. Dreher, *et al.*, published in the journal *Pediatrics* tested 24 Jamaican newborns who had been exposed to cannabis prenatally, plus 20 non-exposed babies from socially and economically matched mother. The infants were compared at day one, three, and thirty by a trained examiner who was unaware of which babies' mothers smoked. No differences were found on day 1 or 3, but at day 30 the children of the cannabist mothers scored much higher in tests of their reflexes, autonomic stability, and general irritability. The children of heavy smokers (at least 21 times a week) scored significantly higher in 10 of the 14 measured characteristics (alertness, orientation, robustness, regulatory capacity, etc.). No negative effects were observed. The researchers also offered a speculation:

"It is possible... that the outcomes at one month are related to neonatal exposure to marijuana constituents via breast milk. Nineteen of the mothers reported that cannabis increased their appetites and relieved their nausea during pregnancy." **(198)**

6o.
Mutagenesis & Cytogenesis --- THC is not carcinogenic, but the tar from marijuana smoke has been shown to produce mutations in bacteria, and skin tumors on rats painted with the tar. Extensive testing by H. Glatt, *et al*., A. Zimmerman, *et al*., and others failed to demonstrate any mutagenic effect or any inhibition of DNA repair. Despite the worst efforts of Gabriel Nahas and his colleagues, other researchers and peer reviews have determined that marijuana and THC do not cause chromosome damage. However, it may affect chromosome segregation during the course of cell division, resulting in daughter cells with abnormal numbers of chromosomes. **(199-201)**

After examining the available evidence, the Relman Committee concluded:

"A variety of effects on cellular processes have been reported, usually based on studies of *in vitro* systems. The low water solubility of the cannabinoids and the need to add solvents and emulsifiers, along with the tendency to use higher *in vitro* concentrations than occurs in living animals, makes interpretation of such experiments difficult... The weight of the evidence from *in vitro* cultures of human cells and from *in vivo* animal and human studies is that neither marijuana nor THC causes chromosome breaks." **(202-204)**

6p.
Cerebral Atrophy --- In the 1970s, considerable controversy was generated by sensational reports by R. Heath, *et al*., alleging that smoking marijuana caused "brain damage." The animals were forced to smoke large amounts of marijuana in a few minutes through a smoking machine, without any opportunity to breathe normally: the animals were suffocated with the smoke. Any brain damage was certainly caused by oxygen starvation, not by the drug. Other experiments with rats have demonstrated severe damage to the hippocampus using huge doses (10-60 mg/kg/day for 60 days), but such experiments bear no relation to real-life conditions and are not relevant to humans except for purposes of prohibitionist propaganda. **(205-207)**

The Relman Committee summarized the issue thus in their report on *Marijuana and Health*:

"There is substantial controversy about whether marijuana causes changes in brain structure or in brain cells. Two studies have reported that marijuana produces changes in brain morphology. Both suffer sufficiently from methodological and interpretational defects that their conclusions cannot be accepted. Furthermore, other studies have not found changes in morphology...

"There is no persuasive evidence that marijuana causes morphological changes in brain structure. Electron micrographic studies of monkey brains indicating morphologic changes are methodologically flawed and cannot be used as evidence for an effect of marijuana on brain cell morphology..."

7.
Mental Effects

Cannabis' mental effects are notorious. They are generally characterized by euphoria, but that is a simplistic description. The clinical effects are much more complex, and sometimes frightening, but apparently benign:
7a.
Perception --- Marijuana produces a wide spectrum of perceptual effects. These include mood changes, facilitation of interpersonal behavior, and reduction of aggressive behavior. In other words, marijuana usually makes people feel happy, sociable, and peaceful. A variety of perceptual phenomena have been recorded by Charles Tart, who made a psychological study of marijuana intoxication. Characteristic visual perceptions include patterns, vivid imagery, and improved peripheral vision. Hallucinations, auras, and dimensional changes occur less often. The senses of taste, smell, touch and hearing are augmented with new qualities and greater intensity. Usually there is a craving for sweets. The sense of time is consistently distorted by marijuana; events seem to last

much longer than they really do. Another common effect is a strong sense of being here-now. The phenomenon of *deja vu* occurs more often. In some subjects, time becomes non-linear. This can be problematic if the person is not aware of techniques for manipulating the effect to advantage. Paranormal phenomena such as empathy, intuition, or telepathy, and mystical experiences often are reported. Marijuana often is considered to be an aphrodisiac in that it can enhance sexual experiences. Emotions are felt more strongly. People often report that they feel more childlike and open to new experiences. **(208-212)**

Reese Jones repeatedly tested marijuana and placebos containing no THC, and found that the placebo produced about 60% subjective "high" responses. Average quality marijuana gave about 70% high response. Much of the high results from "set and setting" (the subject's expectations and surroundings). Cannabis is unique among drugs in that the user can develop so-called "reverse tolerance", requiring less and less to get high.

Dr. Andrew Weil elaborated on the concept of a placebo-effect by marijuana and reverse tolerance in *The Natural Mind* (1972):

"If all of the so-called psychological effects of marihuana are really not attributable to marihuana, and if the physical effects that are attributable to it are so unimpressive, what, then, is marihuana? Certainly it is about as far from being a drug as it can be and still merit the name drug rather than herb. In fact, nutmeg, which we are used to thinking of as a spice, has far more pharmacologic power than hemp. To my mind, the best term for marihuana is active placebo -- that is, a substance whose apparent effects on the mind are actually placebo effects in response to minimal physiological action... all psychoactive drugs are really active placebos since the psychic effect arise from consciousness, elicited by set and setting, in response to physiological clues... Not surprisingly, regular marijuana users often find themselves becoming high spontaneously... The user who correctly interprets the significance of his spontaneous highs take the first step away from dependence on the drug to achieve the desired state of consciousness and the first step toward freer use of his nervous system..." **(213)**

7b.
Adverse Effects --- Cannabis sometimes evokes a panic reaction from naive smokers (and from prohibitionists). As many as a third of regular users occasionally experience paranoid or panic reactions, hallucinations, confusion, and other adverse reactions, especially in unfavorable settings and at high doses. The problem occurs most often when cannabis is ingested, apparently because the dose cannot be controlled as it can with smoking. Medical treatment is rarely sought because the situation is easily self-controlled in most cases. Chinese herbalists recommend mung bean as an antidote.

Perhaps the most extreme case on record involved an episode of "koro" following cannabis-smoking. Koro is a state of acute anxiety characterized by retraction of the penis into the abdomen. In this instance, a Hindu man who smoked ganja for the first time experienced extreme depersonalization and could not feel his legs:

"He then tried to feel the presence of his legs by deep pressure with his fingers, and to his utter surprise and horror he discovered that is penis had seemingly gone inside the abdomen beyond grasping or holding. At this feeling of "penis loss" he shouted for help... His friends came hurriedly and "dragged out" the receded penis manually. He was in a state of acute psychogenic shock... He was taken to a nearby pond with his penis held by one of his friends and he was put into the water... Eventually the victim perceived that the retracting penis had become stable and regained its usual morphology." **(214)**

The so-called "acute brain syndrome" or delirium attributed to cannabis abuse is distinguished by mental clouding, perceptual disturbances, disorientation, impaired goal-directed thinking and behavior, memory disorders, disruptions of sleep patterns, and changes in psychomotor control. The symptoms develop quickly and fluctuate rapidly. The syndrome manifests during drug use and soon disappears with abstinence. Most of the reported cases have come from India and the Middle East,

where the potency of cannabis products is generally higher and consumption is more widespread than in Europe and America. Cases have been reported among American soldiers in Vietnam and in Europe; the men recovered in 3 to 11 days and returned to duty. **(215-218)**

A sufficient number of reports have accumulated to indicate a temporal association between the use of marijuana and the return of preexisting symptoms of mental illness such as hypomanic behavior. Schizophrenics may be particularly susceptible to such relapse. Depressive patients treated with THC have shown a high incidence of dysphoria reactions. Nonetheless, many psychotic persons smoke marijuana to relieve their symptoms; this indicates that negative or positive reactions are highly individualized. **(219-221)**

7c.
Learning--- In state-dependent learning, information is learned while intoxicated and is best recalled while intoxicated with the same drug. State-dependent learning is performed more slowly with marijuana. Recall usually is impaired, apparently because of poor concentration causing a deficit in the attention-storage phase of memory. **(222)**

Numerous tests have shown that marijuana has adverse effects on short-term memory, persisting for 2-3 hours. Some researchers contend that the effects persist for at least 6 weeks. Some have gone so far as to claim that marijuana causes brain damage. On the other hand, Arthur Leccese (Prof. of Psychology, Kenyon College, OH), has researched the effects of drugs on memory, and offers a second opinion:

"There is really no evidence that any of the recreational compounds --- cocaine, marijuana, LSD --- are capable of causing significant or prolonged brain damage that would have any effect on anybody's ability to function adequately in a cognitive way. That is, unless you overdosed. If you're not sure whether you ever overdosed, then you didn't. I teach a course where we talk about memory loss as a consequence of brain damage, and if you scour that literature, you'll find that --- short of overdose --- the only drugs we know do it are alcohol and other organic solvents, glue sniffing, stuff like that. The only that is demonstrated to be certainly associated with brain damage... to areas involving memory is alcohol." **(223, 224)**

7d.
Dependence --- *The Merck Manual of Diagnosis and Therapy* (15th edition, 1987) states:

"Chronic or periodic administration of cannabis or cannabis substances produces some psychic dependence because of the desired subjective effects, but no physical dependence; there is no abstinence syndrome when the drug is discontinued.

"Cannabis can be used on an episodic but continual basis without evidence of social or psychic dysfunction. In many users the term dependence with its obvious connotations probably is misapplied.

"Many of the claims regarding severe biologic impact are still uncertain, but some are not. Despite the acceptance of the "new" dangers of marijuana, there is still little evidence of biologic damage even among relatively heavy users. This is true even in the areas intensively investigated, such as pulmonary, immunologic, and reproductive function... The chief opposition to the drug rests on moral and political, and not a toxicologic, foundation". **(225, 226)**

7e.
Amotivational Syndrome --- Some chronic users of marijuana exhibit a group of personality changes which clinicians are wont to call "amotivational syndrome". The changes include: apathy, loss of ambition and energy, poor concentration, and a decline in work or scholastic performance. This group of symptoms also is found in nonsmokers, and it is not always associated with regular use of marijuana. Since many troubled individuals seek relief or "escape" in drugs, frequent use of marijuana can be counter-productive behavior for such people, and for adolescents in particular. **(227, 228)**

The issue of "amotivational syndrome" largely began in 1971, when the *Journal of the American Medical Association* published an article entitled "Effects of Marihuana on Adolescents and Young Adults", written by Harold Kolansky and William Moore. It was accompanied by an editorial proclaimation:

"[This study is] the first real evidence based on good research of the harmful effects of marihuana. Heretofore, medicine has been able to say only that there was no good evidence of harm from smoking pot. Now we have some evidence."

Kolansky and Moore described 38 marijuana smokers, 13 to 24 years old:

"[They]showed an onset of psychiatric problems shortly after the beginning of marihuana smoking; these individuals had either no premorbid psychiatric history or had premorbid psychiatric symptoms shortly after the beginning of marihuana smoking; these individuals had either no premorbid psychiatric history or had premorbid psychiatric symptoms which were extremely mild or almost unnoticeable in contrast to the serious symptomatology which followed the known onset of marihuana smoking... It is our impression that our study demonstrates the possibility that moderate-to-heavy use of marihuana by persons with a predisposition to psychiatric illnesses may lead to ego decompensation ranging from mild ego disturbance to psychosis..."

Although the authors showed an association between smoking marihuana and mental problems, they did not demonstrate causal relationship, nor did they explain the mechanism of "ego decompensation", which they repeatedly stated was due to the "toxic" effect of marihuana. Thus, the damage as done to the truth, if not the marihuana smokers.

The unqualified report generated a storm of controversy. The eminent Dr. Lester Grinspoon offered this observation:

"All in all this paper is, from a scientific point of view, so unsound as to be all but meaningless. Unfortunately, from a social point of view it will have a great significance in that it confirms for those people who have a hyperemotional bias against marijuana all the things they would like to believe happen as a consequence of the use of marijuana and in turn it will enlarge the credibility gap which exists between young people and the medical profession. I am convinced that if the American Medical Association were less interested in the imposition of a moral hegemony with respect to this issue and more concerned with the scientific aspects of this drug this paper would not have accepted for publication."

In 1990, J. Shedler and J. Block published the results of a rigorous longitudinal study of 101 youths whom they followed from age 3 to 23, examining their psychological health in relation to drug use. The researchers found that adolescents who had experimented occasionally with drugs, particularly, were well adjusted. Abusers and non-users were not so happy:

"Adolescents who used drugs frequently were maladjusted, showing a distinct personality syndrome marked by interpersonal alienation, poor impulse control, and manifest emotional distress. Adolescents who had never experimented with any drug were relatively anxious, emotionally constricted, and lacking in social skills. Psychological differences between frequent drug users, experimenters, and abstainers could be traced to the earliest years of childhood and related to the quality of their parenting. The findings indicate that (a) problem drug use is a symptom, not a cause, of personal and social maladjustment, and (b) the meaning of drug use can be understood only in the context of an individual's personality structure and developmental history...

"The most effective drug prevention programs might not deal with drugs at all... Current efforts at drug 'education' seem flawed on two counts. First, they are alarmist, pathologizing normative adolescent experimentation... and perhaps frightening parents and educators unnecessarily. Second, and of far greater concern, they trivialize the factors underlying drug abuse, implicitly denying their depth and pervasiveness." **(229)**

Johnathan Shedler said:

"It's absolutely not the case that experimentation leads to abuse... The few youths who did become addicts shared three psychologic factors that made them susceptible: poor impulse control; unhappiness --- they were anxious, distressed or depressed; and alienation --- they had few friends, they weren't invested in anything like sports or family relations."

Psychologist Judith Brook concluded from her similar studies that "parental support, warmth, responsiveness, affection and the child's identification with the parent" were fundamental to prevention of drug abuse in later years, Mellinger, *et al*., also refuted the association of marijuana with amotivation; instead, they found that poly-drug use (alcohol, amphetamines, cocaine, etc.) is associated with the syndrome. **(230)**

A comparison of marijuana users and non-users revealed that individuals who did not smoke marijuana scored slightly higher on psychological tests for sociability, communality, responsibility, and achievement by conformity, perhaps because they were "too deferential to external authority, narrow in their interests and over-controlled." Marijuana smokers scored higher for empathy and independent achievement, and had better social perception and more sensitivity to the feelings and needs of other persons. The researchers concluded that marijuana smokers possess all the "achievement motivation necessary for success in graduate school."

Interviews conducted in 1970 by N. Zinberg and A.Weil with regular and heavy smokers of marijuana revealed that they felt "bitter about society's attitude toward marijuana... Being defined as a deviant and law breaker, for something they could not accept as criminal, had driven them into increasingly negative attitudes toward the larger society." C. Davis reported in the *Drug Journal Forum* (1977) that the psychological health of young marijuana smokers did not appreciably differ from that of non-users or psychedelic users. **(231, 232)**

Scientific American magazine reviewed and evaluated the many studies claiming to show that drug use in the workplace is counter-productive or dangerous. It was found that all but one of the studies were poorly designed or had been misinterpreted. The single valid study, published in the *Journal of General Internal Medicine*, found "no difference between drug-positive and drug-negative employees" in terms of job performance or evaluations by their supervisors, except for the fact that 11 persons out of the 158 who passed their drug tests were fired within a year, while none of those who tested positive after being hired were dismissed. **(233)**

Contrary to Kolansky and Moore, the Jamaica Study found otherwise:

"Almost unanimously, informants categorically stated that ganja, particularly in spliff form, enabled them to work harder, faster and longer. For energy, ganja is taken in the morning, during breaks in the work routine, or immediately before particularly onerous work... The effects of small doses of ganja in the natural setting are negligible, while concentration on the work task itself increases markedly after smoking...

"The belief that ganja acts as a work stimulant and the behavior that this induces casts considerable doubt on the universality of what has been described in the literature as 'the amotivational syndrome', or a 'loss of desire to work', to compete, to face challenges. Interests and major concerns of the individual become centered around marijuana and drug use becomes compulsive... In Jamaica, and one would suspect in other cannabis-using, agricultural countries, ganja is central to a 'motivational syndrome', at least on the ideational level. Ganja... rather than hindering, permits its users to face, start and carry through the most difficult and distasteful manual labor..."

[Dr. Andrew] Weil suggests that in the United States 'amotivation' is a cause of heavy marihuana smoking rather than the reverse.

Melanie Dreher, a member of the Jamaica Study, made a similar finding:

"[There was] no impairment of the ability to work, no apathy. In fact, the opposite seemed to be

true... But anthropological findings have been disappointingly underutilized in the forming of national policy."

Dreher said that members of a presidential commission told her they weren't interested in the results of her work if it failed to show negative effects of marijuana use. **(234)**

8.
Neurology

In 1984, Miles Herkenham and his colleagues at NIMH mapped the brain receptors for THC, using radioactive analogs of THC developed by Pfizer Central Research. They found the most receptors in the hippocampus, where memory consolidation occurs. There we translate the external world into a cognitive and spatial "map". Receptors also exist in the cortex, where higher cognition is performed. Very few receptors are found in the limbic brainstem, where the automatic life-support systems are controlled. This may explain why it is so difficult to die from an overdose of cannabis. The presence of THC receptors in the nasal ganglia --- an area of the brain involved in the coordination of movement --- may enable the cannabinoids to relieve spasticity. Some receptors are located in the spinal cord, and may be the site of the analgesic activity of cannabis. A few receptors are found in the testes. These may account for the effects of THC on spermatogenesis and its alleged aphrodisiacal properties.

S. Munro, *et al*., located a peripheral CX5 receptor for cannabinoids in the marginal zone of the spleen. The Anandamide/cannabinoid receptor site, a protein on the cell surface, activates G-proteins inside the cell and leads to a cascade of other biochemical reactions which generate euphoria. **(235-240)**

CBD antagonizes THC and competes with THC to fill the cannabinoid receptor site. THC also exerts an inhibitory effect on acetylcholine activity through a GABA-ergic mechanism. It significantly increases the intersynaptic levels of serotonin by blocking its reuptake of into the presynaptic neuron. THC also elevates the brain level of 5-hydroxy-tryptamine (5-HT) while antagonizing the peripheral actions of 5-HT. **(241-243)**

In 1990, Patricia Reggio, *et al*., developed a molecular reactivity template for the design of cannabinoid analgesics with minimal psychoactivity. The analgesic activity of the template molecule (9-nor-9b-OH-HHC) is attributed to the presence and positions of two regions of negative potential on top of the molecule. The template places all cannabinoid analgesics on a common map, no matter how dissimilar their structures.

The brain produces Anandamide (Arachidonylethanolamide), which is the endogenous ligand of the cannabinoid receptor. It was first identified by William Devane and Raphael Mechoulam, *et al*., in 1992. Anandamide has biological and behavioral effects similar to THC. Devane named the substance after the Sanskrit word *Ananda* (Bliss). The discovery of Anandamide and its receptor site has unlocked the door to the world of cannabinoid pharmacology. **(245-248)**

9.
Compassionate Cannabis

Robert C. Randall, a glaucoma patient, was arrested in 1975 for cultivating cannabis. He sustained a defense of "medical necessity": THC is proven to reduce Intra-Ocular Pressure (IOP) in glaucoma with negligible side-effects (to wit, euphoria or anxiety), when other conventional treatments have failed. Over 7,000 Americans go blind from glaucoma each year. More than 250,000 people in the USA suffer from the incurable disease, and so do millions more worldwide. Being obliged to supply Randall with legal medical marijuana, the federal government created the Compassionate Investigative New Drug program, through which qualified patient could obtain their supply. The application involved a ludicrous amount of paperwork, and few doctors were willing to take on the task. The Public Health Service has suspended the program in 1993. Assistant Health Secretary

Philip Lee wrote: "Sound scientific studies supporting these claims are lacking despite anecdotal claims that smoked marijuana is beneficial", but suggested that the PHS may allow privately funded experiments to determine if cannabis has any health benefits.

A review of the extant literature on Cannabis shows many conflicting claims. The results obtained by one researcher or group often cannot be duplicated by others, and sometimes are inconsistent in themselves. The problem may be due to any of several causes, such as purity of materials, small numbers of test subjects, different external conditions, routes of administration, and differences in protocols. The problem has also been complicated by politically bias pseudo-scientific studies conducted by such as Gabriel Nahas, *et al*.

Since New Mexico first allowed the medical use of marijuana in 1978, some 40 states have passed similar legislation, but their programs have been suppressed by federal prohibition, despite official protests from the states.

9a.
NORML vs. DEA ---The obnoxious recidivism posed by the various federal agencies which are concerned with cannabis, is well-illustrated by the example set by NORML vs. DEA. The Controlled Substances Act (CSA) of 1970 placed marijuana under Schedule I, the most restrictive classification, thus making it unavailable for medical use. The provisions of the CSA allow individuals and organizations to petition for rescheduling. Accordingly, the National Organization for the Reform of Marijuana Laws (NORML) filed a petition with the Bureau of Narcotics and Dangerous Drugs (BNDD) in May 1972, urging the BNDD to reclassify cannabis to Schedule II so doctors could prescribe it as a medicine. The petition was summarily rejected without holding public hearings as required by the CSA, and it was falsely claimed that reclassification would violate the obligations of the United Nations Single Convention on Narcotic Substances.

NORML filed suit in the US Court of Appeals, which issued its decision in January 1974, ordering the BNDD to reconsider the matter. The BNDD and its successor, the Drug Enforcement Administration (DEA), did not take action until September 1975, when the DEA denied NORML's petition "in all respects." NORML again appealed to the US Court of Appeals, which decided against the DEA in April 1977 and ordered the agency and the Department of Health, Education & Welfare (DHEW) to undertake a scientific and medical evaluation of the petition. Despite repeated court orders to review the petition, the DEA only continued to delay and divert the issue. On October 16, 1980, the Court again ordered the DEA to review the petition "in its entirety", but the DEA ignored the judgment.

In March 1982, The Food & Drug Administration (FDA) published a recommendation that pure THC be reclassified to Schedule II of the CSA. The DEA reclassified THC under Schedule II in April 1982. The FDA approved synthetic THC for medical use in June 1985 under the chemical name Marinol.

NORML was joined by the Alliance for Cannabis Therapeutics (ACT), which also filed 13 "patient petitions" with the DEA. Again and again, NORML and ACT appealed for a review of their joint petition. After still more delaying action, the DEA saw fit to conduct hearing, only 15 years after the initial court order to that effect. The hearings were held from Summer 1986 until Summer 1988 (Docket No. 86-22).

Administrative law judge Francis Young reviewed the documentary evidence and the testimonies of the many patients and doctors who appeared as witnesses, and issued his 69-page ruling on September 6, 1988. He wrote, in part:

"Marijuana, in its natural form, is one of the safest therapeutically active substances known... The provisions of the [Controlled Substances] Act permit and require the transfer of marijuana from Schedule I to Schedule II... The cannabis plant considered as a whole has a currently accepted medical use in treatment in the United States. There is no lack of accepted safety for use under medical supervision and it may lawfully be transferred from Schedule I to Schedule II. The judge

recommends the Administrator transfer cannabis. Based upon the facts established in this record and set out above, one must reasonably conclude that there is accepted safety for use of marijuana under medical supervision... The evidence in this record clearly shows that marijuana has been accepted as capable of relieving the distress of great numbers of very ill people, and doing so with safety under medical supervision. It would be unreasonable, arbitrary and capricious for the DEA to continue to stand between those sufferers and the benefits of this substance in light of the evidence in this record."

While he concluded that the perceived dangers of marijuana do not outweigh its medical benefits, Judge Young noted that "In strict medical terms, marijuana is far safer than many foods we commonly consume."

DEA administrator John Lawn summarily rejected the court's decision and made his own arbitrary judgment:

"Accounts of these individuals' suffering and illnesses are very moving and tragic. They are not, however, reliable scientific evidence... These stories of individuals who treat themselves with a mind-altering drug, such as marijuana, must be viewed with great skepticism. There is no scientific merit to any of these accounts."

In 1989, Lawn charged that advocates of medical cannabis have a "Dark Ages" mentality and have "attempted to perpetrate a dangerous and cruel hoax on the American public."

In April 1991, the Appeals Court decided that Lawn "had acted with a vengeance" to reject Judge Young's recommendation, and ordered the DEA to restudy its opposition to marijuana. The DEA then demanded that cannabis must meet a new set of standards for accepted medical use, based on the Food, Drug & Cosmetic Act. The DEA required: an acceptable scientific determination and knowledge of cannabinoid chemistry and its toxicology and pharmacology in animals, designed on scientific clinical trials of its effectiveness in humans, general availability, information about the use of marijuana, general recognition of cannabis' clinical use in medical journals, texts, and pharmacopoeia and by physicians associations and other organizations, and its recognition and use by a majority of practitioners.

The plaintiffs appealed once more, and on April 1971, a three-judge panel of the US Courts of Appeal (DC Circuit) ordered the DEA to reconsider its opposition to marijuana as medicine and to reevaluate its criteria, which were illogical and impossible to satisfy. Again, the DEA refused to act, and in March 1992 issued its final rejection of any petitions to reschedule cannabis. On February 8, 1994, the US Court of Appeals upheld the DEA decision to keep marijuana classified as a Schedule I substance.

Meanwhile, in May 1991, the United Nations deigned to reassign THC from Schedule I (as established by the 1971 Convention on Psychotropic Substances) to Schedule II, because the pure substance has been proven useful for several medical purposes, and it is "not widely used outside legitimate medical channels." The Cannabis plant remained in Schedule I, because it is "used illegally by millions of people worldwide."

In June 1991, Herbert Kleber, the Deputy Director of National Drug Control Policy, assured the public that anyone with a legitimate medical need for cannabis would be able to receive a Compassionate IND. Yet, only about 50 persons ever were approved for the program. Nonetheless, NIDA processed and distributed more than 160,000 marijuana cigarettes for human use between 1979 and 1990. James Mason, chief of the Public Health Service (PHS), canceled the program in March 1992 after a surge of new applications from AIDS patients. The increase in applications was prompted by a 1990 court decision supporting the medical necessity defense posed by Kenneth and Barbara Jenks, a young Florida couple who contracted AIDS from a tainted blood transfusion received by the husband, a hemophiliac. They smoked home-grown marijuana to relieve the nausea and loss of appetite caused by AIDS and their AZT treatments. Mason said the free-marijuana program ended because "If it is perceived that the Public Health Service is going around giving

marijuana to folks, there would be a perception that this stuff can't be so bad. It gives a bad signal. I don't mind doing that if there is no other way of helping these people... But there is not a shred of evidence that smoking marijuana assists a person with AIDS." He also claimed that inhalation of marijuana smoke could aggravate the lung ailment known as pneumocystitis carinii pneumonia, which afflicts some people with AIDS. Mason said he also feared that AIDS patients, crazed on marijuana, would be more likely to practice unsafe sex." A PHS spokesman denied charges that the move was politically motivated, saying that Mason made the decision because doctors at the NIMH said patients who used marijuana could be treated with other drugs instead. The decision was also influenced by the "apparent inconsistency of the government manufacturing and distributing marijuana while it is waging a war on drugs."

DEA Administrator Robert Bonner said, "Claims of marihuana's medical benefits are a cruel hoax to offer false hope to desperate people," and he compared the modern movement to support the medical use of cannabis to when, "a century ago, many Americans relied on snake oil salesmen to pick their medicines."

9b.
***The RAP Report* ---** In 1990, the office of California Attorney General John Van de Kamp tried to censor the 20th annual report issued by its Research Advisory Panel (RAP. The office had been mandated to research "the nature and effects" of marijuana and to provide "compassionate medical access" to cannabis. The RAP was required to report yearly to the governor and the Legislature on its research projects. RAP chairman Edward O'Brien, Jr., strictly limited research and failed to provide cannabis for qualified patients. Instead, he insisted on foisting synthetic THC (Nabinol, Marinol, etc.) onto applicants. The program expired in September 1989 after the staff members decided that "not enough people had been treated to justify its extension."

The RAP recommended that the state legislature "immediately modify" the state's anti-drug policy and permit the cultivation of cannabis for personal use. Instead, the report was censored and published with this disclaimer:

"The executive summary and commentary sections of this annual report have been deleted at the direction of the attorney general."

Vice Chairman Frederick Meyers, MD, and other panel members decided to publish the report themselves, an did so. In its commentary section, the group wrote:

"Our 'War on Drugs' for the past fifty years has been based on the principle of prohibition and has been manifestly unsuccessful in that we are now using more and a greater variety of drugs, legal and illegal...

"Legislation aiming at regulation and decriminalization (not 'legalization') should be formulated as novel efforts that could be quickly modified if unsuccessful.

"The first suggestions for demonstration legislation, rationalized and detailed herein are: 1) Permit the possession of syringes and needles. 2) Permit the cultivation of marijuana. 3) As a first step in projecting an attitude of disapproval by all citizens toward drug use, take a token action in forbidding sale or consumption of alcohol in state-supported institutions devoted in part or whole to patient care and educational activity...

"As Prohibition failed to stop people from consuming alcohol, so too have today's drug laws failed to halt drug abuse and may actually be exacerbating some of the problems associated with it. We are currently at a similar point in our history where much of the leadership and a considerable fraction of the public are coming to question whether prohibition is not equally unproductive in coping with the drug problems. Clearly the marijuana laws are unenforceable in the face of the attitudes and practices of a significant fraction of the population."

10.

Propaganda

During the 1970s, a spate of research reports were published claiming that marijuana causes damage to the brain, to chromosomes, the immune system and the lungs, etc.. Although those studies have been discredited since then, they continue to be mongered as facts by prohibitionists will say anything and stop at nothing to prevent cannabis from coming into its own. Much of the injury to truth was caused by Gabriel Nahas of Columbia University. Nahas was appointed to the UN Narcotic Control Board in by Secretary General Kurt Waldheim in 1971. Earlier that same year, Nahas (who was an anesthesiologist) was involved in a scandal over a fraudulent report of a death attributed to cannabis in Belgium. In his new position with the UN, Nahas dispensed generous grants to a clique of colleagues who proceeded to generate numerous biased and misinterpreted studies alleging to reveal terrible bodily and mental damage resulting from marijuana use.

The *Journal of the American Medical Association* published a critical review of Nahas' "essentially moralistic" book, *Marihuana: Deceptive Weed* (1973), and noted:

"Biased selection and interpretation of studies and omissions of facts abound in every chapter... So much of the volume is distorted that one must know the marijuana literature in order to judge the accuracy of each statement." **(249-251)**

Columbia University held a press conference in 1975 to publicly dissociate itself from Nahas' embarrassing pseudo-science. In 1976, the National Institute of Health refused to give Nahas any more money for cannabis research, and in 1983, the National Institute of Drug Abuse (NIDA) repudiated his work and cut off any further funding to him. Nahas left America and moved to Paris, where he established a prohibitionist organization called Europe Against Drugs (EurAD) in 1992. Meanwhile, the DEA and various prohibitionist groups in the USA continue to tout his phony publications as scientific gospel.

Richard Cowan, then head of NORML, pointed out the dangers of anti-drug propaganda in the *National Review*:

"The fact is that the "narcotics" bureaucrats had been making a variety of wild claims about the perils of pot for decades, making it virtually impossible to do research on the subject. Today, since they can no longer block all research on the drug, the narcocrats simply sponsor ideologically reliable researchers who can be counted on to produce politically useful results. And conservatives generally swallow it whole, because they do not apply to marijuana the same high intellectual standards with which they analyze other subjects, nor do they apply the same standards to the laws against it that they apply to other laws...

"In general, the politicization of drug research undermines the credibility of valid drug information. In the short run, untrue but frightening reports about the dire effects of pot may result in reduced consumption. In the long run, these reports will be seen to be false, and users will, in reaction, disbelieve even the reports that are true. Even worse, warnings about the effects of other drugs also lose credibility, with most unfortunate consequences. Statements such as "marijuana is the most dangerous drug" are not just harmless hyperbole --- they necessarily imply that angel dust, speed and heroin are "safer"...

"Consider the implications of what I am saying, if I am correct. The narcotics police are an enormous, corrupt international bureaucracy with billion-dollar budgets, and multi-billion graft opportunities. They have lied to us for fifty years about the effects of marijuana and now fund a coterie of researchers who provide them with "scientific" support. Some of these people are fanatics who distort the legitimate truth of others for propaganda purposes.

"I realize that this is much more extreme than saying that marijuana is harmless, which, again, it is not. If I am right, then the anti-marijuana propaganda campaign is a cancerous tissue of lies undermining law enforcement, aggravating the drug problem, depriving the sick of needed help,

and suckering in well-intentioned conservatives... and countless frightened parents..."

In testimony at hearings before the DEA in 1987 on the medical use of marijuana, Dr. Tod Mikuriya, who had worked with the National Institute of Mental Health (NIMH) in 1967, said:

"When I served at NIMH, in my responsibility in setting up the first legitimate research on cannabis, I saw first-hand the government's bias in examining marijuana. The government seemed only to want to justify the total prohibition of cannabis, including it prohibition as a medicine, rather than to honestly research this plant. This political motivation for government research was a principle reason for my leaving NIMH."

11.
Cannabis & Crime

Beginning with the Indian Hemp Drugs Commission (1983-94), several distinguished governmental and scientific bodies have investigated the possible association of marijuana with crime. All such studies have reached similar conclusions: marijuana does not usually incite users to commit violent or sexual crimes. Instead, marijuana tends to reduce aggression in most people. Laboratory and clinical studies have shown that although some persons do commit crimes while under the influence of cannabis, such abuse is under-represented in studies of violent offenders, especially in comparison with users of alcohol and amphetamines. Studies also indicate that while some marijuana users commit crimes against property, non-drug variables probably are more influential than are drug effects on deviant behavior.

Drug effects are highly individualized by multiple factors, such as: pharmacological properties of the drug, poly-drug interactions, adulterants, dosage, mode of administration, cumulative effects, and pre-drug personality conflicts, mindset, and setting. Sophisticated analyses by several researchers indicate that pre-drug personality disorders are closely associated with assaults that occur during marijuana intoxication. Only an indirect relation exists between marijuana and crime. While all studies suffer from methodological limitations, it is nonetheless apparent that other than the crime of buying and possessing marijuana, there is no reliable evidence that the plant is a "cause" of crime. **(252-255)**

The Indian Hemp Drugs Commission found that, "For all practical purposes, it may be laid down that there is little or no connection between the use of hemp drugs and crime."

William Bromberg and associates reviewed the criminal records of 16,854 offenders in the psychiatric clinic of New York County from 1932-37, and found only 67 users of marijuana. Six were charged with crimes of sex and violence, and the rest were charged with crimes against property. **(256, 257)**

The LaGuardia Commission of New York City (1944) concluded that "Marijuana is not the determining factor is the commission of major crimes."

In the Wooton Report, it was pointed out that, "In the United Kingdom, the taking of cannabis has not so far been regarded, even by the severest critics, as a direct cause of serious crime."
After conducting a thorough review of the available research in 1972, the Shafer Commission reported these conclusions:

"The use of marijuana did not cause or lead to the commission of aggressive or violent acts by the large majority of psychologically and socially mature individuals in the general population... In fact, only a small proportion of marijuana users among any group of criminals or delinquents known to the authorities and appearing in study samples had ever been arrested or convicted for such violent crimes as murder, forcible rape, aggravated assault or armed robbery. When these marijuana-using offenders were compared with offenders who did not use marijuana, the former were generally found to have committed less aggresive behavior than the latter...

"Further, no findings indicate that marijuana was generally or frequently used immediately prior to the commission of offenses in the very small number of instances in which these offenses did occur. In contrast, however, the aggressive and violent offenders in this sample did report with significantly greater frequency the use of alcohol within 24 hours of the offense in question.

"These findings should be considered in the light of an earlier West Coast study of disadvantaged minority-group youthful marijuana users, many of whm were raised in a combative and aggressive social milieu... the data show that marijuana users were much less likely to commit aggressive or violent acts than were those who preferred amphetamines or alcohol. They also show that most marijuana users were able to condition themselves to avoid aggressive behavior even in the face of provocation. In fact, marijuana was found to play a significant role in youth's transition from a "rowdy" to a "cool", non-violent style."

In the book *Legalize It?* (1993), co-authored with James Inciardi, Arnold Trebach stated:

"[Before the passage of the Harrison Act in 1914] massive crime was not caused by wide drug avilablility. It is quite possible that prohibition was the leading cause of the huge increases in crime evident in the last 100 years. However, I do not attempt to make that argument here because so many other social and environmental factors --- urbanization, economic dislocations, class conflicts, the breakdown of old family values and controls, to name only a few -- have emerged over the last several decades that help explain crime... Nevertheless, I believe the data [police records]... seriously undercut the modern argument that legalizing drugs would certainly lead legions of citizens into lives of crime... Virtually all of the data support my central thesis: the absence of national prohibition and the generally easy availability of drugs cannot be shown to have pushed significant numbers of people into crime. Under prohibition, crime rates have risen dramatically." **(258)**

12.
Polemics Against Prohibition

America has been fighting the so-called Drug War ever since President Nixon cursed the nation with his
declaration in 1971. It has been to little avail, because the Drug War cannot be won. Instead, the institutionalized national psychosis known as the Drug Enforcement Administration (DEA) has turned the USA into a police state.

Intoxication is a basic drive in the animal world. It cannot be suppressed without generating psychotic consequences. The eminent psychopharmacologist Ronald K. Siegal, Jr. (UCLA) presented the case for natural drug use in his study of *Intoxication: Life in Pursuit of Paradise* (1989):

"Recent ethological and laboratory studies with colonies of rodents and islands of primates, and analyses of social and biological history, suggest that the pursuit of intoxication with drugs is a primary motivational force in the behavior of organisms. Our nervous system, like those of rodents and primates, is arranged to respond to chemical intoxicants in much the same way it responds to rewards of food, drink, and sex. Throughout our entire history as a species, intoxication has functioned like the basic drives of hunger, thirst or sex, sometimes overshadowing all other activities in life. Intoxication is the fourth drive. We have become the most eager and reckless explorers of intoxication."

It behooves us to cultivate our abilities and realize our potential, but not necessarily without drugs, as prohibitionists would have it. However, that lesson cannot be learned by denying ourselves freedom of choice. Our dysfunctional drug laws punish natural exploratory behavior and forbid us from testing our character in the mirror of psychedelic molecules. Prohibition is ineffective and unconstitutional. Illicit drugs are readily available to almost anyone who wants them, especially among youths, and even in prison, where guards are dealers.

Laws against drugs are predicated on the false assumption that all drug use is harmful. Actually, few drugs are truly addictive when used in moderation, and most people simply will not allow themselves to become addicted. Instead, they use other forms of compulsive behavior (religion, sex, love, politics, money, work, sports, TV, gambling, etc.) to produce altered states of consciousness; some claim to be happy.

Prohibitionists take the process several steps farther, getting their kicks by trampling on the rights of others. Indeed, as the British M.P. Walter Elliot observed in 1920, Americans are "the barbarians of the West" because of their "extraordinary savage idea of stamping out all people who happen to disagree... with their social theories" about alcohol and other intoxicants.

People use and abuse any and all substances in their search for reality or fantasy. Most societies and individuals choose their poisons (alcohol, tobacco, cannabis, coffee, cocaine, opium, Prozac, etc.) for arbitrary moral or traditional reasons. Thus they determine what is a "good", "bad", legal or illicit drug. Otherwise, as Dr. Andrew Weil put it, "There are no good or bad drugs; there are only good or bad relationships with drugs".

The distinctions between legal and illicit drugs are purely ritualistic, magical attributes with little or no basis in pharmacology. Dogmatic Christians (and religionists of almost all other brands) especially fear magic and drugs, so they cannot be very realistic about drugs (let alone magic). There's just no arguing with taste. Indeed, as Fred Nietzsche observed, "Alcohol and Christianity are the two great European narcotics". Karl Marx expressed the same general idea in a similar aphorism: "Religion is the opium of the people".

The entire sad spectacle is mere superstitious scapegoating. The scapegoat is a sacrificial victim (animal or human), heaped upon with the sins and other failures of the people. The wretched creature is banned into the wilderness, or condemned to death. In ancient Greece, the sacrificial human was called *pharmakoi* (remedy), from which are derived the terms pharmacology, pharmacy, etc.. The Greeks abandoned the practice ca. 600 BC, after which *pharmakoi* assumed its modern meaning. However, the collective subconscious mind appears to have retained its primitive magical character; today we exercise the custom of *pharmakoi* in the form of draconian anti-drug laws by which users and dealers are ostracized or quarantined as if they were diseased. Through the skillful abuse of language, prohibition propagandists portray drugs as a virus; no one is immune to the plague of pleasure and self-destruction, and there is no cure.

Fortunately, education is a powerful prophylactic against such quackery. Plato warned us: "Complacent ignorance is the most lethal sickness of the soul". Truly, knowledge is the only therapy for the deadly stupidity caused by anti-drug propaganda. With knowledge and self-control we can meet the challenge and carefully explore the dimensions revealed by psychoactive substances.

Thomas Jefferson and Dr. Benjamin Rush (who was George Washington’s personal physician and a signer of the Declaration of Independence) both foresaw that the federal government might someday attempt to control medicine. Dr. Rush warned:

"Unless we put medical freedom into the Constitution, the time will come when medicine will organize into an underground dictatorship... To restrict the art of healing to one class of men and deny equal privileges to others will constitute the Bastille of medical science. All such laws are un-American and despotic and have no place in a republic... The Constitution of this republic should make special privilege for medical freedom as well as religious freedom."

Thomas Jefferson also declared this in no uncertain terms:

"If people let the government decide what foods they eat and what medicines they take, their bodies will soon be in as sorry a state as are the souls who live under tyranny."

The foresight of Jefferson and Rush has proven true, and the problem appears to be terminally cancerous. Medical tyranny pervades modern society in such various forms as national health care

programs, the FDA and DEA, and the heinous Drug War.

Prohibition is a complete failure. The Drug War actually is controlled chaos, serving the interests of an "underground dictatorship" while it forbids us from the pursuit of happiness --- particularly in the form of Cannabis.

Using the phony Drug War as its primary excuse for "necessary" abridgements of our rights, the federal government of the USA has abandoned the Constitution and surrendered to the Communist model of suppression by imposing pre-trial detention without bail, mandatory minimum prison sentences, and capitol punishment for drug crimes, plus increased fines, forfeitures and asset seizures, "good faith" exceptions to the exclusionary rule, and other aberrant violations of justice. Stoned military forces are used to enforce civilian law and to interdict suspected smugglers at sea and in the air. Intelligence agencies smuggle huge quantities of cocaine and heroin from Asia and South America into the USA, and operate clandestine laboratories to finance their crimes. Entire governments have been toppled by cocaine (Bolivia, Panama, Bahamas, etc.). Civilians are required to submit to unreliable drug tests to gain employment. Obnoxious currency controls supposedly prevent the laundering of drug money, and so on. In short, America has become a police state because of its insane drug laws and cowardly citizens.

The Drug War is a coup d'etat. The Drug War is not being fought against molecules, but against ourselves and freedom. The Drug War is conquering America law by law, right by right, until nothing will remain but to fight the Second Civil War foreseen by George Washington and several other American prophets. The Drug War is a fraud that has cost Americans their civil rights, over 150 billion tax dollars, and at least 100 million man-years spent in prisons, in futile, corrupt law enforcement, and other associated costs including countless deaths at home, in the streets, and abroad. We have been rendered dumb and stupid by an open conspiracy that suckles on us like a vampire, eats our children, and aborts our birthrights.

Abraham Lincoln is attributed with having stated (8 December 1840):

"Prohibition... goes beyond the bounds of reason in that it attempts to control a man's appetite by legislation and makes a crime out of things that are not crimes... A prohibition law strikes a blow at the very principles upon which our government was founded."

There are several legal precedents which support the many Americans who refuse to obey drug laws. The decision in Maybury vs. Madison (1803) is clear enough:

"All laws which are repugnant to the Constitution are null and void."

According to 16 Am Jur. 2d. Sec. 177 & 178, the general rule is:

"An unconstitutional statute, having the form and name of law, is in reality no law, but is wholy void and ineffective for any purpose. It imposes no duty, confers no rights, creates no office, bestows no power or authority on anyone, affords no protection and justifies no acts performed under it. No one is bound to obey an unconstitutional statute and no courts are bound to enforce it... If any person acts under an unconstitutional statute, he does so at his peril and must take the consequences."

Cannabis must be made legal. This is the first step toward the only viable resolution of the drug problem: legalize all drugs (with regulatory control of quality, dosage, etc.). Cannabis does not need to be controlled, but only to be regulated and cultivated for all the values of its fiber, seeds and resin. Yet, instead of enjoying the benefits of Cannabis, we suffer for tiny Pyrrhic victories in a perpetual civil war. We have been convinced by propaganda to repudiate the principles of freedom upon which our former rights were founded. The continued suppression of Cannabis only aggravates a grave injury to society that probably will not be healed by legalization in time to prevent disaster from other quarters. God forbid that this burning issue should become the funeral pyre of freedom! Hemp is sure to survive and thrive, whether it is in the victory gardens or in the ruins of the USA.

13.
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