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7 February 1956

A/B, VII, 9, 5

MEMORANDUM FOR: THE RECORD

SUBJECT: Exploration of Potent Plant Resources in the Caribbean Region

The assignment had a four-fold purpose, namely:

1. To collect specific plant products and other promising drugs in sufficient bulk for study, appraisal and exploitation.
2. To gain, through personal contact with this region, the desired orientation concerning the natural drug resources, the institutions and personnel engaged in developing or testing them, and individuals especially familiar with native potent plants and medicines.
3. To explore every opportunity to enrich our knowledge of hidden treasures in potent plant resources, either native or introduced, to learn of their availability, their place of growth and the season of maturity, and to record their reported or proven value.
4. To collect published data, manuscripts, lists and notes dealing with potent plant resources found in the Caribbean and neighboring regions.

The following twelve countries or regions were visited and explored as thoroughly as time permitted: Puerto Rico, Trinidad, Tobago, Martinique, Dominica, Guadalupe, St. Thomas, and the Water Isle of the Virgin Islands, the Dominican Republic, Haiti, Jamaica, and Cuba. In addition, personal inquiries were made in Miami in contact with Government officials engaged in plant introduction, in the [redacted] with staff members active in the study of plants and plant products. A chart of the area explored is attached. C

The results were most gratifying, inasmuch as provisions made for the trip, the season selected, and the weather were very favorable for observation and collection, and the fullest cooperation was obtained from all officials and other individuals contacted.

To assure the desired complete success of the exploration, the following recommendations are respectfully suggested.

[redacted]

1. Evaluation of the most promising potent agents collected, and exploitation where warranted.
2. The conclusion of cooperative agreements such as those with the

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3. To establish or set aside token-cooperative funds to pay the expenses incurred for labor in growing, collection and transportation.
4. To maintain the contacts made and develop new ones for the continued exploration of additional natural potent resources, including especially the mushrooms and other fungi, having psychogenic properties. Particularly promising sources for further study are the native Carib ceremonial drugs of Dominica and the domestic cerebral drugs of the Virgin Islands and Haiti.
5. To arrange for adequate cover for field contacts, such as the functioning as a consultant for the [REDACTED] or the [REDACTED] with the continued cooperation of [REDACTED]

[REDACTED]

Attachments:

- I Institutions and Personnel Contacted
- II Caribbean Collections, 16 Dec 54 - 25 Jan 55
- IIIa Potential Sources of Potent Plant Products
- IIIb Potential Sources of Potent Fungal Products
- IV Caribbean Collections, 16 Dec 54 - 25 Jan 55

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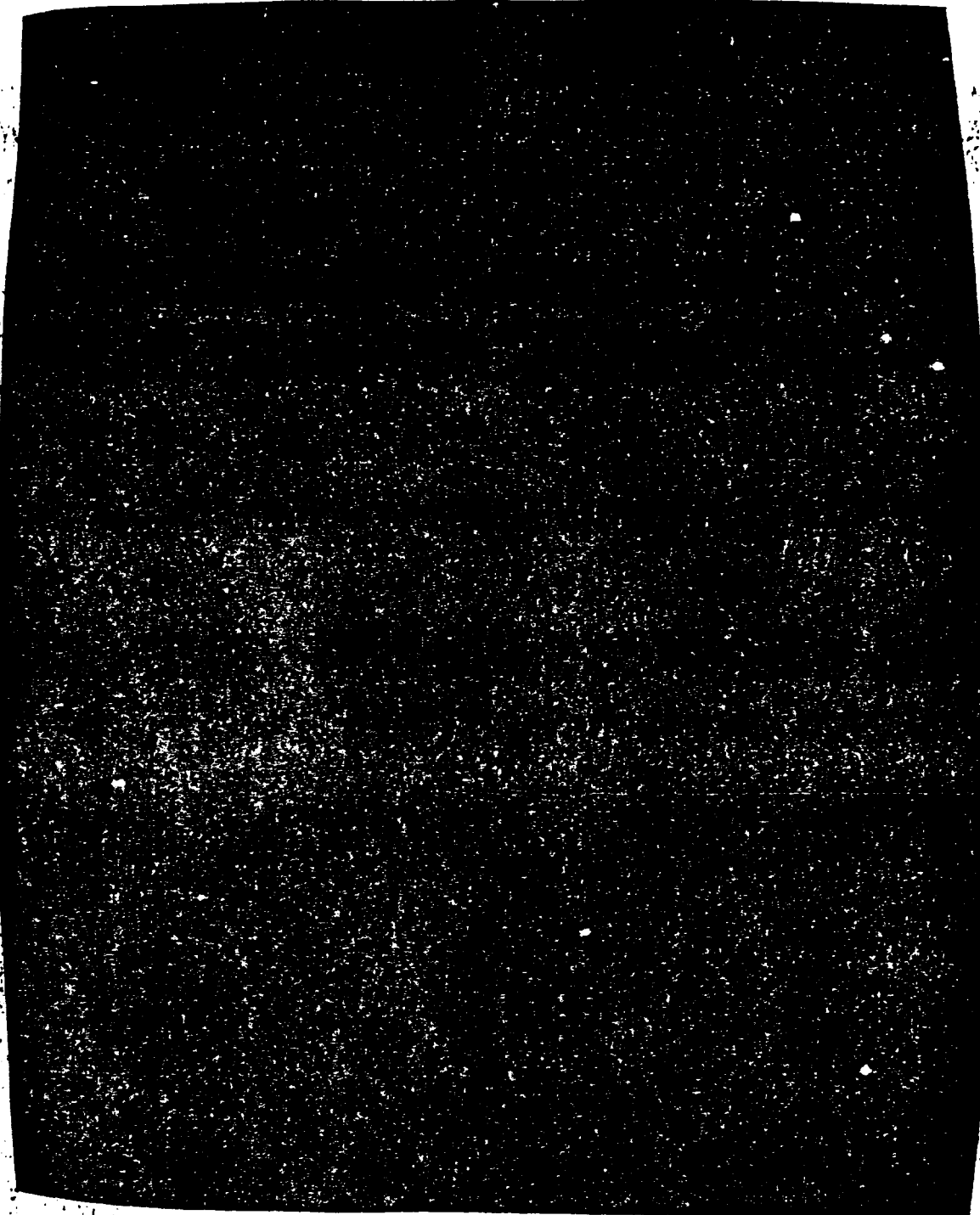
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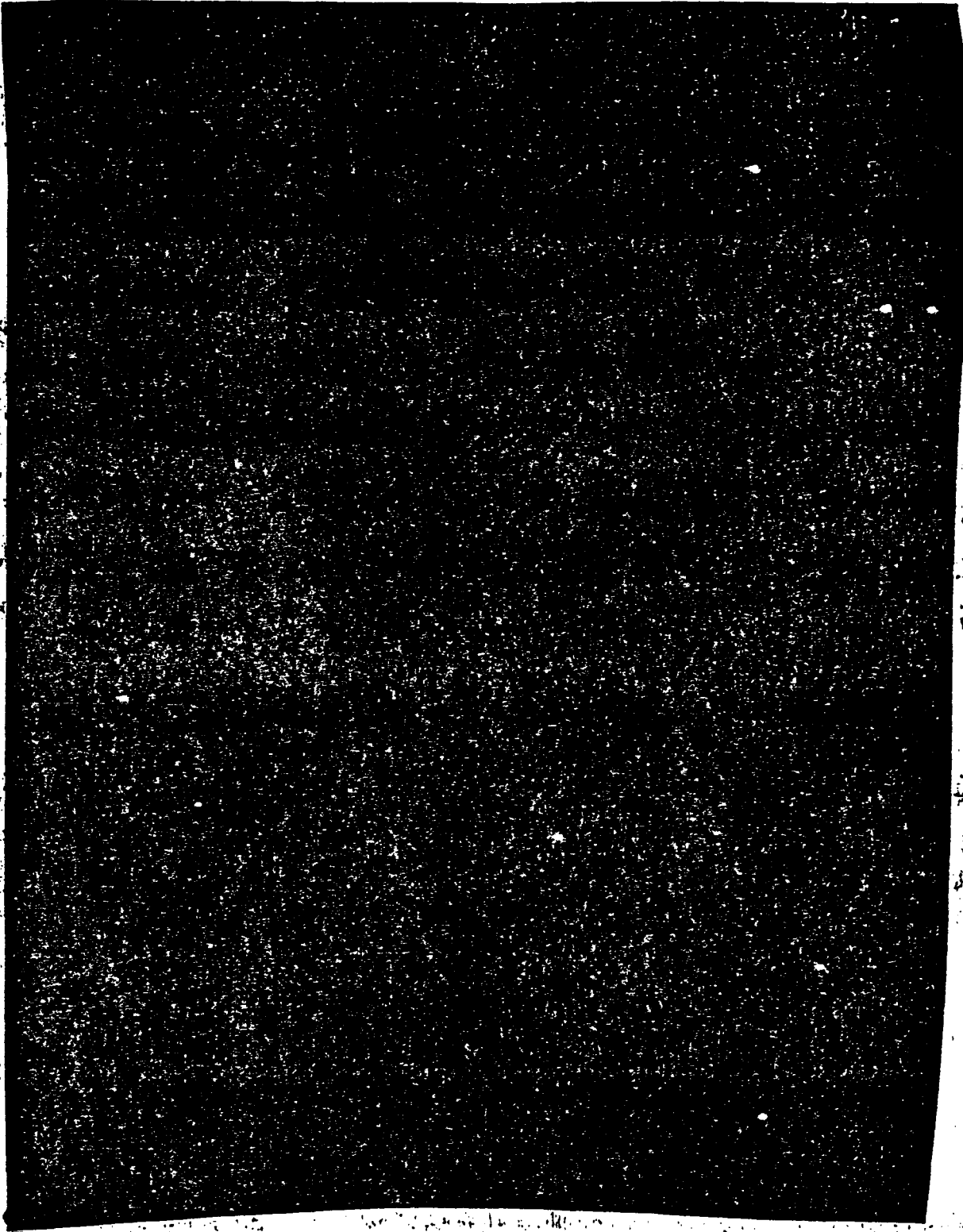


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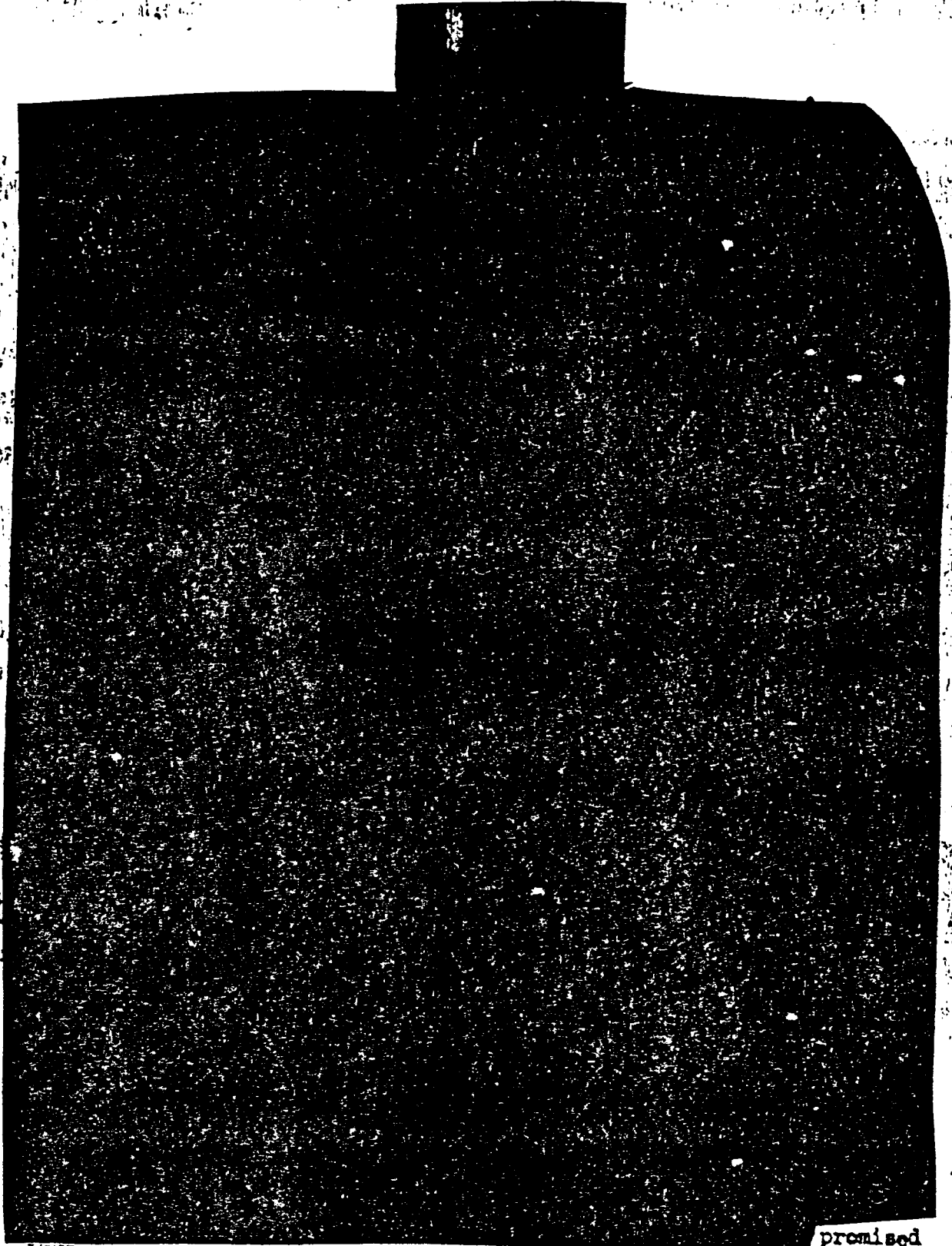
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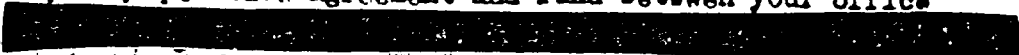




②

to cooperate in any survey of poisonous or potent plants, as well as in efforts to grow them under control. promised



1 - 17 - 53

1. Set up a cooperative agreement and fund between your office in  C
 2. Ask us for the seed and plant samples you wish.
 3. We will determine the cost of obtaining the samples and shipping them to you.
 4. Your office deposit the necessary fund in the cooperative account.
 5. We will have the material collected and send it to you.
 6. We will pay the expense incurred from the cooperative fund.
-  A
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II CARIBBEAN COLLECTIONS, DECEMBER 16, 1954 - JANUARY 25, 1955:

No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
1	<i>Abrus Brittonii</i> ?	seed	Virgin Isles	Leguminosae	Abrin ?	
2	<i>Abrus precatorius</i>	seed	Martinique	Leguminosae	Phytotoxin	Used in malingering
	<i>Abrus precatorius</i>	seed	Virgin Isles	Leguminosae	Phytotoxin	Toxic
		root	India	Leguminosae		Abortive
3	<i>Adenanthera pavonina</i>	seed	Dominica	Leguminosae	Alkaloid ?	Intoxicant
4	<i>Aleurites moluccana</i>	fruit, seed	Puerto Rico	Euphorbiaceae	Phytotoxin	Toxic
5	<i>Andira inermis</i>	fruit, seed	Virgin Isles	Leguminosae	N-methyltyrosine	Narcotic
6	<i>Annona muricata</i>	fruit, seed leaves	Dominica	Anonaceae	Muricine, Muricinine	Sedative
7	<i>Barringtonia speciosa</i>	fruit, seed	Haiti	Lecythidaceae	Saponin ?	Fish poison
8	<i>Elichia sapida</i>	fruit, seed	Dominica	Sapindaceae	Saponin ?	Very toxic, unripe
	<i>Elichia sapida</i>	aril, pulp	Jamaica	Sapindaceae		Very toxic, overripe
9	<i>Caesalpinia coriaria</i>	fruit, seed	Jamaica	Leguminosae		Disinfectant Antiperiodic
10	<i>Datura metel</i>	fruit, seed	Puerto Rico	Solanaceae	Scopolamine, Hyoscyamine	Stupefacient
11	<i>Datura stramonium</i>	fruit, seed	Puerto Rico	Solanaceae	Hyoscyamine	Antispasmodic, Arrow Poison

No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
12	Datura Tatula	fruit, seed	Puerto Rico	Solanaceae	Hyoscyamine ?	Antispasmodic, Arrow Poison
13	Dieffenbachia seguina	stem, leaves roots, juice	Puerto Rico	Araceae	Oxalic acid ?	Painful swelling, temporary dumbness
		stem	S. America	Araceae	Oxalic acid	Addition to Arrow Poison
14	Diospyrus ebenaster	fruit, seed	Dominica	Ebenaceae	? ?	Fish Poison (unripe fruit)
15	Erythrina indica	fruit, seed	Cuba	Leguminosae	Alkaloids	Psychogenic agent
16	Erythrina senegalensis	seed	Jamaica	Leguminosae	Erythramine ?	Psychogenic agent
17	Ficus Benjanina	fruit, seed	Dominica	Moraceae	Ficin ?	Proteolytic enzyme in latex
18	Hura crepitans	fruit, seed	Puerto Rico	Euphorbiaceae	Phytotoxin	Fish poison, latex used in arrow poison
		latex	Dom. Repub.		Hurin	Arrow poison mixture
19	Jatropha curcas	fruit, seed	Puerto Rico	Euphorbiaceae	Phytotoxin curcin	Toxic
20	Jatropha multifida	fruit, seed	Virgin Isles	Euphorbiaceae	Phytotoxin curcin ?	Toxic
21	Jatropha curcas	husks	Jamaica	Euphorbiaceae	Phytotoxin curcin	Toxic, resin, irritant
	Jatropha gossypifolia	leaves	W. Indies	Euphorbiaceae	? ?	Drasticum, abortive
22	Mucuna pruritem	Pods, seeds	Puerto Rico	Leguminosae	Mucunine, Mucunadine ?	Physostigmine-like base



No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
23	<i>Mucuna Sloani</i>	Pods, seeds	Puerto Rico	Leguminosae	Mucunine, mucunadine	?
24	<i>Ormosa Krugii</i>	seeds	Puerto Rico	Leguminosae	Ormosin, Ormosinine	Psychogenic agent
25	<i>Ormosa Monosperma</i>	seeds	Dominica	Leguminosae	Ormosin, Ormosinine	Psychogenic agent
26	<i>Ormosa dasycarpa</i>	seeds	Dominica	Leguminosae	Ormosin, Ormosinine	Morphine like ?
27	<i>Piptadenia peregrina</i>	fruit, seeds	Puerto Rico	Leguminosae	Bufotenin, approx. 70%	Psychogenic narcotic Stimulant
			Dominica Haiti	Leguminosae	Bufotenin Bufotenin	
28	<i>Rhynchosia phaseoloides</i>	fruit, seeds	Puerto Rico	Leguminosae		Psychogenic
29	<i>Rhynchosia minima</i>	seeds	Cuba	Leguminosae		Toxic
30	<i>Rivea corymbosa</i>	fruit, seeds	Duba	Convolvulaceae		Psychogenic
			buds, flowers	Tobago	Convolvulaceae	Intoxicant
			leaves	Cuba	Convolvulaceae	
			stems, roots	Cuba	Convolvulaceae	
		honey	Cuba	Convolvulaceae	Intoxicant	
31	<i>Sophora tomentosa</i>	pods w/ seeds	Cuba	Leguminosae	Cytisin	Psychogenic
	<i>Sophora occidentalis</i>		Trinidad			

No. Material	Plant	Part Collected	Source	Family	Constituent	Physiological and Original Action
32	<i>Tabernaemontana</i> <i>altifolia</i>	roots	Guadalupe	Apocynaceae	<i>Tabernaemontanine</i> <i>Coronarline</i> ?	Latex Arrow poison ?
33	<i>Tephrosia</i> <i>olmerae</i>	pods, seeds	Dominica Guadalupe	Leguminosae	<i>Tephrosin</i> ?	Fish poison, toxic admixture to arrow poison

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IIIa Potential Sources of Potent Plant Products*

No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
1	<i>Aconitum arborescens</i> "Wild Tobacco"		Guadalupe Trinidad, Tobago	Solanaceae		Toxic, narcotic
2	<i>Adansonia digitata</i> "Guinea Tamarind"	fruit	St. Thomas	Bombacaceae		
3	<i>Amaranthus spinosus</i> "Stupid Bush"		St. Thomas Puerto Rico	amaranthaceae		Psychogenic agent Parasitic weed
4	<i>Annona reticulata</i>	fruit, seed	St. Thomas, Dominica	Annonaceae		Narcotic, specific antidysent, vermifuge
5	<i>Brownea latiflora</i> <i>grandiflora</i>	bud	St. Thomas	Leguminosae		Menstruant
6	<i>Cajanus cajanus</i> <i>indicus</i>	leaves	St. Thomas Haiti, W. Indies	Leguminosae		Against toothache "Abscess in mouth" abortive
7	<i>Cecropia peltatum</i> <i>Cecropia mexicana</i>	latex	Haiti, Trinidad Mexico	Moraceae	Alkaloid cowleyine Alkaloid cecropine	Caustic
8	<i>Cerbera odollam</i> G.	seeds	Trinidad	Apocynaceae	Cerberin	Poisonous
9	<i>Cestrum nocturnum</i>	leaves	Haiti, Mexico Trinidad	Solanaceae	Cestrumid	Antispasmodic, anti-epileptic
10	<i>Cissampelos pareira</i>		Haiti, Puerto Rico Mexico	Menispermaceae	Alkaloids Bebeerine	Antidote

[REDACTED]

No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
11	<u>Clibadium surinamensis</u> <u>Clibadium sylvestre</u> "Hivrage"	leaves	St. Thomas Guadalupe	Compositae		Fish poison
12	<u>Cosmos caudatus</u> H.B.K.	leaves	Trinidad, Puerto Rico Haiti	Compositae	Volatile oil	
13	<u>Croton humilis</u> L.	leaves	St. Thomas, Haiti, Mexico	Euphorbiaceae	crotonoside	Nerve stimulant
14	<u>Euphorbia tercnilla</u>	latex	St. Thomas	Euphorbiaceae		Very potent
15	<u>Furcraea tuberosa</u> (<u>Fourcroya tuberosa</u>)	roots juice	St. Thomas Puerto Rico	Amarylidaceae	Saponin ?	Poisonous
16	<u>Fumaria muralis</u> S.		Haiti	Papaveraceae	Fumarine, protopine	Narcotic
17	<u>Gliricidia sepium</u>	leaves bark twigs	Haiti	Leguminosae		Cure of fright & terror, rodent poison
18	<u>Hippomane mancinella</u>	latex	West Indies	Euphorbiaceae		Arrow poison, very toxic, causing temporary blindness
19	<u>Hibiscus pretans</u> Roxb.	seeds	Mexico	Malvaceae	Glucos-alkaloid ?	Intoxicant, anti- snake bite.
20	<u>Ipomoea sinuata</u>	leaves	Trinidad, Tobago	Convolvulaceae		Poisonous to cattle



No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
21	<i>Lactuca sativa</i> ?	latex ?	Guadalupe Haiti	Compositae	Lactucin, hyoscyam.	Narcotic
22	<i>Leucaena glauca</i> L.B.	leaves	St. Thomas, Haiti Trinidad	Leguminosae		Causing shedding of hair (Mane & tail of horses)
23	<i>Lonchocarpus violaceus</i>	wood	West Indies	Leguminosae	Rotenone ?	Fish poison
24	<i>Momordica charantia</i>		West Indies	Cucurbitaceae	Alkaloids, incl. momordicine	Calmant
25	<i>Morinda citrifolia</i> <i>Morinda Douleur</i> <i>citrifolia</i>	leaves	St. Thomas Haiti	Rubiaceae	Morindin (root, bark)	Analgesic
26	<i>Panax marototoni</i> A.	roots ?	Guadalupe	Araliaceae		Excellent analgesic
27	<i>Parthenium hysterophorus</i> L.		West Indies	Compositae	Parthenin	Analgesic
28	<i>Passiflora laurifolia</i>		Trinidad Haiti	Passifloraceae	Passiflorin ?	Opium-like
29	<i>Passiflora quadrangu-</i> <i>laris</i>	root	Guadalupe Haiti	Passifloraceae		Toxic ?
30	<i>Paullinia cururu</i> L.	fruit	Guadalupe	Sapindaceae	Curarine ?	Fish poison
31	<i>Paullinia pinnata</i>	plant	W. Indies, Haiti			Fish poison
32	<i>Physalis angulata</i>	roots	Puerto Rico, Haiti	Solanaceae		Analgesic



No.	Plant Material	Part Collected	Source	Family	Constituent	Physiological and Criminal Action
33	<u>Phytolacca icosandra</u>		Guadalupe Haiti	Phytolaccaceae		Narcotic
34	<u>Piptadenia flava</u>	fruit, seed leaves	Trinidad	Leguminosae	Bufotenin ?	Stimulant ?
35	<u>Pithecolobium arberaeum</u> "Poison Lachine"		Mexico, Haiti, W. Indies	Leguminosae	Pithecolobine ?	Psychogenic agent ?
36	<u>Roupala montana</u> "Bois bande"	bark	W. Indies	Proteaceae		Nerve stimulant
37	<u>Scoparius dulcis</u>		Guadalupe, Haiti, Puerto Rico	Scrophularia- ceae	Alkaloid	Opium substitute emetic
38	<u>Solanum mammosum</u>	fruit	Dominica Haiti Trinidad	Solanaceae	Alkaloids ?	Narcotic
39	<u>Spigelia anthelmia</u>	leaves	Trinidad Haiti Guadalupe Puerto Rico	Loganiaceae	Alkaloid spigeline ?	Poisonous vermifuge
40	<u>Strychnos gravi G.</u>	seed	Haiti	Loganiaceae	Strychnine, brucine ?	Convulsant ?
41	<u>Verbascina alata</u> "Information bush"		St. Thomas Haiti Puerto Rico	Compositae		Psychogenic agent ?
42	<u>Vulcamira aculeata</u>		St. Thomas	Verbenaceae		Antispasmodic

* Most promising sources are underlined.

IIIb Potential Sources of Potent Fungal Products

	Sources	Season
Mushrooms, believed to affect the Central Nervous System.		
<u>Amanita muscaria</u> Linn.	Fairly common	Fall
" <u>pantherina</u> D.C.		
" <u>phalloides</u> Fr.	Local	Summer
" <u>verna</u> Bull.		
" <u>Mappa</u> Linn. (Amanita virosa, Amanita citrina)		
" <u>strobiliformis</u>	Woods	Midsummer
<u>Boletus calopus</u>		
<u>luridus</u> Schaaff—red-pored Boletus		
<u>retusus</u> Lenz—white-topped Boletus		
<u>Stropharia coronilla</u>		
<u>scutigerata</u> —with hemispherical cap, on dung	Common	
<u>stercoaria</u>	Mexico	Summer
<u>mazatecorum</u>		
<u>Inocybe asterospora</u>		
<u>brunnea</u>		
<u>cinnamomea</u>		
<u>descissa</u>		
<u>enthales</u>		
<u>geophylla</u>		
<u>hirsuta</u>		
<u>lamiginosa</u>	Europe only	
<u>obscura</u>		
<u>praetervisa</u>		
<u>Clitocybe cerussata</u>		
<u>dealbata</u>		
<u>illudens</u> Schw.—Giant Clitocybe	Canada, Florida	Summer
<u>phyllophila</u>		
<u>pithyophila</u>		
<u>sudorifica</u> (Sweet producing)		
<u>virulosa</u>		
<u>Hebeloma fastibile</u>		
<u>Coprinus atramentarius</u> (with alcohol) "Inky Cap"	Kenneth Square	
<u>narcoticus</u> , with narcotic odor, with deliquescent gills	Mushrooms Beds	
<u>Gyromitra esculenta</u> - ?		
<u>Lepiota Morzani</u> —in fairy rings	Lawns, local	Summer
<u>Lactaria terminosus</u> Fr.—Large-sized with colored acrid latex		
<u>Lactarius</u>		

	<u>Source</u>	<u>Season</u>
<u>Panaeolus campanulatus</u> Linn. sphinctrinus	Mexico	Summer
ovatus	U.S. Wales	
<u>penilloneus</u>		
<u>retrovagin</u> —gills non-deliquescent		(Rainy season)
<u>Yuccospora</u> Berk.		
<u>limicola</u> Fr.		

Russula emetica Fr. extremely acrid Summer, Fall

Pailocyba cubensis Cuba (on dung)

NOTE: These items underscored are the most important potential sources.

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Approximately 1000 species, mostly herbs of warm regions (including ornamentals), with potent alkaloids, especially in bulbs: Lycorin and derivatives, Euphantine, minor alkaloids and saponins, yielding arrow poisons, emetics, affecting the central nervous system, etc.

Plant	Species	Author	Source	Pl. Part	Potent Agents	Nature	% Ant	Effect	References
*Agave	Americana	L.	Mediterran.	Root		Saponin			Wahner 29
"	Heteracantha	Succ.	"	Leaves		"			" "
"	Lecanosticta	Torr.	"	Rootstock		"		Toxic	" "
*Amaryllis	Belladonna	L.	W. Indies	Bulb	Lycorin	Alkaloid	0.7	Hydrastine-like	" "
"			Africa	Dry Bulb	"	"	0.3	Fatal paralysis of CNS.	Steyn 34
"	Indiata	Herit.	Japan, China	Root	Lycoramine	Minor Alkaloid			Wark's J. 1952
"	Pudica								
"	Carnianensis	L.							
Euphane	Disticha	Herb	S. Africa	Bulb & Herb	Lycorine				
"	Toxicaria	"	"		Euphantine	Alkaloid		hyoscine-like	Steyn 34

Plant	Species	Author	Source	Pl. Part	Potent Agents	Nature	Ant	Effect	References
*Clivia	Miniata	Benth	Java, S. Afr.	Root	Lycorine	Alkaloid	0.3		Bentley 49
*Cooperia	Drymonodii Pendunculata	Herb	Java, Tex, Mex	Fresh Bulb	"	"	0.04- 0.05		Manske 52
*Cinnam	Aelaticum	L.	Java	Root	"	"	1.0- 1.8		Manske & Holmes 52
"	Japonicum	Andr.	Japan	Seed	"	"	0.018		"
"	Diquileum	Herb	Java	Root	"	"	1.0- 1.5		"
"	Pratenso	Herb	Java	Root	"	"	0.9		"
"	Scabrum	Herb	Trop. Afr.	Root	"	"			Read 36
"	Esatfolia	R. Br.	China	Root	"	"			"
(*)	Malabarica	Vlight	"	"	"	"			"
"	Oreholodes	Garlin	"	"	"	"			"
"	Stans	Labill	"	"	"	"			"
(Hypocis	Minor)	Seem.	"	"	"	"			"
Cyrtanthus	Pallidus	Sims	Java	Bulb Root	Lycorine	Alkaloid trace			Manske 52
Euebaris	Ornithi flora	Planck	Java, Brazil	Foot	Lycorine	Alkaloid	0.45- 0.75		Manske 52
Stuyves	Silvestris	Salisb	Java, Malaya	Root	"	"			"
(*)	Ambolmensis	"	"	"	"	"			"

Plant	Species	Author	Source	Pl. Part	Potent Agents	Nature	Dose	Effect	References
Yourarova	Cubensis Gigantea (Postida R.)	Vent. L.	Cuba Trop. Amer.	Sap		Saponin			Wehner 29
Galanthus	Nivalis	L.	Europe W. Asia	Bulb	Taxettine, Leucocine, Buccocitine	Alkaloids			Sokolov 52
"	Woronowii	Losinsk	Lower Don Russia	Bulbs Leaves	? ?		1.03 0.60		Manske & Holmes 52
Haemanthus	Toxicarius	Ait	S. Afr.		Haemanthine	Alkaloid Mixture	?	Atropine-like Harcosis, Trembling, Spasms, Myd- riasis, arrow poison Toxic	Manske & Holmes 1952 L. Lewin 23
Hippeastrum	Maginae	Herb	Brasil	Bulb					
"	Reticulat.	Herb	Mex, W. Ind.	"					
"	Rutilum	Heck	"	"					
Hymenocal- lis	littoralis	Salisb	Java	Root	Lycorine	Alkaloid	0.015		Wehner 29
Leucojum	Aestivum	L.	Crima	Bulb	Leucojin, Buccocitine	Alkaloid		Emetic	Wehner 29
"	Vernum	L.	Eu, W. Ukraine		"	"		"	Sokolov 52
Lycoris	Radiata	Herb	Japan, China	Root	Lycorine Sekisanine	"		"	



Plant	Species	Author	Source	Fl. Part	Potent Agents	Nature	Dose	Effect	References
<i>Nerine</i>	<i>Japonica</i>	Miq	Japan		Lycorenine, Sekisanoline				Read 36
<i>Narcissus</i>	<i>Orientalis</i>								
* <i>princeps</i>	<i>Poeticus</i>	Cult L.	Ukraine	Bulb	Lycorine, Narcispostine	Minor Alkaloid	Trace		Sokolov 52
**	<i>Pseudo-narcis</i>	L.	S. Europe	Fresh bulb	Lycorine	Alkaloid	0.2	Emetic	Wahmer 29
**	<i>Taxetta</i>	L.	"		Sussenine ?	Alkaloid			Wahmer 35
<i>Panorathum</i>	<i>Zeylanicum</i>	L.	E. Indies	Bulb	Lycorin	Alkaloid		Emetic, Paral. 0.18	Burkill 35
<i>Polyanthes</i>	<i>Tuberosa</i> *	L.	C. Am, E. Ind	Tuber	"	"		"	"
* <i>Sprekalia</i>	<i>Formosissima</i>	Herb	Mex, W. Ind.	Bulb	Lycorin	Alkaloid	0.9		Manske & Holmes 52
(<i>Anaryllis</i> *)									
<i>Ungernia</i>	<i>Sewerrovii</i>	Egl.		Bulb	Tansettine	Alkaloid	0.067-	Emetic	Manske & Holmes 52
"	<i>Tadahirorus</i>	Uved			Ungerine, Lycorine	"	0.11 0.31		"
<i>Ipheyanthes</i>	<i>Carinata</i>	Herb	N. Zealand		Bupharine ?	Alkaloid		Causing Stag- gers in horses	Manske & Holmes 52
"	<i>Grandiflora</i>	Lindl							
"	<i>Rosea</i>	Lindl	Java	Root	Lycorine	"	Trace		Wahmer 29
"	<i>Texana</i>	Herb		Bulb			0.02		

Footnotes: * In cultivation - as ornamentals, etc.
 - Items underlined are the most promising agents.