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THE PROBLEM OF CANNABIS

Note by the Secretary-General

At its eighth session, the Commission included among the studies which it considered to be required in connexion with the problem of cannabis an additional study on the physical and mental effects of cannabis (E/2423, para. 1^o2). The World Health Organization agreed to make this study and the Secretary-General has the honour to transmit it herewith.

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THE PHYSICAL AND MENTAL EFFECTS OF CANNABIS

Additional Study*

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* Prepared, on request of the World Health Organization, by Dr P.O. Wolff, formerly Chief, Addiction Producing Drugs Section, WHO.

INTRODUCTION

During the discussion of document E/CN.7/256 in the 214th meeting of the eighth session of the Commission on Narcotic Drugs, on 16 April 1953, a request was made for "an additional study on the physical and mental effects of the use" of cannabis^{(44)*} in order to complete the writer's earlier study⁽⁵⁰⁾ which is in the hands of the members of the Commission. The facts and papers mentioned in the latter will not, therefore, be repeated here.

There are, indeed, quite a number of papers which have appeared since 1948 and there are also some older ones to which it seemed advisable to refer in the present study.

On the other hand, considerations of time and space necessitated a restriction in the choice as well as in the use and evaluation of the contents of the papers referred to. The writer has, therefore, thought it advisable to confine his study mainly to papers published in the scientific press. Facts contained in the Annual Reports and other government publications are known to the members of the Commission on Narcotic Drugs and are therefore mentioned only for special reasons. Furthermore, it seemed advisable to include some reference to botanical and pharmacological matters, as well as to cultural and social aspects.

As far as recent special governmental publications on the cannabis problem are concerned, there are two in particular which should be cited:

(a) a volume of some 400 pages containing 24 papers from Brazil,⁽⁶⁾ which gives a comprehensive picture of the situation in that country and also contains valuable general views; all or most of these papers have been published before in different periodicals; some of them have been referred to in the earlier study⁽⁵⁰⁾ and others are mentioned in the present study.

* This request was repeated during the ninth session (19 April to 14 May 1954).⁽⁴⁵⁾

(b) the South African report,⁽⁴⁻³⁾ known to the members of the Commission on Narcotic Drugs, an exhaustive study based on a large number of observations and enquiries and leading to important conclusions.

An effort has been made to present the material of this study in short chapters; however, some overlapping was unavoidable in order to maintain a certain continuity in the observations and statements of the different authors.

Before entering into details, reference is made to an illustrative study on:

CULTURAL FACTORS

G. M. Carstairs, a London psychiatrist, who, during a field study lived in intimate daily contact with the inhabitants of a large village in northern India, has described "Cultural Factors in the Choice of Intoxicant". He found that there was a violent antithesis between members of the two highest local caste groups, the Rajputs consuming a potent distilled spirit, whilst Brahmins were observed "who were benignly and conspicuously fuddled with bhang". A Brahmin considered the taking of bhang as a sort of devotional act, thinking only of God; in his impersonal, ecstatic trance the "arrived" devotee became oblivious of mundane concerns. The priest at a nearby pilgrimage centre, as well as his predecessors, were described by the people with admiration as being mighty drinkers of bhang and heroic in the depth of their devotional trances. The ultimate reward of religious asceticism is to exist for hours in an inward-looking state and to pass directly into union with the spirit of the universe. Bhang is highly regarded as conducing toward this condition and is taken regularly by most of these devotees. The Brahmin thinks of his intoxication with bhang as a flight not from but towards a more profound contact with reality. Carstairs gives an interesting explanation for the cleavage between the castes mentioned above, based on the psychological effects of either type of intoxication, and on the different values stressed by each group, both in their personality development and in their ideal patterns of behaviour. This discussion of the cultural aspect of cannabis intoxication seems to the writer a new and fruitful way towards the understanding of certain aspects of cannabis consumption.

BOTANICAL RESEARCH

The question as to whether cannabis sativa of the same origin planted in regions with different climates will adapt itself to the production exclusively - or mainly - of useful fibre or of resin gave rise to further lively discussion during the 1954 session of the Commission on Narcotic Drugs. The following observations and experiments may therefore be of interest:

Already many years ago, experimental trials were carried out in order to discover whether in climates favouring fibre production for industrial purposes, the cannabis plant also produced resin with narcotic properties. More recently, Hitzemann investigated at the Institute for Applied Botany and Colonial Plant Cultivation, Hamburg, whether the resin with narcotic effect was also produced in cannabis sativa from different sources planted at Hamburg. He attempted to develop the well-known Beam reaction into a quantitative colour test and made experiments - with Daphnia ("water fleas"), a few fish, two mice and two rats - which, in his opinion seemed to justify the conclusion that a strong colour reaction corresponds to a high content of resin with narcotic effect. If this parallelism proves true, it would certainly represent an advance; however, the author himself recognized that his observations were of a preliminary nature only. To the writer's mind, they do not permit any conclusions of the kind. Nevertheless it might be useful to repeat them on a larger scale.

However, without going too far in this study into the question of chemical analysis, the investigations of Jacob and Todd (published in the year before Hitzemann's paper) must be referred to; these authors stated that their finding "lends further colour to the view that the Beam test is not a specific test for the active principle in hashish". Apparently Hitzemann, who quoted some American papers of the same year (to which Jacob and Todd also refer), had no knowledge of the paper by these two authors.

The view of Jacob and Todd has been confirmed by Llorens' statement that tetrahydrocannabinol, which is the active substance in the resin, does not give the Beam test, unlike inactive cannabidiol which does (at least the alkaline Beam reaction).

Comparisons of cultivation conditions were made by Hitzemann using cannabis plants from different sources. He found, briefly, that even the usual European plants, including the German one which is cultivated for its fibre content, are able to produce a considerable quantity of resin which, although not as much as in charas or ganja, is at least equal to, if not higher than the amount in the North American ("marihuana") variety, which Hitzemann also planted. In order to obtain the resin in these northern climates the principal requirement is to grow a quickly maturing variety in a warm and sunny field. Contrariwise, those varieties which mature slowly, for example the Indian, produce no resin at all in Hamburg, because they are not ripe before the winter starts, and their Beam colour reaction is very weak. This explanation of an, at first view, surprising finding seems to shed some new light on an old problem.

n According to Hitzemann's Beam colour test, the resin of the Rumanian plant had the greatest narcotic strength, followed by the German. But here also, the author found differences according to the place where he planted them in the Hamburg garden; this apparently confirms older findings concerning the influence of climate on the production of narcotic resin.

is In contrast to the results obtained with Indian plants grown at Hamburg by Hitzemann - and therefore confirming his opinion - cannabis plants grown from Indian seed, at the experimental station of the Naples Botanical Garden ("Stazione Sperimentale per le Piante Officinali annessa all'Orto Botanico dell'Università di Napoli"), in a climate very different from that of Hamburg, have been shown, in experiments on dogs, to be quite active (Covello).

In England also, the cannabis plant can produce resin with narcotic properties, as is shown by two illustrative cases.⁽³⁾ A young man, having read about hemp as an "increaser of pleasure" etc., planted in his garden during the month of June, hemp seeds separated from parrot food; in September he dried and chopped the leaves and tops and smoked them in cigarettes, experiencing loss of sense of time and space, vivid dreams or hallucinations and subsequent drowsiness. His fiancée inhaled

two-thirds of such a cigarette and exhibited errors in appreciation of time and space, exhilaration, apprehension, hallucinations and many serious corporal and mental symptoms of cannabis intoxication, even the hallucination of dual personality, and confused, often inarticulate speech.

In France, in 1947, and repeatedly in later years, clandestine cultivation of the cannabis plant with a considerable content of resin has been detected.⁽⁴⁸⁾

In a Turkish region (South West Anatolia), where cannabis sativa is cultivated for fibre production, the pharmacological investigation of 369 samples showed that there were plants with resin of all degrees of activity, from absence of effect to a strong action; the majority of the plants showed an average effect (pulewka). Apparently plants were not cultivated especially for their resin production. The tests were carried out on mice by a method devised by the author.

Hasselmann and Ribeiro, comparing the effects of North American and Brazilian cannabis in a fish test, found that the Brazilian plant is probably about eight times as strong (toxic) as the North American. But this is apparently not the case for all Brazilian cannabis but depends on different regional origin.⁽⁵⁴⁾ Even plants cultivated in the same plantation did not have the same toxicity.

The above authors did not find the difference stated by earlier authors, i.e., that the leaves beneath the fifth nodule of the plant are no longer toxic.

It is the writer's belief that a further follow-up of the questions discussed above might shed more light on subjects of great interest for international work on cannabis.

A general conclusion might be drawn from these experiments and observations to the effect that the climatic theory of varieties is not so well founded as may formerly have appeared to be the case. "All varieties of cannabis ... produce physiologically active resin in varying quantities ... if the circumstances of habitat and climate provide the necessary conditions."⁽⁴⁾

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But the recognition of this fact has yet other consequences. The choice of regions for growing hemp for fibre should depend also on the character of the population of that region, viz., whether the people would be inclined to use for narcotic purposes the small amounts of resin produced in addition to the fibre for there might be other regions where such misuse is less likely to occur.

PHARMACOLOGY

A very able review of the present status of the pharmacology of cannabis, active substances and synthetic derivatives, has been given by S. Loewe. In conjunction with other recognized American investigators, Roger Adams, E. J. Wollner, et al., he has himself made important contributions to this subject. The large number of animals at his disposal, for example, 2600 experiments carried out on 150 dogs, give his conclusions still greater weight. Reference will be made to some of his important findings.

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The active substances with cannabis effect are the tetrahydrocannabinols, and Loewe refers to the ingenious hypothesis that cannabidiol represents the starting point, and cannabinol the final stage in a phytochemical process where the active substances occur as the intermediate steps.

Not all the effects described with crude cannabis preparations could be reproduced with pure substances. Loewe is justified in saying that the experimental study of the psychological effect in man - and, for obvious reasons, still more so in animals - presents an as yet unsolved problem, even with pure substances. The reasons for this state of affairs will continue to exist and have been explained elsewhere. (52)

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The catalepsy which has been observed in many animal species, can be produced with all pure substances which cause ataxia. There is continually more and more proof that the ataxia produced in dogs is an important test which is "highly specific for cannabis" and parallels the psychological effect. The centre of the ataxia as well as its mechanism are unknown. All active substances caused central excitation. Mice even became aggressive (!). There is no hypnotic effect as was supposed by earlier investigators. Possibly cataleptic symptoms in man have been misinterpreted as a sedative effect.

ETIOLOGY OF CANNABIS ABUSE

A. Abdulla, a physician practising in Cairo and in a smaller town of the Nile Delta recently published his observations on various aspects of the cannabis problem. He gives various reasons for the tendency of the Egyptian population to smoke cannabis. In the course of centuries of foreign domination, the Egyptians lost hope, became indifferent and looked for some form of euphoria; many foreigners, who were answerable only to their own countries, which had less severe regulations against cannabis and opiates, became drug traffickers; the alcohol prohibition for Mohammedans caused them to look for some compensation which they found in cannabis; female circumcision, with the resultant decrease in sexual excitability, induced the male partner to smoke cannabis, which in the opinion of the population prolongs the sexual act; and lastly, cannabis can be used without chemical or other highly technical preparation and, because of its cheapness, is easily obtainable even by the poor.

EFFECT IN GENERAL

The different effects produced in different countries depend, according to Abdulla on individual conditions, arising from differences in personality, education and environment, as well as on the kind and quality of the preparation used. Other factors can certainly be added, e.g. reaction type, racial influences, etc. Whilst in the Americas, for instance, excitation, violence and crime have frequently been observed, in the Near and Middle East, particularly in Egypt, the result of taking cannabis is quietness and even anxiety without motivation; here the cannabis consumer is a coward.

Carstairs also draws attention to the fact that discrepancies in the description of the effect may be due, at least in part, not only to varying concentrations, but also to combination with other drugs.

Brazilian authors agree with this view.

In all observations and conclusions, it should be borne in mind that there is a great difference between the effect of cannabis (i.e., the resin itself, known as charas, hashish, chira) and that of the leaves and flowering tops (known as bhang, ganja, kif, takrouri, dagga, marihuana, maconha, etc.), the former being about eight times more toxic (see also p. (23)).

This great difference might perhaps be one explanation among others of the fact that, as mentioned earlier, ⁽⁵⁰⁾ there are some observers who do not consider cannabis to be as dangerous as it in fact is.

PHYSICAL EFFECTS

There is not much to add to the known facts (see, for instance the comprehensive review recently published by Bouquet). In the experience of Abdulla, in Egypt, there is, in particular, a diminution of resistance; among cannabis smokers diseases of the respiratory tract are frequent, bilharziasis and circulatory as well as alimentary diseases become refractory, etc.

Abdulla agrees that there are no physical abstinence symptoms as with opiates, but the weakness of will which develops and the psychological fixation on cannabis cause the smokers to relapse again and again.

Parreiras is of the opinion that there is a typical physical symptomatology in the description of which he agrees mainly with earlier authors. He does not think that there is a real aphrodisiac stimulation, but chiefly a suggestive effect, widespread, however, among the population. Bulimia is a typical cannabis symptom; there are cannabis smokers who say that because of the hunger they develop they are capable of stealing and ... even of killing. They have a particular longing for sugar and sweet things in general, due to hypoglycemia cannabica, for instance, bunches of bananas, such as are found in Brazilian markets.

Parreiras also refers to the cannabis cachexia observed in Brazil among inveterate smokers, which can appear even some time after withdrawal, taking the form of prostration, low spirits, dyspepsia, frequent attacks of diarrhoea, inappetence, bronchitis - in short, a picture of human ruin, with a grave prognosis.

Other references to physical effects are included in the chapter on mental effects (for example, Fernández Sánchez and González Más), for it was deemed inadvisable to separate certain features from the general clinical picture presented, in which the psychological aspect is of much greater importance than the physical.

MENTAL EFFECTS

There may be some truth in what Baudelaire says in "Les paradis artificiels", namely, that the reaction of different individuals varies according to their degree intellectual refinement, thus distinguishing merely material, even brute intoxication from the "spiritual" form. To this one can add Carstairs' witty remark that the quality of the intoxication may be influenced by the expectations with which the subject enters into it.

The hallucinations being influenced by the mental make-up of the individual, by his inclinations, his personal and even professional interests, the effect of the resin will take a different form in a cultured as compared with a primitive person.

According to Abdulla's observations, there are three periods which can be distinguished:

(1) transitory intoxication with increased cerebral activity, decrease of normal inhibitions, euphoria, loquacity, hilarity without motivation and which cannot be kept under control. Characteristic is the incoherency of ideas, of which the cannabis consumer is not aware. After ten to twenty minutes this euphoria is replaced by hallucinations. On the whole it is a polymorphous picture which changes according to individual factors;

(2) the visional period (of hallucinations) is the most important phase of the acute cannabis intoxication; it is accompanied by varied pictures which recall various kinds of psychosis. The person is sometimes aware of this state and sometimes not, entering a stage of mental dullness. Abdulla refers furthermore to the well-known visions which can arise, the slowing down of the reaction time, the erotic dreams, etc.;

(3) with a consumption of up to 4 g of hashish daily - which is usual - chronic cannabism and likewise the above-mentioned symptoms and psychotic changes develop. The mental dullness increases.

An extensive study on the "Psychophysiology of hashish intoxication" is at present being undertaken in the Sudan; but as its author wishes to check his observations in the light of further experience before drawing final conclusions, we have not referred here to the preliminary results of this promising investigation. (14)

An important paper which was not mentioned in the earlier study (50) is one entitled "Insanity from Hasheesh", by J. Warnock, who was for many years Medical Director of the Egyptian Hospital for the Insane in Cairo. During temporary intoxication, the smoker becomes dull and drowsy, and has pleasant half-waking dreams. The active excitement of alcoholic inebriety is uncommon, but if the smoker is annoyed or interfered with during his dreams, he is liable to become irritable and excited and to show loss of self-control. A staggering gait makes the condition not unlike that of alcoholic intoxication, while the pleasant, dreamy state approaches that of the opium smoker.

Warnock then describes the "delirium from hasheesh" with the well-known hallucinations of different kinds, the delusions of persecution which often occur, the great exaltation and the smoker's belief that he is a sultan or prophet. The "mania from hasheesh" varies in degree, up to a prolonged attack of furious mania ending in exhaustion or even death; exaltation delusions of grandeur or persecution are frequently observed and provoke violence towards others, further restlessness, destructiveness, indecency, loss of moral feelings and affections, etc. "Chronic mania from hasheesh" is often not distinguishable from ordinary chronic mania, but the patient is less worried than the alcoholic chronic maniac. "Chronic dementia from hasheesh" is the final stage of the preceding forms.

The chronic hashish user is a good-for-nothing, often even assaulting his relatives when he is without money to buy cannabis. Moral degradation is the most salient feature; loss of social position, shamelessness, addiction to lying and theft and a loose, irregular life are also characteristic.

Warnock concludes that "in Egypt it frequently* causes insanity" and he insists on cannabis as a cause of crime. "Again, in my experience, I find that persons insar from hasheesh have a proneness to commit crimes, especially those of violence, and I have a strong suspicion that much disorderly conduct results from hasheesh smoking ...

There are quite a few other papers, from the same period or somewhat earlier, which come to the same conclusions, but which are nowadays more or less forgotten. In the Report of the Indian Hemp Drugs Commission of 1893** also, many valuable observations can be found, although Warnock remarks: "Unfortunately, it appears that no lunacy expert sat on the Commission".

In Spanish Morocco the cannabis resin is mostly smoked; less frequently it is taken as an infusion with tea or as a sweetmeat or in the form of pressed green leaves mixed with raisins or figs. In some parts of the Spanish Protectorate there are clandestine smoking clubs, whose members assemble in spots distant from the city centre. Surprisingly enough, the authors Fernández Sánchez and González Más, psychiatrists in Ceuta, state that the members of such clubs are generally Europeans. The six to twelve persons who meet together smoke either cannabis cigarettes or a special pipe, one for each person, or a narghile for common use. So as to overcome its harsh and acrid taste, the cannabis is mixed with "taba", that is green tobacco fermented in dung. The lighting of the pipes is a special ceremony, proceeding from neighbour to neighbour. After a few quiet minutes of smoking, excitation and loquacity set in, as well as incessant laughing, all of which symptoms have been described by other observers. One participant ("el rollista") takes the lead and recounts, sometimes for six hours or more, in a loud voice, personal adventures, mixed with imagination and the most loose fantasies, whilst the others keep quiet but on the basis of what they hear make mentally their own associations of ideas in a curious fantastical and semi-hallucinatory state of delirium, realizing their dreams and aspirations. Sometimes another participant starts to speak in a loud voice, stimulated by his fantasies, and then the first one becomes silent and the second becomes the "rollista". Although

* in italics in the original text.

** recently extensively abstracted by H. C. Mookerjee. (34)

they are sitting on the floor, uncomfortably, with crossed legs, for several hours, they do not show signs of fatigue. After finishing, they reach a normal state very rapidly, for instance, by drinking only a glass of fresh water, without passing through intermediate stages of disintoxication; they show no fatigue, but much hunger. The "novice", however, passes in his first experience through an acute state of nausea, dizziness, painful intestinal crises, headache and a light somnolence; but he quickly becomes addicted.

Unfortunately, nothing is said as to the quantity of cannabis used during these meetings, nor is there a more detailed analysis of the facts observed.

It is also stated⁽¹⁶⁾⁽²²⁾ that the consumption of alcohol is generally avoided, because in combination with cannabis it frequently unchains impulsive acts of terrible violence. This remark might also interest observers in other regions of the world. A. Porot (Algiers), however, states that alcohol is regarded in some countries as an antidote to cannabis drunkenness.

The observations made by J. D. Fraser of nine cases "of an acute psychosis associated with the withdrawal of cannabis indica from addicts" seem to be significant. They were made on Indian troops, in a campaign in the Far East; all of these men came under observation in the first four weeks after departure from India, giving a similar history and presenting similar signs. They had been ganja smokers for some years and soon after departure began to notice signs of deprivation. On the sea voyage, two of them became extremely irritable but got over this when they procured some more ganja from their comrades. On arrival they all suffered from deprivation. Their comrades knew them as ganja addicts and regarded them with some fear, and as untrustworthy. Irritability increased, culminating "in a sudden outburst of violence, such as stabbing another man, striking out, or shooting at someone". On guard duty they shot at an imaginary enemy. The strange, and often dangerous fact was that these men had become quiet again by the time they were brought to a medical unit, were apparently rational, mildly depressed, taking their food and enjoying a smoke. "Patients have been returned to their units during this quiet phase with disastrous results." The deceptive nature of the "quiet phase" was revealed when after

48-72 hours there was another outburst of impulsive violence, followed by an acute psychotic episode lasting three to six weeks and characterized by acute excitement; their habits became filthy, etc.; they would crawl abjectly along the floor begging for some ganja. Apparently they had terrifying visual and aural hallucinations. To Fraser's surprise, none of them died; all emerged from the psychotic phase, became quiet, co-operative and well-conducted, though weak and emaciated.

Fraser concludes that only a comparatively small proportion of cannabis addicts cannot manage without the drug.

These observations confirm the opinions - backed up by facts! - expressed on earlier occasions concerning the danger of crime resulting from abuse of the cannabis resin. (56)

Drewry has described in detail a case of psychosis, observed in the United States of America, where the person concerned smoked marihuana cigarettes for a year, two or three per day at the beginning, but more later on. Although the patient was of unstable make-up, he was not considered to have a true psychopathic personality. He had mild delusions, lost the sense of time and size (including his own size), had visual hallucinations and illusions of colour, and other symptoms which, according to the author, made it evident that the illness was due to marihuana intoxication. The diagnosis of schizophrenia, which at the height of the illness seemed possible, was ruled out. After five months, he was discharged from the hospital as recovered; after ten months he was still well and had not returned to the drug.

It is known that the psychiatric symptoms of chronic cannabis abuse are extremely variable. Lucena et al. have added four new cases to those they previously described, namely four inveterate maconha smokers of 17, 19, 22 and 26 years of age. These subjects had been thoroughly studied for several months in the Psychiatric Clinic of the Medical Faculty at Recife (Brazil). Briefly, two of them had delusions of grandeur or persecution and rather frequent hallucinations; the third had schizophrenic symptoms which appeared immediately after maconha smoking, with a tendency to persist and become aggravated, and the fourth showed a complicated psychiatric picture, in addition to certain organic symptoms, character disturbances and emotional instability (he attacked his mother when searching for money, and threatened to kill the whole family).

In the case of other patients seen by Lucena, the problem was to decide how far it was maconha that was responsible for their disorderly conduct and anti-social behaviour. According to present psychiatric views, exogenous factors and endogenous symptoms are inter-related and it may be assumed that there was some pre-existent endogenous pathological disposition which had been activated when endogenous symptoms appeared after an exogenous aggression.

Although these psychotic changes were quite different from each other in symptomatic exteriorization, and atypical, they belong according to Lucena's opinion, to the wide range of schizophrenic forms in their most general sense. The frequency of the appearance of such psychotic behaviour is much greater with maconha smokers than among the population in general, so that possibly there is a certain link between chronic cannabis consumption and the atypical schizophrenic picture.

Giulla has described six cases of maconha smokers in the psychiatric clinic of Porto Alegre (Rio Grande do Sul), in the southern part of Brazil, where, contrary to the northern Brazilian states, this vice is rarely observed. One of them, twenty years of age, was confined in the clinic because he was found to be in a state of turbulent "drunkenness" after smoking maconha. He said he had smoked these cigarettes for six months because they were exciting, made him venturesome, and caused euphoria for a period of two hours. In the hospital, he was restless, irritated and loquacious.

The most interesting of the cases was the second one, which showed the correctness of characterizing cannabis resin as a criminogenic drug. This young man, twenty years old, of Porto Alegre origin, said he had never before smoked a maconha cigarette. He got one by chance from sailors at the port. He stated that after three or four whiffs he had disagreeable sensations, the outer world became strange and he had a sensation of levitation. His mind became crepuscular, so that he could only vaguely remember what happened. He had an imperious desire to do things which in a normal state of mind he would never have permitted himself to do. Without any justification he attacked a man and took his coat away by force; he attacked another man because he identified him apparently with himself, and finally fought violently with the policemen who tried to overpower him. Several hours later, he became quiet. Three days later he was dismissed from the hospital.

It is worthy of notice that this violent reaction appeared after one maconha cigarette - at least according to the patient's statement.

The other four, sailors from the north of the country, did not show traits worth while mentioning here. They are described as men of degraded morals, without family ties, adventuring from port to port in search of new stimuli; maconha gave the satisfaction, namely the euphoria typical of it, with a certain mental obnubilation, and frequently, sexual erethism. .

From the point of view of social repercussions, it is interesting to note that these few cases created alarm in Porto Alegre, so that the four northerners were immediately sent back by the police to their own region before they could infect vagrants in the south.

Parreiras refers to a man who smoked the enormous quantity of fifteen cigarettes per day, had delusions, fell into the water, which he thought was sand, and when walking alone during the night in the forest heard voices which called him and accused him.

According to the observations of two psychiatrists, A. Reales Orozco and E. Martínez Gómez, in Barranquilla (Colombia), where marihuana abuse is very prevalent, in the acute stage of intoxication the psychological manifestations appear before the physical ones. They are so manifold that any effort to systematize them would fail. Likewise, as has been done on earlier occasions, these authors also relate the psychological symptoms in each case to the individual "psychological formula", temperament (as in acute alcoholic drunkenness), education, cultural level, social standing and environment of the person concerned. The mood at the moment when marihuana is taken has a great influence, so that experimental observation is "distant from reality" because the reactions of the subject are subordinated to influences which impair spontaneity, and thus diverge from the form they normally take. For instance, experimental trials, employing marihuana smokers in psychiatric institutions or prisons, led to contradictory conclusions because the marihuana acted differently and its influence was diminished. This important statement confirms the

criticism expressed by the writer in 1948, of certain other experiments of this nature. Thus, it was pointed out, inter alia, that the experimental conditions are not correct when prisoners are given marihuana to smoke in surroundings of rigid discipline, instead of in the bad (but free) environment to which they are accustomed, and that marihuana smokers only react freely when they are in their own "surroundings", safeguarded from alien observation and vigilance. (55)

The authors give a vivid picture of the acute stage of cannabism which confirms statements by earlier observers. They say that during the first periods of the acute stage there is a notable sexual excitation, an opinion with which not all investigators agree, but which is in any case, whether true or not, an important factor inducing many cannabis users to take the drug, e.g. in Arab countries. As far as behaviour is concerned, cannabis weakens inhibitions and sets free previously repressed anti-social tendencies.

The chronic abuser becomes thin, he shows diminished motility, a stupid expression and, very frequently, anaphrodisia and impotence.

Frequently maniac episodes of confusional character in individuals of cyclothymic type, psychoses of a definite toxi-confusional kind and reactions of a schizophrenic type were found.

Six cases of varying psychotic character are described which show the seriousness of the symptoms, although they disappeared in hospital after from one to six weeks.

Auto-observations by physicians certainly arouse much interest; for example the account given by Carstairs. Prevailed upon to share in the Brahmin group's potations on two occasions, "he experienced the time distortion, the tumbling rush of ideas, the intensified significance of sights, sounds and tastes, and more strongly than anything else, the feeling of existing on two planes at once. His body sat or lay in a state of voluptuous indifference to its surroundings, while consciousness alternated between a timeless trance-like state and a painful struggle to keep awake, to keep on observing, and acting (in this case, to keep on writing down notes on his introspective experiences). It became clear to him, in retrospect, that throughout the

intoxication his bias of personality, and perhaps his less conscious fears of surrendering to a dreamlike state, resisted the somatic pull of the drug; and yet he was able to enter sufficiently into the fringe of the real ecstasy to quicken his future appreciation of what the experience meant to those who welcomed and valued

Moreover, the recognition of his own fear and repudiation of the state opened Carstairs' eyes, as he explains, to two possibilities: (a) that other Western observers might have shared his own reluctance, if not inability, fully to submit to this intoxication; and (b) that to Hindus, "with their different cultural heritage and personality bias", the experience might represent something different, at once less frightening and more congenial.

Some experiment with physicians, dental surgeons and para-medical personnel of a medical clinic in Rio de Janeiro have been described.⁽³⁷⁾ In the first experiment with 7 persons, one or two marihuana cigarettes containing 1.56 g each were given, mixed with placebos made from maize awns. As the marihuana had been stored for a long time, only 1 person showed any mental disturbance.

The experiment was then repeated in the same place, with fresh drug sent by air. The cigarettes contained this time 2.82 g of the drug. Six of the 9 persons concerned showed signs of mental disturbance. Objective symptoms were revealed in the following order of frequency: tachycardia and high pulse rate in 8 of the persons under observation; abnormal reasoning in 4, serious conjunctival irritation in 4, a state of excitation in 4, affected pupils in 3, restlessness in 3, lachrymation in 2, sweating in 1, ambulatory delirium in 1, mental confusion in 1, irritability in 1. Subjective symptoms occurred in the following order of frequency: burning sensation in the throat 11, bitter taste 8, giddiness and "dopiness" 7, paresthesia 5, change of character 5, disorders of the circulation 5, sleepiness 4, euphoria 3, thirst 3, insensibility of the tip of the tongue 3, anxiety 3, giddiness 2, feeling of drunkenness 2, desire to laugh 2, "a pleasant smoke" 2, "resinous flavour" 2, furring of the tongue 2, buzzing noises 2, feeling of absurdity, sleep-walking, imminent death headache, walking delirium, 1 (and other, minor symptoms in some cases).

The symptoms started within the first ten minutes and persisted for from three to twenty-three hours.

From further observations made by Parreiras during a journey to the northern states of Brazil, on 120 persons of different social classes, the majority of them workmen, it was concluded that in about two-thirds of them the smoking of maconha caused psychic disturbances, ranging from exaggerated and forced laughter to hallucinations, psychoses, aggression and murder. The same proportion of two-thirds was also found three years earlier in 46 cases observed by Cardoso.

This might be the right place to give a warning that care should be taken not to hold cannabis responsible, in the absence of satisfactory proof, for psychological symptoms apparently the same as those caused by this drug. Hillenbrand, for instance, quotes from the memoirs of C. L. Schleich a story according to which hashish was injected (!) at a students' club in the small university town of Greifswald in Northern Germany at the end of the last century. This does not sound very probable.

Recently - in 1952 - D. McI. Johnson explained the symptoms of bread poisoning observed at Pont-Saint-Esprit as being "an epidemic of intoxication mania" caused by cannabis. Apart from a few psychotic symptoms of a general character which the author discovered when visiting the village six months later, no valid proof for his conjecture was given. The clinical picture, described in detail,⁽¹⁹⁾ does not agree with cannabis symptomatology. Moreover, it has been stated by the government authorities responsible for narcotic affairs that most probably a fluid fungicide drug for the impregnation of flour sacks had been spilled inadvertently on the floor and had soaked into the contents of the sacks.

RELATION TO VIOLENCE AND CRIME

As explained in detail, with many examples on an earlier occasion,⁽⁵⁰⁾ the writer has no doubt that such a relation exists in many countries. Further affirmative views, based on facts, have been expressed by Fraser, Giulla, Reales Orozco and Martínez Gómez, as well as by Warnock, as mentioned in the last chapter.

Recently, M. J. Pescor of the United States Public Health Service, recognized for his investigations on drug addiction, referred in a short review to the "considerable controversy about the effects of marihuana". Whereas, in general, investigators in the United States of America regard marihuana smoking as a relatively innocuous vice, he adds that "it releases inhibitions which may account for the commission of crimes or the development of mental disturbances in certain pre-disposed individuals". This statement, which in the opinion of the writer is correct, seems to contradict seriously those who "are inclined to minimize the importance of smoking marihuana".

Pescor adds, however, that many law enforcement officers (also in the USA, the writer believes) and scientific investigators, principally from countries other than the USA, "are fully convinced that the use of marihuana is an evil practice dangerous to the individual as well as society. At least it deprives the individual of good judgment, leading him to commit various antisocial acts. At the worst it drives him to orgiastic sexuality, brutal assault, murder, and eventual insanity".

Pescor also indicates the following factors which perhaps may account for the differences of opinion: cannabis in the States is generally not as potent as that obtained in other parts of the world; addicts in the USA smoke it diluted with a considerable amount of air, which would mean a very small dosage compared to that when it is eaten or drunk (infusions); experimental studies in the USA have been made in a controlled institutional environment where the subjects are not exposed to the same type of stimuli as in their natural environment. This viewpoint thus confirms that expressed previously.⁽⁵⁵⁾ He adds further that in the USA the prolonged use of marihuana among addicts is exceptional; in the majority of instances, in some parts of the country, it serves as the introductory step to heroin or morphine addict particularly in the case of juveniles. Pescor concludes that there is every reason for not condoning its use, if on no other grounds than its tendency to lure its victims into more serious types of addiction.

Other authors from different countries and continents confirm the above viewpoint.

Gardikas, Head of the Greek Criminal Services, made a thorough study of the relations between hashish and crime which he communicated to the International Congress of Criminology, Paris, 1950. He insists that crimes can be committed whether hashish is taken only once, or habitually. "The smoker thinks he is capable of anything and everything, no task would be too great, no problem too difficult", and there is also "a propensity to create imaginary ideas of persecution (paranoiac)". He refers, for instance, to a case judged at Piraeus where five persons were wounded. "They believe that pedestrians in the street laugh at them or are seeking to harm them. Thus the state of intoxication by hashish leads to acts of violence, but also the chronic abuse of hashish leads to the committing of crimes, transforming the personality of an individual and making him lazy, unstable (with consequent vagrancy and theft), contentious, excitable, suspicious cowardly and fearful. As a result of this cowardice, a fear of being attacked is created, leading to illegal carrying of arms, and assault. The hashish habit leads to crime by another route also, since chronic abuse of the drug not only alters the character but also results in serious psychoses of a special nature, viz., incidental states of mental confusion, chronic and prolonged psychosis due to hashish, showing various perplexing psychopathologic symptoms."

The Greek Criminal Service examined from 1919 to 1950, 379 individuals either sentenced or arrested in flagrante delicto, for using hashish publicly, namely accidental or habitual hashish takers. These 379 hashish smokers were divided into three categories, viz.,

Category A 117 individuals who had neither been sentenced nor arrested for criminal activities prior to their sentence or their arrest for the use of hashish and who, after they became hashish smokers were repeatedly sentenced for committing crimes, probably mainly due to the use of hashish. 38 of them (32.5%) totalled 322 sentences including - apart from 142 convictions for the use or possession of hashish - 25 for wounds, 38 for illegal assault or attack with firearms, 9 for murder or manslaughter, actual or attempted, etc. Another group of 46 (39.3%) became habitual hashish smokers and habitual criminals, with a strong tendency towards violent crime, particularly assault, but also theft, fraud, etc. A third group of 33 (28.2%) had a propensity for crimes of dishonesty, particularly theft and fraud. About half of the persons

belonging to Category A were characterized as dangerous vagrants. The 117 individuals of this category received in all 1191 sentences.

Category B 53 individuals who had neither been sentenced nor arrested for criminal activities, prior to their conviction for using hashish and who, after they had acquired the habit, were either repeatedly sentenced or arrested for using the drug, for hashish smuggling, or for vagrancy, but not for crimes of any other type, in all 173 sentences.

Category C 209 individuals who were already criminals prior to starting to use hashish, i.e. who had been either sentenced or arrested for various crimes and who were sentenced or arrested later on for intoxication through hashish. In 75 of these cases their former criminality was intensified three or four-fold after the acquisition of the hashish habit, particularly as regards violence and vagrancy as well as the illegal carrying of arms. These 75 persons, before using hashish, totalled 294 convictions (dishonesty, theft, etc., violence, illegal carrying of arms, vagrancy); after they had made use of hashish they received 1180 sentences. Of these, 401 were for crimes of dishonesty, 154 for violence, 53 for illegal carrying of arms, 139 for vagrancy, 340 for the use or possession of narcotics. In 22 of this group, the original strong tendency towards criminality undoubtedly underwent a deviation towards violence and vagrancy. No particular relation to sex offences was observed.

Although in the above study it is not easy to decide to what extent these criminal tendencies were due to constitutional mental inferiority, which even without the use of hashish may lead to crime, it is an important contribution which again shows backed by relatively extensive statistics, the criminogenic influence of the cannabis resin.

In the South African enquiry⁽⁴³⁾ it is stated that many witnesses emphasized dagga-smoking as a cause of crime, because it breaks down normal inhibitions, and that it was actually used by criminals before embarking on crime in order to stimulate courage; also that it excited animal passion. "When the individual constitution shows anti-social tendencies or aggressiveness, these qualities are accentuated by the drug and may result in crimes, generally crimes of violence."

Washington Llorens, government chemist at San Juan (Puerto Rico), stated that cannabis apparently brings to the surface of the subconscious, vices and tendencies which have been submerged by education and environment, or, in other words, "it unleashes the wild beast which is in all of us".

On another occasion (quoted by Jardines Carrión) he said that the marihuana vice is not restricted to the lower social groups and to people connected with depravity and crime, but extends to all social classes; he insists that with its extension "increase also assaults, crimes, robbery, violent acts without evident causes". "For the police of the island the problem has two aspects of great importance: its close relation with crime, and likewise its close connexion with the violation of street traffic rules and accidents."

In 1951, Esquivel Medina and González (of Yucatán, Mexico) repeated their statement of 1938: The action of marihuana in considerably strengthening the particular inclinations of the individual, explains criminal acts, such as the horrifying murders committed by them. The visual hallucinations which it produces lead marihuana smokers to defend themselves against imaginary enemies and therefore to become aggressive.

As a result of information gathered from more than a hundred prisoners, Parreiras is convinced that maconha is a frequent factor in the genesis and development of crime in Brazil, particularly in the north-eastern regions. "Maconha is, in fact, a criminogenic factor." Because it destroys self-control, man shows his true nature, which is an aggressive one. Under the influence of cannabis, the danger of committing unpremeditated murder is very great; it can happen in cold blood, without any reason or motive, unexpectedly, without any preceding quarrel; often the murderer does not even know the victim, and kills simply for pleasure.

Parreiras refers to a case in Sergipe, of a man who, under the effect of cannabis, killed his companion and went to his funeral as if nothing had happened.

Eleyson Cardoso mentions the case of a soldier in the State of Pará (Brazil) whose conduct had been good but who, after smoking maconha for the first time, entered the house of his captain, in a state of furious delirium, armed with a knife, and tried to kill him, wounding another person in the process.

Clippings from newspapers from South American countries which suffer particularly from the consequences of marihuana abuse, and which the writer has been collecting for years, relate time and again the most violent crimes committed under the influence of the drug. Even admitting the somewhat sensational character of some of these reports their repetition, as well as police statements, show that there must be much truth in them. It would be easy to draw up long lists of abominable crimes carried out under the influence of cannabis.

Four youths, the youngest 16 years old, robbed and murdered a filling station attendant. The defence admitted that they were so strongly under the influence of marihuana that they did not know what they were doing. The jury refused to accept this as a defence and found them all guilty of murder in the first degree. (46)

A series of atrocious cases is mentioned in the important book recently published by H. J. Anslinger and W. F. Tompkins, "a few of many cases ... which illustrate the homicidal tendencies and the generally debasing effects arising from the use of marihuana"; for instance, a bellboy shot a federal guard, who was unknown to him, working in another building, not remembering later what he did; the officers of a merchant vessel were under continuous danger of being attacked by members of the crew using marihuana; murder of a man of 74 years, unknown to the murderer; a cotton-picker of 25 years of age drank, then smoked a "reefer", picked up a 17 months old baby girl which had been left in the family car, violated and suffocated her; "the real criminal in this case is marihuana", said the murderer's own counsel.

In their very careful study Maurer and Vogel also come to the conclusion that "crimes committed by opiate addicts are likely to be non-violent crimes against property committed by addicts in need of their drug; crimes committed by marihuana users are likely to be committed while under the intoxicating influence of the drug". And further, "marihuana is a potent disinhibitor which may, by breaking down inhibitions, release the psychopathic personality for criminal acts; its position as a direct cause of crime is not as yet fully evaluated, but it can be dangerous". Dr Vogel was for many years the Medical Officer in charge of the US Public Health Service Hospital in Lexington (Kentucky) for the treatment of drug addicts.

In the above book the present writer is referred to as being "most emphatic" in stating that cannabis can provoke extremely dangerous outbursts of violence. He certainly agrees that this is his opinion and would be glad to know what other proof is demanded by those authors who do not yet believe in this classification of cannabis.

In North Africa and the Middle East, however, the situation seems to be different. Bouquet (Tunis) who has a special knowledge of the conditions in North Africa, stated in his review of the effects, that there were certainly a large number of petty and also more serious offenders among cannabis addicts, "but very rarely persons guilty of more serious crimes, such as attempted murder".⁽⁵⁾ The reason for this difference may be attributed to constitutional and racial factors, as explained elsewhere in this study.

Although not connected with violence, the following case illustrates well the psychological effect and danger of marihuana cigarettes used in order to commit a robbery. According to J. Ortiz Velázquez, Professor of Forensic Medicine at the University of Antioquia (Colombia)⁽³⁶⁾⁽⁵⁸⁾ somebody gave a cigarette to the owner of a combine café and provision shop. After having smoked the cigarette containing cannabis (a fact he did not know), the shop-owner, under the influence of the drug and in a "state of fantasy or semi-consciousness", sold the contents of his shop, in the presence of witnesses for 800 pesos, i.e., for next to nothing, to the person who had given him the cigarette. All the merchandise was immediately removed from the shop which was left completely empty. The next day, the grocer accused the "buyer" of swindling him.

Another example: In Pernambuco (Brazil), a woman, a great maconha smoker, explained to Parreiras how this plant is used for robbery. When ships arrive, the sailors are enticed to a certain bar where their usual "aromatic" pipe tobacco is replaced by maconha. When they have smoked a little and had some drink, they return on board, with hallucinations and in a delirious state, after having been robbed beforehand of their wallets and other possessions.

SOCIAL ASPECTS IN GENERAL

A few references, out of the many which are available, may serve to illustrate the social situation in some countries. Of course, the relation between cannabis, violence and crime also forms part of the social aspect of the effect of cannabis. Because of its particular importance, however, it appeared advisable to devote a special chapter to the criminological side before turning to the more general considerations, which now follow.

Quite recently, Vaille, Stern and Verde⁽⁴⁸⁾ have given a remarkable review of the world situation, particularly from the social standpoint. It is striking that only men are addicted to this vice, apart from a very small percentage of women in some countries where cannabis is endemic - for instance, in the Union of South Africa⁽⁴³⁾ and in Brazil.⁽³⁷⁾ In those parts of North Africa under French rule, cannabis constitutes a serious social problem. From the legal and social point of view, the abolition of the monopolies in Tunisia and French Morocco (in 1953 and 1954, respectively) is a courageous step forward.

In Egypt, cannabis abuse still presents a grave problem. A. Abdulla explains that chronic abuse of the drug leads to physical and mental lassitude, disinclination to work, lack of perseverance, idleness, loss of initiative for economic or professional progress. The chronic abuser loses all self-control, is irritable and quarrelsome, neglects his family and prefers the company of other cannabis abusers; his intellectual powers are profoundly affected and finally he develops a state of indifference and apathy. During walks in Cairo in the company of the writer, Dr Abdulla was able to recognize (and confirm) chronic cannabis abusers by their sallow complexion and vacant look.

According to his statement, about 70% of the workers, 60% of the armed forces and 40% of the fellaheen take cannabis. Whilst in former centuries poor people in particular used it, within the last decades it has been smoked by all classes, including intelligent and wealthy persons. He further insists that in Egypt, even in 1953, not only the common people but also learned persons and even many physicians considered cannabis as innocuous.

Rodríguez Diago, chief of the central office of forensic medicine in Barranquilla (Colombia) stated that in the corresponding Department (province) "an increasing campaign had been undertaken against the marihuana vice", but that in spite of the efforts of the health, police and education authorities, the number of prosecutions has progressively increased during the last few years. As an illustration he refers to the number of cases in which samples have been sent to his office for determination of the cannabis content: in 1945 - 1, in 1946 - 15, increasing progressively to 93 in 1952.

An Interstate Conference on Maconha (the Brazilian States of Pernambuco, Sergipe, Alagoas and Bahia) which took place in December 1946, ⁽⁷⁾ suggested to the respective Governments, among other things, destruction of the cannabis plantations, limitation of its production to use for medical or industrial purposes, further legal measures to consolidate and activate the repression and prophylaxis of cannabism, the discussion of drug addiction, particularly cannabism, in congresses and other gatherings of psychiatrists and public-health officers, special surveillance of delinquents, sailors, prostitutes and prisoners, special protection of juveniles, including abandoned and maladjusted children, encouragement of investigations, multiplication of dispensaries for mental health and of measures to discover psychopaths, which at the same time calls for prophylaxis against drug addiction as well as the treatment and imprisonment respectively, of maconha smokers and traffickers; and study of the pharmacological, clinical, psychological and sociological aspects of the problem.

In his competent commentary on these suggestions R. Cordeiro de Farias, ⁽⁹⁾ President of the Brazilian National Commission for the Control of Narcotic Drugs, while supporting many of the above points, particularly the first two, disapproved of a recommendation regarding educational propaganda among juveniles, which he deemed to be dangerous, particularly in adolescence. This standpoint agrees with that of the League of Nations Opium Advisory Committee, and of the Commission on Narcotic Drugs.

On 13 June 1947, in the capacity of Chairman of the above Commission, he fixed rules for the destruction of the cannabis plant.

Décio Parreiras, member of the same Brazilian Commission, has given a wide review of the situation in his country. It is not possible to indicate even an approximate figure for the number of cannabis smokers. He visited all the northern provinces where cannabis is produced and/or used and gives illustrative details. He even mentions "good addresses" where, in the different States and towns of Brazil, cannabis can be found, bars, squares, etc., and a list of "grandes traficantes e grandes fumadores" (great traffickers and heavy smokers). The general result of this report is the confirmation that much maconha is used in the northern parts of the country.

There were only about 1% of women among the maconha smokers, e.g., in Bahia (and these were prostitutes), because women are more peaceable than men, are more domesticated, have less social conflicts and are more religious. Of 100 smokers, 10 were white, 44 were negroes, 46 mulattos. It seems, however, that the preponderance of coloured men is more a social consequence than a racial factor. 90% were bachelors; 95% had character defects. In conclusion, Parreiras refers to the earlier statement: "When the use of marihuana does not lead to pure and well-defined alienation, it frequently ends in mental instability."⁽⁵³⁾

E. de Oliveira refers to the spread of the use of cannabis in Brazil, in spite of the efforts of the health and police authorities, particularly in important harbour like Rio de Janeiro and Santos (see also ⁽⁵¹⁾). In the capital, maconha smoking is indulged in equally by both low and high social classes, according to a police report quoted by the author. The smart Copacabana quarter of Rio de Janeiro, he adds, is now named the "land of vices". However, he recognizes the intense activity of the Federal Public Health Service in its fight against maconha, and makes proposals for an even more intensive campaign.

Shortly afterwards, however, R. Cordeiro de Farias, confirmed that the maconha problem is on the "way to a satisfactory solution".⁽¹⁰⁾

Jardines Carrión refers to the situation in Cuba, which has already been discussed in detail.⁽⁵⁷⁾ The small drug peddler sells about 200 to 300 marihuana cigarettes per day and many more during the weekend and on holidays; and there are thousands of peddlers in Cuba. These estimates show the extent of this vice. Jardines Carrión presents a colourful picture of the special jargon of the marihuana smokers and of the customs they observe whilst smoking together.

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H. C. Mookerjee, Vice-President of the Constituent Assembly in India, has given, in a series of articles, ⁽³³⁾ partly the result of personal investigation and observation in various areas, and partly based on information supplied by social service workers during his trips, a vivid picture of the cannabis situation in his country as it existed towards the end of the pre-partition days. Among many other details he states for instance, that in western areas of Bengal the large consumption "is attributed, and with justice, to the considerable numbers of skilled and unskilled workers employed" in various industries. "A large percentage of them consists of people accustomed in their own homes to the consumption of intoxicants and when they have to work amid unhygienic conditions, so notorious a feature of industrial life in India, they naturally fly to ganja for what has been called temporary release." In Bihar, the use of bhang as a drink was common, but is gradually disappearing, partly because of the spread of education and partly because of the increasing use of alcoholic beverages, especially country-spirit. In Orissa, according to Mookerjee, Brahmins and other high caste Hindus who are forbidden the use of tobacco, indulge freely in ganja as a drink. Ganja is said to be four times more potent than bhang.

Of the United Provinces he says that "it has been held that the use of bhang is of late rapidly disappearing among the well-to-do classes and is being replaced by that of alcohol". It is interesting to note that in some provinces or states the use of some specified form of cannabis preparation for pleasure is allowed, or it may be the favourite form, while another type is not favoured or is even forbidden.

There are people who prefer charas - on account of its higher narcotic content - when they no longer experience the same sensations of intoxication as they did when they first started ganja smoking.* Bhang, eaten as a sweet ("Majun") by people of all castes and creeds, is regarded as a general tonic by the lower classes. Bhang as a cooling beverage is used in several provinces or states during the summer months. No part of the country is free from cannabis consumption which in one form or another has strongly entrenched itself in the life of the population. Repeatedly reference is

* Attention should, however, be drawn to "The Surprising Extinction of the Charas Traffic", with an instructive chart showing the consumption of the different cannabis preparations (Bull. Narcot. 1953, 5, No. 1, 1).

made to the use of cannabis by fakirs. It is generally correct to say that the consumption is always higher in urban than in rural areas; this is particularly true of large industrial centres with a large labour population in low or very low economic circumstances; for them it is a cheap method of securing temporary oblivion. The same is true for mining areas. The high incidence of cannabis in religious centres and important places of pilgrimage is explained by the presence of large number of mendicants. In the different states or provinces, mostly one form or another of cannabis preparation prevails.

SOME FINAL CONSIDERATIONS

Experts on the cannabis problem agree that, despite all the efforts made, the present geographical extension of cannabism constitutes a medical and social danger of no small importance. The clients are mainly Mohammedans and coloured people, but there are already reports concerning Europeans smoking such cigarettes. From every point of view, this is an undesirable development. The governments concerned are taking strict measures to combat this extension, but there is no doubt that for the time being the danger still exists.

The writer is of the opinion that Vaille, Stern and Verde⁽⁴⁸⁾ expressed, only a few months ago, a well-balanced judgement in saying: "If cannabism has been considered for a long time as a "minor" drug addiction not presenting a social danger, this is no longer true today. Its extension, particularly among the youth of certain countries, its influence on criminality and the intensification of the traffic, has contributed to revise this position."

A discussion of juvenile addiction to cannabis would have called for a further extensive chapter. However, the facts are so well-known to the members of the Commission on Narcotic Drugs that the writer has decided to omit this subject for the time being. Apart from a considerable number of papers in the scientific and in the serious lay press - and, unfortunately, as happens in such cases, sensational descriptions which do not always stress the important point of the question and which cause great harm - several books have been published, among which, for instance,

"Drug Addiction among Adolescents" is of special value because it contains the proceedings of the conferences held at the New York Academy of Medicine on this problem. The alarming increase in the smoking of marihuana cigarettes in the United States of America was the reason for measures taken by the Federal as well as by the competent State authorities to combat this evil as quickly and as efficiently as possible. It is important to realize that not only is marihuana smoking per se a danger, but that its use eventually leads the smoker to turn to intravenous heroin injections.

Likewise important are the two extensive reports published by the Attorney-General of the State of New York, N. L. Goldstein, which contain a considerable amount of factual and other instructive material.

It is, however, certainly not true that it is only in the United States of America that juveniles indulge in this vice. In Brazil, for example, a large part of the maconha smokers consist of young people,⁽³⁷⁾ and similar observations have been made in the Union of South Africa,⁽⁴³⁾ where, during the enquiry all witnesses agreed that youths and young men were the greatest smokers of dagga. A certain inclination on the part of young people to take drugs indigenous to the region has also been observed in other countries.

Fortunately, from the public-health point of view, juvenile drug addiction seems, in its consequences, perhaps somewhat less serious than the addiction of adults. D. W. Maurer and V. H. Vogel in their recently published, and valuable book, state that "perhaps the majority of youthful addicts observed recently seem to be essentially normal individuals inadvertently addicted because of association with sophisticated groups in the school or community with which the novice desires status" and they call them "emotionally normal accidental addicts". Of course, Vogel, for reasons given above, has a first-hand insight into the different phases of this complicated problem. From the few observations which the writer has been able to make, it seems to him that this statement of the position is correct and reveals the problem in its true light.

It must, however, be recognized that the situation with respect to and the repercussions of cannabis abuse on public health are not the same in different countries and different cultural regions. The writer hopes that some of these variations can be deduced from the present study.

On the whole it can be said that the standpoint adopted seven years ago⁽⁵⁰⁾ is still correct, and is still further supported by more recent facts and observations, namely, that cannabis constitutes a dangerous drug from every point of view, whether physical, mental, social or criminological.

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