

mander who will lead them. If, however, as everything leads me to fear, a policy of humiliation is followed, let us take off the arms from those who are not worthy to bear them and let us take their position."

For our engraving we are indebted to L'Illustrazione Italiana.

## INDIAN HEMP (CANNABIS INDICA SEU SATIVA).

By Dr. G. ARCHIE STOCKWELL, F.Z.S.

INDIAN, European and American hemp are one and the same, except as modified by locality, climate, soil and culture. The plant attains its highest medicinal virtues when grown in the tropics or sub-tropics, inasmuch as there it develops a large amount of resin (churrus), but in Canada and the United States the churrus is often practically nil.

The dried flowering tops of the female plant are the parts employed medicinally, and it is essential to medicinal virtue that the resin shall not be removed; these tops in their crude condition are known as "gunjah." The Arabian "hasheesh," Hindoo "bhang," and Mohammedan "majoon" are practically identical, being aromatic confections into which not only cannabis Indica, but the powdered seeds of stramonium, enter. Hasheesh is not, as has been stated, "the broken stalks of the hemp made up into fruits," nor "a mixture of opium, hemp and aromatics."

The chemistry of hemp is not well understood. The resin, or churrus, according to Egasse,\* is the active principle, and has received the name of cannabin; but Helbing† gives this title to a supposed alkaloid of sirup-like consistency and brownish or greenish-black hue, scarcely at all soluble in water, but freely so in ether and alcohol. Jahns ‡ insists the only alkaloid is choline, and all other supposed principles are impure choline. Inasmuch as this same name obtains to a base found in plants and animals, formerly known as sinhaline and bitineurine, and described chemically as oxy-ethyl-trimethyl-ammonium, its applicability is questionable.

Cannabindou is another derivative of hemp, and appears in the form of a dark, cherry-red sirup.

The cannabine alkaloid of Merck is had in fine needles, but its relations to the entire drug are not yet fully determined; it is not even known that it is a true alkaloid. So, too, there is found in market another "alkaloid" bearing the same title, and which is a translucent, brown, sirupy liquid, with the hemp odor.

Cannabine tannate is a yellowish-brown powder with a tannin-like taste, not unpleasant smell, insoluble in pure water and ether, soluble in alcohol, and freely so in water made alkaline. It is said to be free from the two acrid and volatile oils peculiar to hemp, and which are generally held to be rapidly acting irritant poisons.

Cannabinine is a yellowish-brown, sirupy liquid, with an odor very similar to that of nicotine.

Cannabinson is a purified churrus of dark brown color, the consistency of treacle, and a most disagreeable taste. It also is insoluble in water.

In the Orient, churrus is smoked, and also manufactured into an intoxicating drink. A "butter" is also employed in the Hindostani peninsula, made by boiling together equal parts of ghee and cleansed hemp herb until the small amount of added water is all absorbed; while warm, it is pressed through loosely woven linen into a vessel filled with cold water; and this "butter," which is of a green hue, is frequently washed again either with pure water or rose-water. Sometimes a certain quantity of cleansed hemp herb is boiled in equal parts of water and of milk until the whole is reduced by evaporation to one-half its original bulk, then strained and curdled. The "butter" is afterward, in the usual manner, separated from the coagulation, and contains the effective (i. e., resinous) part of the herb. The "butter," too, is often flavored with spices and sugar, and by means of gum tragacanth converted into bonbons or lozenges. The latter were attempted to be introduced into medical practice in France by the late Germain Séé.

As a whole, cannabis is one of the most valuable of drugs, but is sadly handicapped by the uncertainty that attends all pharmacopœial preparations. Attempts to prepare by methods of assay have not been attended with any marked degree of success, owing to the fact that such have necessarily been based on the amount of the extractive. Too little is known regarding the so-called active principles to place any reliance on them as guides; consequently, the sole dependence of the prescriber is the character of the manufacturer, and the ability of the latter to judge of the crude drug employed. For such reasons cannabis requires to be employed with judgment and caution. It has been noted, too, that larger doses are required in temperate climes than in the tropics and sub-tropics, to produce a definite effect; but the real truth, doubtless, lies in the fact that the drug deteriorates with age and by transportation—perhaps loses some undetermined volatile constituent. The same precise preparation may prove active to-day, but given to the same individual under equally favorable conditions a few weeks later may prove practically inert. Honiberger observed that a resinous extract prepared for him in Calcutta was very much less energetic when he reached London.

Excellent results may be had from the use of a strong aqueous extract of the flowering tops of the female plant of the usual strength of fluid extracts. It possesses the anodyne and soporific action generally ascribed to the resin, although in a modified degree: has the characteristic odor of hemp and a beautiful deep amber color; is miscible in that it combines readily with other liquids. It offers all the benefits with none of the drawbacks of the tincture, and does not induce those extreme conditions of exhilaration bordering on intoxication that are sometimes met with. Finally, it does not interfere with the secretion of mucus from the bronchial glands—a circumstance which renders it superior to opium preparations.

Physiological Action.—The alkaloids appear to be hypnotic only, but all other preparations exhibit in a general way the activity of the crude drug. Minute doses are sedative to the spinal centers, and even when

frequently repeated produce little other effect, except, perhaps, that some slight contraction of the pupils may be observed; but there is, nevertheless, inculcated a feeling of comfort and well-being, and not infrequently it seems to steady the action of the heart. Larger doses are stimulant; they first induce increased arterial action, followed by exhilaration, and as this latter passes off, drowsiness or stupor succeeds that may be almost cataleptic; but the awakening is free from malaise, nausea, headache or other untoward symptoms; the pupil of the eye is expanded. The preliminary effect is more powerful and lasting than that of opium, and the slumber it induces is commonly disturbed by dreams and spectral illusions. Also the sensory nerves are affected, as is evidenced by marked numbness and tingling, ushering in cutaneous anesthesia and diminution of the muscular sense. Appetite is generally stimulated, and marked aphrodisia is not uncommon. Withal, the drug is a valuable anodyne and antispasmodic, its influence being manifested through the brain and cord. While in large doses it appears toxic, strange to say, in spite of the enormous quantities (relatively) that have been ingested on certain occasions, either accidentally or purposely, a case of death directly referable thereto has yet to be recorded. It is antagonized by caustic alkalies, vinegar and other acids, strychnine, electricity, antimonials, and blisters to nape of neck.

Cannabis Indica likewise exhibits a marked predilection for the genito-urinary apparatus, being strongly stimulant or sedative to the mucous tissue thereof, in accordance with the mode of exhibition and size of the dose; it is sometimes markedly diuretic, and appears to be excreted in part by the kidneys; but beyond this the eliminative process is unknown. Further, in atonic conditions, or inertia during labor, it stimulates uterine activity and induces physiological contractions, and at a time when ergot and kindred remedies prove useless.

Therapeutics.—Cannabis Indica is soporific or hypnotic, anodyne, antispasmodic, nervine stimulant, and, as already remarked, in some measure diuretic, aphrodisiac and oxytocic; consequently its scope of usefulness is a most extended one. Its most important effects, however, are to be found in the mental sphere, as, for instance, in senile insomnia, with wandering:

"An elderly person (perhaps with brain softening) is fidgety at night, goes to bed, gets up, thinks he has some appointment to keep, that he must dress and go out; daylight finds him quite rational again. Here nothing can compare in utility to a moderate dose of cannabis. In alcoholic subjects, however, it is uncertain and rarely useful. In melancholia it is sometimes serviceable in converting depression into exaltation. In the occasional night restlessness of paretics, and the 'temper disease' of Marshall Hall, it has proved eminently useful. In neuralgia, neuritis, migraine, it is by far the most useful of drugs, even when the disease has persisted for years. Many victims of diabolical 'sick headache' have for years kept their sufferings in abeyance by taking hemp at the threatened onset of the attack. It relieves the lightning pains of locomotor ataxia and also the multiform miseries of the gouty. Again, in chronic spasm, whether epileptic or choreic, it is of great service; also in the eclampsia of both children and adults. In brain tumors or other maladies, in the course of which epileptic seizures occur followed by coma, the coma being followed by delirium, first quiet, then violent, the delirium then passing into convulsions, and the whole gamut being repeated, Indian hemp will at once cut short such abnormal activities, even when all other treatment has failed; but in genuine epilepsy it is of little avail."

In tetanus cannabis Indica has been found very efficacious at times, and in those cases wherein it is not curative, it seldom fails to afford some measure of relief. So, too, it is a favorite remedy in the Orient for epidemic cholera; patients in actual collapse have revived after taking a full dose; it seems to stimulate the nervous centers at a period when their influence is all but suspended. It is by no means a panacea as regards this malady, however, and is not so active as regards the dark as the white races, probably because the former are generally more or less habituated to its use.

In delirium tremens it often proves the most satisfactory of all remedies, its action resembling opium and wine, but much more certain. It readily dissipates the horrors, quiets nerve hyperæsthesia and conduces to cheerfulness. Great excitement, however, is necessary in application.

In menorrhagia and uterine hæmorrhages, hemp may prove invaluable if judiciously employed; also in impending abortion. Menstruation has already been made of its power upon the gravid womb, inactive through inertia, and it may be added that it is equally efficacious as a preventive of post-partum hæmorrhage, or as a remedy after "flowing" has begun, but requires to be given in full doses, and sometimes to be reinforced by ergot. Here half drachm or even drachm doses of the fluid extract may be exhibited, since, strange to say, under these circumstances it never exhibits the ordinary physiological effects; there is neither excitement, intoxication nor tendency to somnolence, only a feeling of quiet, of well-being, and that the condition is one of perfect safety.

Cannabis is especially available for sensitive ovaries. Indeed, it seems sedative to all the pelvic viscera; and it is thus that it acts as an aphrodisiac, by allaying functional nerve irritation—not as has been supposed by stimulating erethism; and yet the latter effect may be had from large doses, but is apt to be most fleeting, or else assume the form of a priapism in man and nymphomania in woman, that is not gratified, much less satisfied, by sexual indulgence.

The value of hemp in allaying morbid irritability of the nervous system is such that it has been suggested as a means of relief from the distressing symptoms of vaso-motor coryza, popularly denominated "hay fever" or "hay asthma;" but there seems to have been no critical trial thereof; it is often efficacious, or at least palliative, in other asthmas, either when given by the mouth, or burned and its fumes inhaled, and there seems no reason why it should not be of benefit here; the idea is certainly commendable and rational, and worthy of experiment.

In violent palpitations of the heart the drug is often markedly remedial, especially when the non-utility of all other agents has been proved. The late Dr. Christison, of London, especially extolled it; he employed in a large number of instances with unequivocal effect, and by its aid succeeded in relieving a case of twenty-one years' standing.

In eczema and other cutaneous disorders accompanied with intolerable itching, cannabis gives relief when local treatment does not, but it must be employed in a way to secure its full and prompt effect. There are rarely any untoward manifestations, and it is best, perhaps, to first give in small doses and then gradually increase.

In certain diseases of the stomach and digestive apparatus the drug is often available, and is always preferable to opium, in that it does not inhibit appetite, does not interfere with the secretions of either pancreas or liver, and neither constipates nor checks renal secretion. It is especially desirable in gastric neuroses and gastric dyspepsia. It not only allays painful sensation and improves appetite, but is of great service in promoting digestion and assimilation throughout the prima viæ; this is especially true in cases of hyperchlorhydria. In anachlorhydria it acts feebly; and it has no action on atony or dilatation. On the whole, it may be considered as a true gastric sedative, and it presents none of the disadvantages that accrue to opium, bismuth, potassium bromide, antipyrin, etc.

In the anorexia superinduced by exhaustive maladies—when there is repugnance and intolerance of food that is not relieved by acids, nux vomica and bitters—from five to ten minims of tincture cannabis, or one-quarter to one-half grain of the solid extract, given thrice daily before meals, often brings back the appetite in two or three days. In dyspeptic diarrhœa, also, and the first months of true tropical diarrhœa, it is often of great service. Tropical diarrhœa is primarily and essentially a disease of the liver, and mercury should first be administered. The cannabis acts by diminishing the irritability and excessive peristalsis of the intestines.

In rheumatism cannabis has been lauded for both its analgesic and curative effects, but it is questionable if it deserves the encomiums bestowed; but it may tend to alleviate pain, and is useful in so far as it contributes to increase appetite and promote mental cheerfulness.

It is also a capital sedative to the upper respiratory tract, and is a favorite factor in many cough mixtures. Fothergill, long ago, commended its use in phthisis pulmonalis, and declared it supplies a place that cannot be filled by any other drug.

Many eclectic physicians recommend it in Bright's disease where the urine is tinged with blood, but personal experience has not confirmed this. It is also upheld as an almost specific for urethral spasm, chordee, and the acute stage of blennorrhœa, etc. Nothing is more certain than that in the early stages of gonorrhœa, small doses, combined with gelsemium, subdue the disease much sooner and with greater comfort and safety than the old method of ruining the digestive powers with large doses of copaiba and turpentine. So, too, combined with gelsemium, it tends to subdue any inflammation of mucous tissue. In the spermatorrhea of highly nervous subjects it is especially valuable, and does excellent service if combined with Pareira brava in cases of irritable bladder.

It is somewhat surprising that cannabis is not more frequently employed in migraine, for it is by long odds the best remedy known. It is almost as valuable a drug in the treatment of other headaches, even the severe forms attending cerebral growths, or those dependent on uræmic poisoning. It is almost a specific for that continuous form which begins in the morning and lasts all day, the pain being generally dull and diffuse, but marked by occasional exacerbations. When the patient suffers constantly, or is liable to an attack of headache on the slightest provocation, a pill of one-third to one-half grain of the extract may be taken three times a day for many weeks at a time without the slightest fear of the production of any untoward effect. Should the patient not speedily obtain relief, care must be taken to ascertain that the extract employed is physiologically active.

After all that is said, it must be admitted few practitioners understand the real value of cannabis Indica, owing to the varied character of the preparations found in shops. The writer may say that constant use of the preparations manufactured by Squibb during more than a quarter of a century has proved their general uniformity and utility. The active principles, so called, offer no advantages, the resin churrus excepted, and are, if anything, more unreliable than the average solid and fluid extract. The "majoon" imported from India in foil wrappers is usually both uniform and palatable, but, unfortunately, difficult to procure.

The well known beauty of the China silks now produced in such large quantities in Zurich is said to be due to a peculiar process of preparing and printing the fabric there pursued. It has lately been fully disclosed in the Leipziger Färber Zeitung. Briefly, after the usual preliminary treatment the warp is stretched tightly on a table about twenty yards long and covered with a cloth, then printed by means of blocks, for which the colors are supplied from receptacles that slide in grooves along the entire length of the table. When the whole of the piece has been printed it is subjected to the action of superheated steam for about three-quarters of an hour, which fixes the color; this warp is now packed in a sack and worked backward in water by two men, to wash out the thickening used in the printing colors. The sack and its contents are at this stage wrung centrifugally, the warp taken out of the sack and hung up to dry, and finally brushed in order to close up the threads. The discharge printing of figured silk with a dark-dyed background has the unique advantage, as compared with the application of the background by means of printing, that the pattern is clearer and sharper, while the background itself is of a better color. The background is dyed with such coal-tar colors as can be discharged by zinc dust or tin salt, dyes being mixed with the discharge which are not affected thereby; thus, green, red, yellow and other parti-colored effects can be got on a dark ground and afterward steamed.

\* Bulletin Generale de Therapeutique, tome 118, 1890.

† Modern Materia Medica, 1892.

‡ Archives de Pharmacie, 1887.

\* J. Russel Reynolds, The Lancet, London, March 2, 1890.