

A MANUAL
OF
MATERIA MEDICA
AND
PHARMACOLOGY

COMPRISING THE
ORGANIC DRUGS WHICH ARE OR HAVE BEEN
RECOGNIZED BY THE UNITED STATES PHARMACOPŒIA
AND NATIONAL FORMULARY

TOGETHER WITH
IMPORTANT ALLIED SPECIES

ESPECIALLY DESIGNED FOR STUDENTS OF PHARMACY AND MEDICINE, AS WELL
AS FOR DRUGGISTS, PHARMACISTS, AND PHYSICIANS

BY

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CANNABIS. CANNABIS, U.S.P.

Cannabis sativa,
Linne.

{ The dried flowering tops of pistillate plants with not more than 10 p. c. fruits, large foliage leaves, stems over 3 Mm. ($\frac{1}{8}$ ') thick, nor 2 p. c. other foreign organic matter, yielding not more than 5 p. c. acid-insoluble ash.

Habitat. Asia, Persia, hills of N. India; cultivated in India, Europe, C. and S. Russia, Brazil, W. and S. United States.

Syn. Cannab., Cannabis Indica, U. S. P. 1900, Guaza, Ganjah, Indian Hemp, Black Indian Hemp, Tristram's Knot, Bangué, Hashish, Haliish, Gallow Grass Hemp, Neck or Nick Weed, St. Andrew's-lace, Welsh Parsley, Bang, Bhang, Gunjah Churrus, Charas, Ganja (dried flowers); Fr. Chanvre (Indien); Ger. Hanf, Indischer Hanf.

Can'na-bis. L. Gr. *κάρραβις*, hemp, fr. *ganeh*, its Arabic name. Celtic *can*, reed + *ab*, small—*i. e.*, its slender stems.

Sa-ti'va. L. *sativus*, that which is sown or planted—*i. e.*, in the gardens and fields for use.

In'di-ca. L. *Indicus*. Gr. *'Ινδικός*, pertaining to India—*i. e.*, its habitat.

PLANT.—Annual herb; stem 1–3 M. (3–10°) high, angular, tomentose; leaves palmate-compound; leaflets 5–7 linear-lanceolate, serrate; flowers dioecious, yellow spikes. **FLOWERING TOPS**, separate, or in

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more or less agglutinated masses, fragments consisting of short stems with leaf-like bracts, pistillate flowers or somewhat developed fruits, greenish-brown; odor agreeable, heavy, narcotic; taste acrid, pungent. POWDER, dark green—leaf epidermis with oval stomata beneath, numerous non-glandular hairs usually with calcium carbonate masses, glandular hairs 2 kinds, yellowish-brown laticiferous vessels, calcium oxalate rosette aggregates, tracheæ and phloem, embryo and endosperm tissues with numerous oil globules, aleurone grains (crystalloids, globoids); on slide—effervesces with diluted hydrochloric acid; alcoholic solution bright green; alcoholic extractive 8 p. c. Should not be kept longer than 1 year, when it usually is only one-fourth as strong as the fresh, and in 2 years it practically is inert. *Solvent*: alcohol. Dose, gr. 1-5 (.06-3 Gm.).

Commercial.—Plant was known to the Romans, but not to the Egyptians, and has been cultivated universally many centuries for fiber, seed, and medicine—that for the latter at present being grown mostly



FIG. 90.—*Cannabis sativa*.

in the two districts, Bogra and Rajshahi, north of Calcutta, in rows, the richest in resin at 1,800-2,400 M. (6,000-8,000°) elevation. When mature (indicated by brown color and falling of leaves) the flowering branches are cut off, May-June, cured by wilting, pressing, rolling, and shaking out of leaves and fruits (if any of the latter have developed), and as such is recognized natively by the Hindustani names, *ganja*, *gunjah*; the rolling and treading are performed by human feet, an art demanding training, the object being possibly to work resinous matter from stems into inflorescence tips. There are

two kinds: 1, *Round ganja*, requiring 4 days for kneading each branch into a cylindrical or terete mass; 2, *Flat ganja*, requiring 2 days for working into a flat form; the Bengal (Calcutta) *ganja* (best) is brownish or dusty, the Bombay bright green. Variability in the drug may be due to the presence of staminate flowers, leaves, fruits, cold weather, inopportune collecting (not later than 4 days after maturing), intentional removal of resin, excessive age (losing most of its properties within a year). Great care is taken to prevent the flowering tops becoming fertilized by suppressing the male plants, as a single one is claimed to spoil an entire field; however, when for fiber or seed both male and female plants are cultivated together. Our plant, often called *Cannabis america'na*, having escaped from native country, may possess slight variations owing to colder climate, but under proper cultivation and care may be as active as the India product, in spite of which it is regarded generally as being about one-fourth weaker.

CONSTITUENTS.—Cannabinol, Cannabin 15–20 p. c., choline (bilineurine—trimethylamine), volatile oil (chiefly sesquiterpene—cannabene), $C_{10}H_{16}$, .3 p. c., bitter principle, paraffin, $C_{29}H_{60}$, chlorophyll, gum, sugar, potassium nitrate, ash 5–15 p. c.

Cannabinol, $C_{21}H_{36}O_2$.—This, to which the activity of the drug is due, may be obtained by exhausting cannabis with petroleum benzin, reclaiming latter, evaporating residue to dryness, and subjecting it, under pressure to fractional distillation at 210–240° C. (410–464° F.), when the distillate contains cannabinol and paraffin, the latter being removed with alcohol. It is a poisonous, yellow or brownish syrupy liquid, darkening on exposure to air into inert, brittle, pitchy mass, consequently must be kept, as well as preparations of the drug, in sealed containers; possibly same as Kobert's cannabindon.

Cannabin.—Resin constituent (resinoid), to which formerly was attributed all of the drug's activity, that now known to be due solely to its contained cannabinol; it may be obtained by treating cannabis with water and a solution of sodium carbonate, washing residue with water, drying, exhausting with alcohol, treating tincture with milk of lime, precipitating lime with sulphuric acid, adding animal charcoal to filtrate, filtering, concentrating, and precipitating with water; it is a brown, amorphous resin, burning without ash, soluble in alcohol, ether, from the former being precipitated white by water.

PREPARATIONS.—1. *Extractum Cannabis*. Extract of Cannabis. (Syn., Ext. Cannab., Extract of (Indian) Cannabis (Hemp); Fr. Extrait de Chanvre (Indien); Ger. (Indisch) Hanfextrakt.)

Manufacture: Macerate, percolate 100 Gm. with alcohol until exhausted, reclaim alcohol, evaporate residue at 70° C. (158° F.), stirring frequently, to pilular consistence, mix thoroughly; after assay add enough storax or substandard extract of cannabis for biological standard; yield 12–14 p. c. Dose, gr. $\frac{1}{8}$ –1 (.01–.06 Gm.): Prep.: 1. *Mistura Chloralis et Potassii Bromidi Composita*, N.F., $\frac{1}{2}$ p. c.

2. *Fluidextractum Cannabis*. Fluidextract of Cannabis. (Syn., Fldext. Cannab., Fluid Extract of Cannabis; Fr. Extrait fluide de Chanvre (Indien); Ger. (Indisch) Hanffluidextrakt.)

Manufacture: Similar to Fluidextractum Colchici, page 111; menstruum: alcohol; after dissolving soft extract in the reserve, assay and adjust finished volume to its biological standard—amount producing incoördination in a dog; .1 cc. for every 2 pounds (1 Kg.) of body weight. Dose, mij–5 (.13–.3 cc.): Preps.: 1. *Collodium Salicylicum Compositum*, N.F., 10 p. c. 2. *Mistura Chloroformi et Morphina Composita*, N.F., 1.85 p. c.

Unoff. Prep.: *Tincture*, 10 p. c. (alcohol), mv–30 (.3–2 cc.).

These preparations give varying results, but usually their value can be recognized by the color of the precipitate formed when added to water; if olive-green, it is active; if yellowish-brown, it is inert; thus, whatever there is that destroys chlorophyll injures the active principle.

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PROPERTIES.—Anodyne, nervine, sudorific, narcotic, aphrodisiac, increases appetite. It excels even belladonna in perverting perception, condition, and relation of objects; some subjects become pugnacious, others have delightful intoxicating dreams, in which time, distance, and sound are magnified—a few minutes' dream extends over weeks, near objects as in infinite space, whispering as cannonading. Large habitual doses bloat the face, inject eyes, make limbs tremulous, weak, mind imbecilic, death by marasmus.

USES.—Neuralgia, distressing cough, quiets tickling in throat, does not constipate or depress like opium; gout, delirium tremens, tetanus convulsions, chorea, hysteria, mental depression, epilepsy, morphine and chloral habits, softening of the brain, nervous vomiting.

Poisoning: Have pleasurable intoxication, double consciousness followed by drowsiness, unconsciousness, collapse, insensibility, dilated pupils, rapid pulse, slow respiration, debility, pale, clammy, insensitive skin, catalepsy, excited passion; effects usually last 24 hours, and closely resemble those of opium, differing, however, in not constipating and in not lessening secretions; increases appetite. Give emetics, lemon juice to neutralize its effects, tannin, coffee, ammonia, strychnine, atropine, electricity, spirit of nitrous ether, artificial respiration; similar to chloral hydrate and opium.

Incompatibles: Strychnine, caustic alkalies, acids.

Synergists: Alcohol, ether, bromides, cocaine, narcotics.

Allied Native Products:

These are mostly used for smoking, beverages, or electuaries, etc.

1. *Bhang* (*Sidhee, Subjee, Siddhi*).—Consists of the dried coarsely broken leaves and fruit (dark green), resembles *ganja* in odor and taste; used by natives in their sweet-meat (*majoon*), also smoked with or without tobacco; its cold infusion (tea) as an intoxicant.

2. *Churrus, Churras, Charas*.—This is the resin (practically the active constituent) which exudes spontaneously from the entire plant in minute drops. It is collected in several different ways: 1. By men, wearing leather suits, brushing forcibly against growing plants, whereby resin adheres and afterward is scraped off. 2. By rubbing green portions between the hands and then scraping off adhering resin. 3. By frequent stirring around that put away in barns to cure, thus causing the resin to rise in the form of dust, and to deposit upon the roof and sides of the building, from which it can afterward be collected. Owing to this being more or less impure it is not used in medicine, but solely smoked in pipes; contains usually cannabinol 33 p. c.

3. *Hashish* (*Hasish, Haschisch, Hasash, Hasheesh—Majoon*).—The Arabic name for hemp, signifying “green intoxicating liquor” fr. Heb. *shesh*, to be joyous. This may consist of the dried tops collected before seed ripen, thereby resembling *ganja*, *gunjah*, but usually is more complex, being prepared by heating tender leaves and tops 4 parts, butter 3, water 4, until latter is dissipated, straining, washing twice the greenish extract with water, adding this to syrup (sugar 16, water 32, little

milk, boil), heating, mystifying by incorporating stramonium or nux vomica; in Bengal a small amount of rose oil, musk, cardamom seed, cantharides, or opium (to which mostly is due the deliriums, manias, dreams, sensualism), boiling half an hour, allowing to solidify, cutting into cakes; the Russians prefer it formed into cakes with the resinous extract.

4. *Hemp Seed (Cannabis Semen)*.—These are achenes 3 Mm. ($\frac{1}{8}$ ') long, roundish, smooth, greenish, taste sweet, oily. Used for birds chiefly, but, owing to the fixed oil, an emulsion becomes a valuable demulcent and anodyne; contain protein 22–24 p. c., fixed oil 28–36 p. c., suitable for painting, varnishing, etc.

5. *Hemp Oil*.—A greenish fixed oil, lighter and brownish on exposure; odor hemp-like, taste mild. Demulcent, protective; chiefly extracted for its possible use in the domestic arts; neither this nor seed possess narcotic properties.

6. *Hemp Fiber*.—Used for cordage, sacking, sail cloths, clothing, etc. The colder climates produce the best fibers, and the tropics that which is most medicinal and intoxicating. Russia produces most of the hemp fiber, but Italy the best; that grown in the United States and India is inferior to that of the other two countries.