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A REVIEW OF THE POISONOUS PLANTS OF QUEENSLAND

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INTRODUCTION

Ever since the arrival of the first settlers, poisonous plants have loomed large amongst the hazards associated with the live-stock industries of Australia. From the beginning too, botanists in this continent realized the importance of collecting, sifting and recording all the information they could get about plants that might be toxic to man or beast. This was particularly true of botanists in Queensland, where F. M. Bailey and his successors J. F. Bailey, C. T. White and W. D. Francis were all interested in toxic plants and active in adding to our store of knowledge concerning them. During the last thirty years the study of poisonous plants has been one of my own chief interests.

It is difficult to assess the monetary value of losses due to poisonous plants, but even today it is by no means inconsiderable. One would expect that losses due to plant poisoning would decline as methods of animal husbandry become more intensive and our knowledge of toxic plants increases. To some extent this has happened, but the danger of plant poisoning still exists. For example, last year more than a thousand sheep in one flock died within six hours of their return to their home property, and in another instance more than a hundred cattle died when travelling a well-used stock-route in south-western Queensland. In each case the toxic plant responsible was well known and the mortalities could have been avoided. The losses were due to ignorance or carelessness on the part of those responsible for looking after the animals.

Toxic plants are still with us and in most cases it is impracticable, impossible or even undesirable to eradicate them.

In this address I shall try to take stock of our present knowledge, to look back at the achievements of the past and forward to the problems of the future.

HISTORY OF INVESTIGATIONS ON POISONOUS PLANTS

The first recorded feeding test of a suspected poisonous plant in Australia was carried out at the Endeavour River in 1770, when seeds of a cycad, probably *Cycas media*, were found to be toxic to pigs (Banks, 1896).

By experience, early explorers and settlers found out that many of the native plants were toxic to their live-stock but often they were unable to identify the particular plants responsible. Some information on the properties of the native plants was gathered from the aborigines but communication with these people was poor and they had had no experience in the husbandry

of large flocks of ruminants. The native grass-eaters were marsupials, not under close control and, as we have since discovered, often not affected in the same way by some of the native toxic plants.

Therefore the European settlers had to rely on their own experience. Local knowledge of poisonous plants grew slowly, but communication between graziers, stockmen and drovers was slow, restricted in scope, often very localized and rather haphazard. This local experience was of little value until it could be collected and properly organized.

The first step in the organization of this knowledge and experience was accurate identification of the plants themselves, the recognition, naming and description of the plants which grew in the new continent. From the time of Banks and Solander who accompanied Captain Cook in the voyage of 1770, explorers, botanists and others were active in collecting plants. In 1810 Robert Brown, the botanist who sailed around Australia with Flinders and who had access to most of the earlier collections, published the first volume of his Prodromus, short Latin diagnoses of many of the plants in the new continent, and this laid the foundation for the preparation of a Flora of Australia. Visiting explorers and botanists in Australia continued to work steadily. Ferdinand von Mueller, Government Botanist of Victoria, was particularly active in amassing collections from remote parts of the continent. George Bentham, studying in the herbarium at Kew Mueller's collections and the vast amount of material amassed by other collectors, produced Flora Australiensis, published between 1863 and 1878. This made available for the first time descriptions and names for all the plants then known to exist in Australia.

Although Bentham made little mention of the properties of the plants, his monumental work did make it possible for others to systematize and record these properties under names which could be recognized anywhere. Botanists in all Australian States recorded the observations of men who worked with stock and related them to the botanical names of the plants concerned.

In Queensland, the first great step forward was taken in 1875 when the Government set up a "Board to Enquire into the Causes of Diseases of Live-stock and Plants" in Queensland. F. M. Bailey, who later became Colonial Botanist, was appointed Botanist on this Board. As a direct result of the activities of this Board, the first account of the toxic plants of Queensland was published in 1887. This was Bailey and Gordon's "Plants Reputed Poisonous and Injurious to Stock", a booklet of 112 pages illustrated with 45 full-page drawings.

Over about the next 50 years notes on poisonous plants accumulated in the files of the Department of Agriculture and Stock; feeding tests on different plants were conducted at Yeerongpilly and later at Townsville; data from feeding tests in other States were added; and many articles and pamphlets were published on individual toxic plants. In 1937, a Poison Plants Committee was set up, comprising representatives of the Department of Agriculture and Stock and the University of Queensland, under the chairmanship of Professor H. R. Seddon. For several years this Committee was very active in initiating studies on poisonous plants in the field, in organizing feeding tests and chemical tests, and in sponsoring publication of the results. Following the outbreak of war in 1939 this work lost impetus and no comprehensive account of the poisonous plants of Queensland was ever published.

The next milestone was the publication in 1942 of "The Poison Plants of New South Wales" compiled by Mrs. Evelyn Hurst under the direction of the Poison Plants Committee of New South Wales which had been established

in 1927. Many of the toxic plants in Queensland were included in this work and it is still a valuable reference volume for workers in this State. Unfortunately it has been out of print for many years.

In 1947 I prepared a series of descriptive articles on the plants then known to be toxic to sheep in Queensland. These were published in the Queensland Agricultural Journal (Everist, 1947) and subsequently reprinted as Pamphlet No. 112, "Plants Poisonous to Sheep".

In 1948 C.S.I.R. published Bulletin 232 "Guide to the Medicinal and Poisonous Plants of Queensland" by L. J. Webb. This compilation of published and unpublished data from many sources contained any information, however slight, which might implicate a plant as poisonous or suggest its possible use for medicinal purposes. It contained (as did "The Poison Plants of New South Wales") many references of doubtful value but these were included deliberately and it is possible for the critical reader to judge their value for himself. This Bulletin is still used a great deal but its value is limited unless one also has access to "The Poison Plants of New South Wales", since it did not include details given in the latter work.

About 1947 there was a change in the method of attack on some of the major poisonous plant problems in the State. Instead of haphazard visits to isolated outbreaks, a series of planned field studies was begun by teams comprising veterinarians, botanists and sometimes chemists.

As a result of these organized studies and the assistance of local diagnostic laboratories and workers in other parts of Australia, the causes of some of our most serious, long-standing and puzzling toxic plant problems have been elucidated. These include Georgina River disease and Birdsville disease in Queensland and the Northern Territory, and walkabout or Kimberley horse disease in Western Australia, Northern Territory and Queensland.

Recently a new Poisonous Plants Committee was formed in the Department of Agriculture and Stock and it is hoped that this Committee will give new impetus to work on this subject in this State.

POISONOUS PLANTS IN QUEENSLAND

Before we review the plants known or suspected to be poisonous in Queensland, let us consider the nature of the evidence for toxicity. We can conveniently divide this evidence into three categories, Field Evidence, Feeding Tests and Chemical Tests.

Field Evidence may be either hearsay or based on first-hand experience. Often it is difficult to assess its worth because records are scanty or incomplete. At its best, field evidence can be strong enough to implicate a plant as poisonous beyond reasonable doubt, at its worst, field evidence may be only suspicion based on nothing more than intuition, guess or inaccurate observation. In considering all the records of plants suspected of poisoning stock in Queensland, I have divided the field evidence into two classes:—

Class O, containing plants for which the evidence is rather vague and often limited to a single occurrence unsupported by other information.

Class 1, containing those for which the field evidence is sufficiently reliable and consistent to indicate with some confidence that the plant could be toxic, although toxicity has not been confirmed by feeding tests and there is no record to show that it contains a known toxic substance that could account for the syndrome recorded.

Feeding Tests may be positive, negative or inconclusive. The only feeding tests that prove anything are those that are positive, and these show only that under certain conditions a particular plant can be toxic to particular animals. They do not prove that the plant is always toxic.

Negative tests do not prove that a plant is non-toxic. They only show that a particular sample of a particular species, taken from a particular area at a particular time on a particular day in a particular season, handled in a particular way and fed to particular individuals of a particular species of animal in a particular manner under a particular set of conditions did not produce any effect that could be noticed by a particular observer. If you change any one of those factors, you might get a different result. In fact, it is almost impossible with feeding tests to reproduce conditions as they occur in the field, and there are many examples in the literature of plants recorded as non-toxic on limited feeding tests and later found to be toxic in the manner originally indicated by the field evidence. In assessing the value of feeding tests it is essential to examine closely the conditions under which the tests were conducted, otherwise we can be led astray in our conclusions.

Plants for which positive feeding tests are recorded but whose toxic principles are unknown are placed in Class 3, those with known toxic principles in Class 4.

Chemical Tests are useful if we know the toxin in the plant concerned and if we have some laboratory technique for detecting it in plant tissue. The presence of a known toxic substance in a plant shows that it can be toxic but it does not prove that it is always toxic or that the particular toxin found by the chemist is the substance responsible for killing or injuring animals in the field. This applies particularly to simple toxins like oxalates, nitrates and cyanogenetic glycosides ([CN—]), one or more of which may be found in many plants not recorded as toxic at all, or in some plants which are toxic but which produce a syndrome unlike that known to be produced by the known toxic substance. For example, *Trema aspera*, the Peach-leaf Poison Bush or Poison Peach, is known to be toxic, producing a characteristic syndrome of muscular trembling, gastro-enteritis and fairly slow death. Some samples of this plant have given positive tests for HCN but in this case HCN obviously is not the cause of the syndrome observed.

If we are dealing with plants containing unknown toxins, then routine chemical examination is of little use in diagnosis. These plants do present a challenge to the research chemist and I shall have more to say about them later.

I have tried to separate the plants containing known toxic principles into two classes:—

Class 2 comprises those from which toxins have been recorded but for which we have neither feeding tests nor good field evidence of actual death or injury to animals.

Class 4 comprises those which have been proved toxic by feeding tests or for which field evidence of toxicity is good and which also contain known toxins.

Once the toxic principle is known, the next step is to study its behaviour within the animal body and if possible to devise means for detecting it in tissue or body fluids.

CLASSIFICATION OF POISONOUS PLANTS

As already indicated, I have placed the suspected poisonous plants of Queensland into five classes:

Class O. Recorded as suspected but evidence not good.

Class 1. Suspected on reliable field evidence, but not proved to be toxic.

Class 2. Containing known toxic principle but without good evidence of toxicity in the field or in feeding tests.

Class 3. Proved toxic by feeding tests; toxic principle unknown.

Class 4. Proved toxic by feeding tests or by good field evidence; nature of the toxic principle known.

I have omitted those plants which (*a*) produce only taints in milk and/or meat without affecting the health of the animals, (*b*) are known to be toxic to fish or frogs but not to warm-blooded animals, (*c*) are reputed to be used medicinally but for which there is no suspicion of toxicity.

A total of 912 plants, native and introduced, has been suspected of poisoning stock in Queensland. By far the largest number (426) falls into Class 0 and I do not propose to say much more about these. Although the present evidence is insufficient to state whether they are toxic or not, some day we might have more evidence and some might well be toxic. We can merely let the records stand, add any new information we can get and review their status from time to time. They have been omitted from Table 1.

Class 1 contains 126 species that are most probably toxic. They have been closely associated with sickness or death of animals in the field, usually on more than one occasion, but have not been proved toxic by feeding tests or by the identification of a toxin known to be capable of producing the syndrome seen in the field.

It is possible that some of them may not be toxic, despite the circumstantial evidence, but again we must wait for further evidence.

Failure to prove toxicity is often not for want of trying. In many cases it is due to the difficulty of reproducing experimentally the conditions that lead to mortalities in the field. It is well known that plant poisoning often occurs only under rather special conditions. The toxicity of plants under field conditions is strongly influenced by the condition and stage of growth of the plants, the condition of the animals and the manner in which they are being handled as well as by weather and seasonal conditions.

Class 2 is of special interest to farmers, graziers, veterinarians and others closely associated with animal husbandry. We have in this State at least 160 different kinds of plants in which toxic substances of some kind have been detected but for which we have no reliable records of losses or illness in the field. Although it is likely that many of these do not poison animals under field conditions, it is also probable that occasional cases do occur but are either not recognized or not recorded. I would ask those in a position to do so to report any field cases of poisoning by these plants so that the records may be brought up to date.

Plants in Class 3 offer opportunities for and a challenge to research chemists. No less than 76 species of plants from Queensland have been proved toxic by feeding tests and yet the chemical nature of the substance responsible for their toxicity is not known, even approximately. True, some of them do contain known toxins, but these do not account satisfactorily for the syndromes observed in animals that eat the plants.

The 124 plants in Class 4 are those definitely known to be toxic and with known toxic principles. You might think that there is no more work to be done on these, but in fact a great deal remains to be done.

In many cases our knowledge of the toxic principles goes no further than the extraction of a toxic alkaloid or some other substance from the plant, and the demonstration that this extract can produce the syndrome observed in the field, or the observation that the syndrome exhibited by the animals is consistent with poisoning by the substance detected.

For some of them, chemical work has proceeded to the stage where the structural formulae of the active principles are known. For a few of them, we have sufficient knowledge to enable the chemist or biochemist to detect them in animal tissue or body fluids. For very few of them the pharmacology, the precise nature of their action in the animal body, is also known.

TOXICITY OF PLANT FAMILIES

The toxic plants on the lists are distributed over 117 plant families. The greatest number is in the family *Leguminosae* (146). Next in number is *Compositae* (66), then *Euphorbiaceae* (53), *Solanaceae* (50), *Gramineae* (35), and *Chenopodiaceae* (30). If we subtract the plants in Class 0 from this total, leaving those more likely to be really or potentially toxic, the order is as follows:—

Leguminosae, 73
Solanaceae, 37
Gramineae, 35
Euphorbiaceae, 25
Compositae, 22
Chenopodiaceae, 20

It is of some interest that the first three families on this list also contain the plants which feed the bulk of the world's population and its livestock.

UNSOLVED PROBLEMS AND SUGGESTIONS FOR FURTHER RESEARCH

Despite the great progress made since about 1937 and particularly since about 1947, it is obvious from the lists that there are still many major problems to be solved in the field of poisonous plants.

These problems may be considered under three headings:—

1. Search in the field for plants that may be the cause of well defined and recognizable syndromes.

2. Feeding tests to confirm the toxicity of plants suspected on strong field evidence.

3. Chemical, biochemical, pharmacological and pathological work on plants known to be toxic but about which further data are needed.

1. **Field Work:** The two most important unsolved, widespread disease conditions for which plants have been blamed are "humpyback" in sheep and "coast disease" in cattle. The former occurs over wide areas of inland Queensland, always in hot weather and usually in full woolled sheep. It has considerable economic importance, not only because sheep can die from this condition but also because it restricts the ability of graziers to move sheep into sheds for shearing. Many plants have been blamed and a considerable amount of work has been devoted to this problem. The plants suspected have included *Solanum esuriale*, Quena or Potato Weed, *Malvastrum spicatum*, various species of *Sida*, and *Boerhavia diffusa*, Tar Vine, but there is contradictory evidence concerning them all. There is a distinct possibility that toxic plants may not be concerned at all in this condition and intensive pathological work in the field and the laboratory is now in progress on humpyback. If this research indicates that a plant is likely to be involved then further team work in the field will be needed to search for the plant responsible.

Poisonous plants have often been blamed for "coast disease", a condition that causes the death of large numbers of cattle in several parts of coastal Queensland. It usually occurs on very poor country in cattle with seriously depleted reserves of minerals, chiefly phosphorus. There seems now to be grave doubt amongst numbers of veterinarians whether plant poisoning is involved in this condition at all. Again we must wait for clarification of the pathology of the disease before we know if it will be necessary to search for some plant which might produce the condition observed in the field.

Of course, there are still localized mortalities that require field investigation from time to time. Some of these are puzzling and in cases where large numbers of animals are involved it will still be necessary to employ the team work that has uncovered the cause of so many of our plant poisoning cases during the last twenty years.

2. **Feeding Tests:** Some of the most important plants upon which further feeding tests are needed are *Trachymene ochracea*, Wild Parsnip, which is believed to cause deformation of the legs in young sheep in south-western Queensland and north-western New South Wales, various species of *Solanum* which contain solanine-type alkaloids but for which there is little or no field evidence of toxicity and various species of *Euphorbia* which are suspected on field evidence but not proved to be toxic. Further controlled feeding of well known toxic plants such as *Terminalia oblongata*, *Lantana camara* and *Trema aspera* would also be useful in clarifying the pathological picture.

3. **Chemical, Biochemical, Pharmacological and Pathological Research** is needed badly. We have plants known to be toxic, often producing characteristic syndromes and yet for many of them that is all we know. We do not know the nature of the toxic principle, how it acts or whether it can be detected in the body. Table 2 sets out briefly the more important species in the State upon which this kind of work is needed. This list is practically self-explanatory.

There are workers in all these fields who are acutely aware of the need for research and who are doing splendid work, but the need is for more workers and better facilities for research. In particular we need to develop biochemical, histochemical and histopathological methods for the diagnosis and treatment of those cases of plant poisoning which confront the veterinarian in the field or the clinic.

WHAT CAN WE DO ABOUT POISONOUS PLANTS?

I cannot conclude without saying a few words about the most important question of all, "What can we do about poisonous plants?"

The first thing we can do is to learn to recognize the plants, to learn which ones are poisonous and the conditions under which stock are likely to be affected. Having done this, we can manage the animals in such a way that the danger is reduced to a minimum. In some cases we can reduce or eradicate the plants but it should be appreciated that, in inland areas particularly, many of the poisonous plants are valuable fodder if they are properly handled, and in these cases it may be waste of time and money to try to eradicate them, even if it were possible.

For some plant poisoning, therapeutic treatment is available which can be used in an emergency. If these plants are present on a property, it is wise to keep the necessary remedies on hand and to know how to use them quickly, otherwise the animals are likely to be dead before treatment can begin.

CONCLUSION

I have, I hope, said enough to show that real progress has been and is being made in the study of poisonous plants in Queensland, that we have gathered a great deal of knowledge in the last hundred years. I have tried to show, too, that the task is by no means finished, that there are fields for research which can yield a rich harvest of results. In this, as in so many other fields of scientific endeavour in this State, we need never sit down like Alexander the Great, and weep because there are no more worlds to conquer.

TABLE 1. POISONOUS PLANTS IN QUEENSLAND, ARRANGED IN ALPHABETICAL ORDER OF FAMILIES.

The following abbreviations are used for toxins:—A = alkaloid; B = bitter principle; C = coumarin; E = essential oil; El = elemecin; F = monofluoracetate; G = glycoside (non cyanogenetic); HCN = cyanogenetic glycoside; L = lantanin; LSD = lysergic acid derivatives; N = nitrate; O = oxalate; P = phenolic compound; S = saponin; Se = selenium; T = toxalbumin.

An asterisk (*) means that the observed syndrome is not fully explained by the chemical compound detected.

Botanical Name	Class				Toxin	Common Name
	1	2	3	4		
Agaricaceae						
Psilocybe cubensis				+	LSD	Hysteria Toadstool
Aizoaceae						
Tetragonia tetragonioides		+			A,S,O	New Zealand Spinach
Trianthema galericulata	+					Hogweed
Trianthema portulacastrum		+			A,S,O	Black Pigweed
Trianthema triquetra				+	O,N	Red Spinach
Alangiaceae						
Alangium villosum		+			A	
Amaranthaceae						
Amaranthus cruentus		+			N	Redshank
Amaranthus mitchellii				+	O,N	Boggabri
Amaranthus viridis		+				Green Amaranth
Gomphrena celosioides			+			Gomphrena Weed
Amaryllidaceae						
Agapanthus umbellatus	+					
Calostemma luteum	+					Native Daffodil
Crinum brisbanicum	+					Spider Lily
Zephyranthes grandiflora	+					Crocus
Anacardiaceae						
Semecarpus australiensis	+					Tar Tree
Apocynaceae						
Alstonia actinophylla		+			A	
Alstonia constricta				+	A	Bitter Bark, Quinine Tree
Alstonia muellerana		+			A	
Alstonia scholaris		+			A	Milky Pine
Carissa ovata var. *stolonifera*		+			G	Currant Bush
Catharanthus roseus		+			G	Pink Periwinkle
Cerbera manghas				+	G	
Melodinus australis		+			A	
Nerium oleander				+	G	Oleander
Ochrosia elliptica		+			A	
Ochrosia moorei		+			A	
Parsonsia straminea	+					Monkey Rope
Rauvolfia tetraphylla		+			A	
Thevetia peruviana				+	G	Yellow Oleander, Cook Tree
Araceae						
Alocasia macrorrhiza			+			Cunjevoi
Colocasia antiquorum		+			HCN	Taro
Dieffenbachia picta			+			Dumbcane
Typhonium millarii	+					
Zantedeschia aethiopica			+			Arum Lily
Araliaceae						
Schefflera venulosum		+			S	
Asclepiadaceae						
Araujia sericofera			+			White Moth Plant
Asclepias curassavica				+	G	Red-head, Red Cotton
Asclepias fruticosa			+			Balloon Cotton
Asclepias physocarpa			+			Balloon Cotton
Calotropis procera				+	G	King's Crown
Cryptostegia grandiflora				+	G	Rubber Vine

TABLE 1.—*Continued*

Botanical Name	Class 1	2	3	4	Toxin	Common Name
Hoya australis				+	G	Wax Flower
Marsdenia rostrata				+	A	Milk Vine
Sarcostemma australe				+	S	Caustic Vine
Basellaceae						
Boussingaultia gracilis f. *pseudobaselloides*			+			Lamb's Tail, Madeira Vine
Boraginaceae						
Echium plantagineum				+	A	Paterson's Curse
Heliotropium amplexicaule				+	A, N	Blue Heliotrope
Lithospermum arvense		+			A	Corn Gromwell
Symphytum × *uplandicum*		+			N	Russian Comfrey
Campanulaceae						
Isotoma axillare		+			A	
Isotoma longiflorum				+	A	
Lobelia purpurascens				+	A	White Root
Pratia concolor	+					Poison Pratia
Cannaceae						
Canna indica	+					Indian Shot
Caprifoliaceae						
Sambucus australasica	+					Yellow Elderberry
Sambucus gaudichaudiana	+					Native Elderberry
Caricaceae						
Carica papaya		+			A	Papaw
Caryophyllaceae						
Kohlrauschia prolifera		+			S	Proliferous Pink
Celastraceae						
Denhamia obscura	+					
Chenopodiaceae						
Atriplex muelleri		+			N, O	Annual Saltbush
Atriplex semibaccata		+			O	Creeping Saltbush
Bassia anisacanthoides		+			O	Yellow Burr
Beta vulgaris				+	N	Mangold
Chenopodium album		+			N, HCN	Fat Hen
Chenopodium ambrosioides		+			E	Wormseed, Mexican Tea
Chenopodium atriplicinum				+	N	Purple Goosefoot
Chenopodium auricomum		+			O	Blue-bush
Chenopodium blackianum				+	HCN	Red Crumbweed
Chenopodium carinatum				+	HCN, N	Keeled Crumbweed
Chenopodium cristatum				+	HCN	Crested Crumbweed
Chenopodium hubbardii		+			O	Fishweed
Chenopodium multifidum		+			N	
Chenopodium myriocephalum				+	HCN	Red Crumbweed
Chenopodium rhadinostachyum		+			HCN	Green Crumbweed
Chenopodium trigonon		+			O	Fishweed
Enchylaena tomentosa		+			O	Berry Cotton Bush
Kochia brevifolia	+					Cotton bush
Salsola kali				+	O, N	Soft Rolypoly, Buckbush
Threlkeldia proceriflora				+	O	Soda bush
Combretaceae						
Terminalia oblongata			+			Yellow-wood
Compositae						
Acanthospermum hispidum		+			N	Star Burr
Ageratum houstonianum	+					Blue Billygoat Weed
Ambrosia artemesiifolia		+			B	Annual Ragweed
Anthemis cotula	+					Stinking Mayweed
Bidens pilosa		+			N	Cobblers Pegs
Calotis scapigera		+			HCN	Creeping Daisy Burr
Centaurea melitensis		+			N	Maltese Cockspur, Cockspur Thistle
Cnicus benedictus				+	N	Blessed Thistle

TABLE 1.—*Continued*

Botanical Name	Class				Toxin	Common Name
	1	2	3	4		
Craspedia chrysantha	+					Golden Billy Buttons
Cryptostemma calendula	+					Capeweed
Erigeron bonariensis	+					Fleabane
Erigeron floribundus	+					Fleabane
Eupatorium adenophorum	+					Crofton Weed
Inula graveolens	+					Stinkwort
Lactuca serriola		+			A	Prickly Lettuce
Silybum marianum				+	N	Variegated Thistle
Tagetes minuta				+	E	Stinking Roger
Verbesina encelioides			+		N*	Crownbeard, Wild Sunflower
Vittadinia triloba	+					Fuzzweed
Wedelia asperrima			+		N*	Yellow Daisy, Sunflower Daisy
Xanthium pungens				+	G	Noogoora Burr
Xanthium spinosum				+	G	Bathurst Burr
Convolvulaceae						
Ipomoea calobra			+			Weir Vine
Ipomoea hederacea		+			G	
Ipomoea plebeia		+			N	Bell Vine
Cucurbitaceae						
Bryonopsis laciniosa			+			Native Bryony
Citrullus colocynthus				+	S	Colocynth
Citrullus vulgaris		+			S	Piemelon
Cucumis myriocarpus				+	B	Paddymelon, Prickly Paddymelon
Cucumis trigonus	+					Paddymelon
Cucurbita maxima	+					Pumpkin
Ecballium elaterium		+			B	Squirting Cucumber
Lagenaria vulgaris		+			S	Bottle-gourd
Luffa aegyptiaca		+			B,S	Small Loofa
Momordica balsamina	+					Balsam Apple
Momordica charantia	+					Balsam Pear
Cunoniaceae						
Aphanopetalum resinosum		+			A	
Callicoma serratifolia		+			S	
Cupressaceae						
Cupressus macrocarpa			+			Monterey Cypress, Macrocarpa Pine
Cycadaceae						
Bowenia serrulata	+					Byfield Fern
Bowenia spectabilis	+					Bowenia Fern, Zamia
Cycas media			+			Zamia
Macrozamia lucida			+			Zamia
Macrozamia miquelii			+			Zamia
Macrozamia moorei			+			Zamia
Macrozamia pauli-guilielmi			+			Zamia
Davidsoniaceae						
Davidsonia pruriens		+			HCN	Davidsonian Plum
Dilleniaceae						
Hibbertia diffusa			+			
Hibbertia longifolia	+					Arsenic plant
Hibbertia scandens	+					Snake Vine
Dioscoreaceae						
Dioscorea sativa	+					Common Yam
Droseraceae						
Drosera binata		+			HCN	Forked Sundew
Drosera peltata		+			HCN	Pale Sundew
Drosera spathulata		+			HCN	Spoonleaf Sundew
Erythroxylaceae						
Erythroxylum australe		+			A	

TABLE 1.—*Continued*

Botanical Name	Class 1	2	3	4	Toxin	Common Name
Euphorbiaceae						
Aleurites moluccana		+			E	Candlenut
Andrachne decaisnei				+	HCN	Andrachne
Breynia oblongifolia		+			HCN	Coffee Bush
Bridelia exaltata				+	HCN	Scrub Ironbark
Euphorbia alsiniflora	+					Bottle-tree Caustic
Euphorbia boophthona			+			
Euphorbia drummondii			+		HCN*	Caustic weed, Caustic Creeper
Euphorbia hirta	+					Asthma plant
Euphorbia peplus	+					Petty Spurge
Euphorbia prostrata		+			HCN	Red Caustic Creeper
Euphorbia pulcherrima	+					Poinsettia
Euphorbia stevenii	+					Bottle-tree Caustic
Euphorbia tirucalli			+			Naked Lady
Excoecaria agallocha	+					Milky Mangrove
Excoecaria dallachyana	+					Blind-your-eye
Excoecaria parvifolia	+					Gutta-percha Tree
Homalanthus populifolius	+					Native Bleeding-heart
Jatropha curcas				+	T	Physic-nut
Jatropha gossypiifolia				+	T	Cotton-leaf Physic nut
Phyllanthus gasstroemii		+			HCN	
Phyllanthus lacunarius			+		HCN*	Lagoon Spurge
Phyllanthus urinaria		+			A	
Poranthera microphylla		+			HCN	
Ricinus communis				+	T	Castor Oil
Synadenium grantii	+					African Milk-bush
Gentianaceae						
Centaurium spicatum		+			G	Australian Centaury
Centaurium umbellatum		+			G	Common Centaury
Goodeniaceae						
Scaevola sericea		+			G	
Gramineae						
Avena sativa				+	N	Oats
Brachiaria brizantha			+			St. Lucia grass
Brachiaria mutica		+			HCN	Para grass
Brachyachne convergens				+	HCN	Common Native Couch
Brachyachne tenella				+	HCN	Slender Native Couch
Bromus unioloides		+			N	Prairie grass
Chloris distichophylla		+			HCN	Evergreen Chloris
Chloris truncata	+					
Cynodon dactylon var.				+	HCN	African Star grass
Cynodon incompletus				+	HCN	Blue Couch
Dactyloctenium radulans	+					Button grass
Danthonia racemosa		+			HCN	A Wallaby grass
Danthonia semiannularis		+			HCN	A Wallaby grass
Digitaria adscendens		+			HCN	Summer grass
Echinochloa crus-galli		+			N	Barnyard Millet
Echinochloa crus-galli var. *frumentacea*		+			N	Japanese Millet
Echinopogon ovatus			+			Rough Bearded grass
Eleusine indica				+	HCN	Crowsfoot grass
Lolium perenne				+	A, HCN	Perennial Ryegrass
Lolium temulentum				+	A	Darnel
Panicum antidotale		+			O	Blue Panic grass
Panicum decompositum	+					Native Millet
Panicum effusum			+			Hairy Panic
Pennisetum clandestinum				+	N	Kikuyu grass
Phalaris canariensis				+	N	Canary grass
Sorghum almum				+	N, HCN	Columbus grass
Sorghum dochna var.				+	HCN	Broom Millet
Sorghum halepense				+	HCN	Johnson grass

TABLE 1.—*Continued*

Botanical Name	Class 1	2	3	4	Toxin	Common Name
Sorghum sudanense				+	HCN	Sudan grass
Sorghum verticilliflorum				+	HCN	Wild Sorghum
Sorghum vulgare				+	HCN	Grain Sorghum, Sweet Sorghum
Triraphis mollis				+	HCN	Purple Plume grass
Triticum aestivum		+			N	Wheat
Urochloa panicoides				+	N	Urochloa grass
Zea mays				+	N	Maize
Haemodoraceae						
Haemodorum corymbosum	+					Blood-root
Haloragaceae						
Haloragis odontocarpa	+					Mulga Nettle
Himantandraceae						
Galbulimima baccata		+			A	
Hypericacaeae						
Hypericum perforatum var. *angustifolium*			+			St. John's Wort
Hypocreaceae						
Claviceps paspali			+			Ergot of Paspalum
Iridaceae						
Sisyrinchium micranthum	+					Scour Weed
Juncaceae						
Juncus prismatocarpus		+			HCN	Branching Rush
Labiatae						
Lamium amplexicaule			+			Dead nettle, Henbit
Marrubium vulgare		+			B	Horehound
Salvia coccinea				+	N*	Red Salvia
Salvia reflexa				+	N	Mint-weed
Stachys arvensis			+			Stagger weed
Lauraceae						
Cassytha filiformis		+			A	Dodder-laurel
Cryptocarya bowiei		+			A	
Cryptocarya triplinervis		+			A	
Lecythidaceae						
Barringtonia gracilis	+					River Mangrove
Barringtonia asiatica			+		S,HCN	
Barringtonia longiracemosa	+					
Leguminosae						
Abrus precatorius				+	T	Crab's eyes, Jequirity, Gidee gidee
Acacia burrowii		+			HCN	
Acacia cheelii		+			HCN	Motherumbah
Acacia cunninghamii		+			S	Black Wattle
Acacia doratoxylon		+			HCN	Lancewood
Acacia georginae				+	F	Georgina Gidyea
Acacia glaucescens				+	HCN	Sally Wattle
Acacia harpophylla		+			A	Brigalow
Acacia hemsleyi		+			S	
Acacia longifolia		+			HCN	
Acacia oswaldii		+			HCN	Nelia, Ram's Horn Tree
Aeschynomene indica	+					Budda Pea
Archidendron vaillantii			+			
Caesalpinia crista		+			A	
Canavalia ensiformis		+			HCN	Jack Bean
Canavalia gladiata		+			HCN	Sword Bean
Cassia absus		+			A	
Cassia coluteoides	+					
Cassia floribunda	+					Smooth Senna
Cassia occidentalis	+					Coffee Senna
Castanospermum australe			+		S*	Moreton Bay Chestnut, Black bean
Crotalaria aridicola			+		A*	Chillagoe Horse Poison

TABLE 1.—*Continued*

Botanical Name	Class				Toxin	Common Name
	1	2	3	4		
Crotalaria dissitiflora	+					Woolly Rattlepod
Crotalaria incana	+					Sunn Hemp
Crotalaria juncea				+	A	Streaked Rattlepod
Crotalaria mucronata				+	A	
Crotalaria novae-hollandiae				+	A	
Crotalaria retusa				+	A	Wedge-leaf Rattlepod
Crotalaria spectabilis				+	A	
Crotalaria trifoliastrum			+		A*	
Entada scandens		+			S, A	Matchbox Bean
Erythrina indica		+			A	Coral Tree
Erythrophleum chlorostachys				+	A	Cooktown Ironwood
Gastrolobium grandiflorum				+	F	Desert Poison bush, Heart leaf Poison bush
Goodia lotifolia				+	HCN	Golden-tip
Hovea longifolia		+			A	
Indigofera australis				+	HCN	Australian Indigo
Indigofera enneaphylla			+			Birdsville Indigo
Indigofera linifolia	+					
Isotropis atropurpurea	+					
Leucaena leucocephala				+	A	Leucaena glauca, Vi Vi
Lotus australis				+	HCN	Native Birdsfoot Trefoil
Lotus coccineus				+	HCN	Red Flowered Trefoil
Lotus corniculatus		+			HCN	Birdsfoot Trefoil
Medicago denticulata			+			Burr Medic
Medicago minima			+			Woolly Burr Medic
Medicago sativa				+	N	Lucerne
Melilotus indica				+	C	Hexham Scent
Milletia megasperma	+					Native Wisteria
Mimosa pudica		+			A	Sensitive Plant
Neptunia amplexicaulis				+	Se	
Oxylobium trilobatum	+					
Phaseolus lathyroides	+					Phasey Bean
Stylosanthes gracilis		+			N	Stylo
Swainsona affinis	+					
Swainsona galegifolia			+			Darling Pea
Swainsona greyana			+			Hairy Darling Pea
Swainsona lessertiifolia	+					
Swainsona luteola			+			Dwarf Darling Pea
Swainsona microphylla	+					
Swainsona oligophylla	+					
Swainsona oroboides	+					
Swainsona procumbens			+			Broughton Pea
Templetonia egena	+					
Tephrosia purpurea	+					
Tephrosia rosea	+					Flinders River poison
Trifolium repens		+			HCN, N	White Clover
Vicia angustifolia		+			HCN	Narrow-leaf Vetch
Vicia faba				+	A	Broad Bean
Vicia hirsuta		+			HCN	Hairy Vetch
Vicia monantha		+			HCN	Spurred Vetch
Vicia sativa		+			A, HCN	Vetch
Vigna sinensis				+	N	Cowpea
Liliaceae						
Anguillaria dioica	+					Native Leeks, Onion Weeds
Bulbinopsis spp.	+					
Caesia vittata				+		Blue Flax-lily
Dianella coerulea	+					
Dianella ensifolia	+					
Dianella laevis	+					Nodding Blue Lily
Stypandra glauca	+					

TABLE 1.—*Continued*

Botanical Name	Class 1	Class 2	Class 3	Class 4	Toxin	Common Name
Linaceae						
Linum marginale		+			HCN	
Linum usitatissimum				+	HCN	Linseed
Loganiaceae						
Strychnos lucida		+			A	
Strychnos axillaris		+			A	
Malvaceae						
Gossypium hirsutum				+	P	Cotton
Hibiscus ficulneus	+					Native Rosella
Malva parviflora			+		N*	Small-flowered Mallow
Malvastrum spicatum ..		+			N	Malvastrum
Marsileaceae						
Marsilea drummondii	+					Nardoo
Meliaceae						
Melia azedarach var. *australasica*			+			White Cedar
Menispermaceae						
Legnephora moorei	+					Wild Grapes
Stephania japonica var. *discolor* and var. *timoriensis*	+					Tape Vine
Monimiaceae						
Daphnandra dielsii		+			A	
Daphnandra micrantha		+			A	Socket-wood
Daphnandra repandula		+			A	
Doryphora aromatica		+			A	Northern Sassafras
Doryphora sassafras		+			A	Canary Sassafras
Moraceae						
Maclura pomifera	+					Osage Orange
Myoporaceae						
Eremophila freelingii			+			Limestone Fuchsia Bush
Eremophila latrobei			+			
Eremophila maculata				+	HCN	Native Fuchsia
Myoporum acuminatum sens. lat.				+	E	Boobialla
Myoporum deserti				+	E	Ellangowan Poison Bush
Myrsinaceae						
Aegiceras corniculatum		+			S	River Mangrove
Myrtaceae						
Eucalyptus cladocalyx				+	HCN	Sugar Gum
Rhodomyrtus macrocarpa				+	S	Finger Cherry
Nymphaeaceae						
Nelumbo nucifera		+			A	Pink Lotus Lily
Olacaceae						
Ximenia americana				+	HCN	Yellow Plum
Oleaceae						
Ligustrum lucidum	+					Tree Privet
Onagraceae						
Jussiaea repens	+					Water Primrose
Oxalidaceae						
Oxalis corniculata				+	O	Yellow wood sorrel
Oxalis corymbosa		+			O	Pink Shamrock
Oxalis pes-caprae				+	O	Soursob
Palmae						
Arecastrum romanzoffianum	+					Feather Palm, *Cocos plumosa*
Papaveraceae						
Argemone mexicana				+	A	Mexican Poppy
Fumaria officinalis				+	A	Fumitory
Glaucium corniculatum	+					
Papaver aculeatum	+					
Papaver hybridum		+			A	Rough Poppy

TABLE 1.—*Continued*

Botanical Name	Class 1	2	3	4	Toxin	Common Name
Papaver nudicaule	+					Iceland Poppy
Passifloraceae						
Passiflora alba			+		HCN*	White Passion-vine
Passiflora aurantia		+			HCN	
Passiflora foetida		+			HCN	Stinking Passion-flower
Passiflora herbertiana				+	HCN	
Passiflora suberosa				+	HCN	Small Passion-flower
Philydraceae						
Philydrum lanuginosum	+					Woolly Waterlily
Phytolaccaceae						
Phytolacca dioica	+					Bella Sombra Tree
Phytolacca octandra	+					Inkweed
Pittosporaceae						
Pittosporum ferrugineum		+			S	
Pittosporum phillyreoides		+			S	Cattle Bush, Meemeei
Plantaginaceae						
Plantago varia	+					Lamb's Tongue, Native Sago
Plumbaginaceae						
Plumbago zeylanica	+					
Polygonaceae						
Emex australis		+			O	Double-gee, Spiny Emex
Polygonum aviculare		+			N	Wireweed
Polygonum convolvulus	+					Climbing Buckwheat, Black Bindweed
Polygonum hydropiper	+					Water Pepper
Rheum rhaponticum				+	O	Rhubarb
Rumex brownii				+	N, O	Swamp Dock
Rumex crispus		+			N, O	Curled Dock
Polypodiaceae						
Asplenium flabellifolium		+			HCN	
Blechnum indicum	+					Bungwall Fern
Cheilanthes distans			+			Rock Fern
Cheilanthes sieberi			+			Rock Fern or Mulga Fern
Cheilanthes tenuifolia			+			Rock Fern or Mulga Fern
Davallia spp.		+			HCN	
Lindsaea spp.		+			HCN	
Pteridium esculentum			+			Bracken
Portulacaceae						
Calandrinia balonensis		+			O	Parakeelya
Portulaca filifolia	+					
Portulaca intraterranea				+	O, N	Inland Pigweed
Portulaca oleracea				+	O, N	Pigweed
Primulaceae						
Anagallis arvensis				+	S	Scarlet Pimpernel
Anagallis foemina			+			Blue Pimpernel
Proteaceae						
Grevillea banksii		+			HCN	Red-flowered Silky Oak
Grevillea helmsiae		+			N	
Grevillea robusta		+			HCN	Silky Oak
Hakea dactyloides		+			HCN	
Hakea saligna		+			HCN	
Hicksbeachia pinnatifolia		+			HCN	
Lomatia silaifolia		+			HCN	Crinkle-bush
Macadamia integrifolia		+			HCN	Queensland Nut, Macadamia Nut
Macadamia ternifolia		+			HCN	Small Macadamia
Macadamia tetraphylla		+			HCN	Queensland Nut
Macadamia whelanii		+			HCN	
Xylomelum pyriforme		+			S, HCN	Woody Pear
Ranunculaceae						
Adonis annua			+			Pheasant's Eye

TABLE 1.—*Continued*

Botanical Name	Class				Toxin	Common Name
	1	2	3	4		
Clematis glycinoides	+					Headache Vine
Ranunculus lappaceus	+					Common Buttercup
Ranunculus muricatus	+					Sharp Buttercup
Ranunculus parviflorus	+					Small-flowered Buttercup
Ranunculus rivularis	+					River Buttercup
Ranunculus sceleratus	+					Celery-leaved Buttercup
Resedaceae						
Reseda luteola	+					Dyers Weed
Rhizophoraceae						
Rhizophora stylosa	+					Red Mangrove
Rubiaceae						
Morinda reticulata				+	Se	
Nauclea orientalis	+					Leichhardt Tree
Pomax umbellata		+			HCN	
Rutaceae						
Flindersia australis		+			A	Crow's Ash
Flindersia schottiana		+			A	Bumpy Ash
Melicope erythrococca		+			El	Tingle-tongue
Zanthoxylum brachyacanthum		+			A	Thorny Yellow-wood
Zanthoxylum torvum		+			A	Thorny Yellow-wood
Zanthoxylum veneficum		+			A	Thorny Yellow-wood
Zieria laevigata		+			HCN	
Zieria smithii	+					Lanoline Bush
Sapindaceae						
Alectryon coriaceus		+			HCN	
Alectryon tomentosus		+			HCN	
Atalaya hemiglauca			+			Whitewood
Heterodendrum oleifolium				+	HCN	Boonaree
Jagera pseudo-rhus		+			S	Foam-bark
Scrophulariaceae						
Gratiola peruviana	+					
Morgania floribunda			+			Morgan flower
Morgania glabra	+					
Simaroubaceae						
Ailanthus altissima	+					Tree of Heaven
Brucea javanica				+	B	
Solanaceae						
Cestrum aurantiacum			+			
Cestrum nocturnum			+			Poison-berry
Cestrum parqui				+	A	Green Cestrum
Datura arborea				+	A	Angel's Trumpet
Datura ferox				+	A	Long-spined or Fierce Thornapple
Datura leichhardtii				+	N, A	Native Thornapple
Datura metel				+	A	Purple Angel's Trumpet
Datura meteloides				+	A	Recurved Thornapple
Datura stramonium				+	N, A	Common Thornapple, Stramonium
Datura tatula				+	A	Purple-flowered Thornapple
Duboisia hopwoodii				+	A	Pituri
Duboisia leichhardtii				+	A	Corkwood
Duboisia myoporoides				+	A	Corkwood
Lycium ferocissimum	+					African Boxthorn
Nicotiana debneyi		+			A	
Nicotiana exigua				+	A	Native Tobacco
Nicotiana glauca				+	A	Tree Tobacco
Nicotiana gossei		+			A	
Nicotiana megalosiphon				+	A	Long-flowered Native Tobacco
Nicotiana velutina				+	A	Native Tobacco

TABLE 1.—*Continued*

Botanical Name	Class				Toxin	Common Name
	1	2	3	4		
Physalis minima		+			N	Wild Gooseberry
Solanum aculeatissimum		+			A	Devil's Apple
Solanum auriculatum		+			A	Wild Tobacco
Solanum aviculare			+			Kangaroo Apple
Solanum campanulatum		+			A	
Solanum cinereum			+			Narrawa Burr
Solanum ellipticum				+	A	Potato Weed
Solanum esuriale	+					Quena
Solanum hispidum		+			A	Giant Devil's Fig
Solanum nigrum				+	A, N	Blackberry Nightshade
Solanum pseudo-capsicum				+	A	Madeira Winter-cherry
Solanum seaforthianum	+					Brazilian Nightshade
Solanum sodomaeum				+	A	Apple-of-Sodom
Solanum sturtianum			+			
Solanum torvum	+					Devil's Fig
Solanum verbascifolium		+			A	Potato Tree
Solanum tuberosum				+	A	Potato
Sterculiaceae						
Brachychiton populneum	+					Kurrajong
Brachychiton rupestre				+	N	Bottle-tree
Thymeleaceae						
Pimelea curviflora	+					
Pimelea decora	+					Pimelea Poppy
Pimelea haematostachya	+					Pimelea Poppy
Pimelea pauciflora			+			Poison Pimelea
Pimelea trichostachya			+			Flaxweed, Broom Bush
Wikstroemia indica			+			Tie Bush
Ulmaceae						
Trema aspera			+		HCN*	Peach-leaf Poison-bush, Poison Peach
Trema orientalis	+					
Umbelliferae						
Conium maculatum				+	A	Hemlock
Trachymene australis	+					Native Parsnip
Trachymene ochracea			+			Wild Parsnip
Trachymene incisa	+					Native Carrot
Urticaceae						
Laportea cordifolia			+			Stinging Bush
Laportea gigas			+			Giant Stinging Tree
Laportea moroides			+			Gympie Gympie
Laportea photinophylla			+			Shiny-leaf Stinging Tree
Urtica dioica			+			Stinging Nettle
Urtica incisa			+			Stinging Nettle
Urtica urens			+			Stinging Nettle
Verbenaceae						
Duranta repens	+					Duranta
Lantana camara				+	L	Lantana
Lantana montevidensis	+					Creeping Lantana
Verbena officinalis		+			A	Common Vervain
Vitex trifolia		+			A	
Xanthorrhoeaceae						
Lomandra longifolia	+					
Lomandra multiflora	+					
Xanthorrhoea sp. aff. *X. arborea*	+					Grass tree
Xanthorrhoea hastile			+			Swamp Grass tree
Xanthorrhoea sp. aff. *X. media*			+			Grass tree
Zygophyllaceae						
Tribulus terrestris				+	N	Caltrops
Zygophyllum apiculatum	+					Twin-leaf, Gall weed
TOTAL	126	160	76	124		

TABLE 2.—SOME IMPORTANT POISONOUS PLANTS OF QUEENSLAND WHOSE TOXINS ARE UNKNOWN

Name	Animals Affected and Syndrome	References or Work in progress
Castanospermum australe	Cattle: severe gastro-enteritis, emaciation, death: seeds toxic: some evidence of loss of toxicity with age but more work needed.	Hurst, 1942, 152. Brunnich found saponin. A.R.I. Yeerongpilly found no saponin yet the dried powdered seeds were toxic to guinea pigs.
Cheilanthes tenuifolia *Cheilanthes sieberi* *Cheilanthes distans*	Sheep: staggers, inco-ordination. Feeding tests indicated toxicity. Can be important in some districts.	Hurst, 1942, 428. Much field evidence since.
Gomphrena celosioides	Horses: inco-ordination (coastal staggers). 600 lbs. to produce symptoms.	Newton, 1952, 151-4.
Indigofera enneaphylla	Horses: inco-ordination (Birdsville disease).	Bell & Everist, 1951, 185, Rose *et al.* 1951, 189.
Ipomoea calobra	Sheep: inco-ordination, loss of judgment: wandering (somewhat similar to *Swainsona*). Feeding test with about 10 lb/head/day for 5 weeks was positive.	Everist, 1947, 85-87.
Macrozamia lucida (under *M. spiralis*) *Macrozamia pauli-guilielmi* *Macrozamia miquelii* (under *M. douglasii*) *Macrozamia moorei* *Cycas media*	Cattle: leaves: inco-ordination, particularly in hind limbs: apparently chronic: no recovery but no worse if removed from Zamia. *M. lucida*—10 ozs per day for 34 days: minimum feeding time 20 days or 20 lbs at 1 lb. per day. *M. pauli-guilielmi*—150 lbs in 100 days. fruits: gastro-enteritis: death	Hall, 1954, 173-177 Hall, 1956*b*, 173-178 Gardner & Bennetts, 1956, 5-8
Malva parviflora *Stachys arvensis* *Lamium amplexicaule*	Sheep, cattle and horses (when driven): staggers: shivers: with *Stachys* and *Lamium* seeds most toxic.	Hurst, 1942, 266, 343, 349
Melia azedarach var. *australasica*	Pigs: fruits only: muscular trembling: inco-ordination, irregular gasping respiration. Sheep more rarely.	Hurst, 1942, 214 (under *M. azederach* and *M. dubia*)
Pimelea pauciflora *Pimelea trichostachya* *Pimelea decora* *Pimelea haematostachya* *Wikstroemia indica*	Cattle and sheep: severe gastro-enteritis, emaciation and death. All unpalatable and important only in drought. 5½-6 lbs (*P. trichostachya*) fatal to sheep. Similar to *Pimelea* but fruits fatal to children.	Legg & White, 1940, 175-177

TABLE 2.—*Continued*

Name	Animals Affected and Syndrome	References or Work in progress
Swainsona galegifolia *Swainsona luteola* *Swainsona swainsonioides* *Swainsona procumbens*	Sheep: cattle: horses : inco-ordination and madness: head held back and swaying from side to side, jumping over objects: pushing against fence posts. In feeding tests symptoms with *S. galegifolia* developed after 5 weeks.	Martin, 1897, 363-369 Everist, 1947, 141-142
Terminalia oblongata	Cattle: blinking, photophobia, yellowish discharge from eyes: probably impaired vision and loss of co-ordination in fore feet: photo-sensitisation: oedema: continuous micturation. Sheep: sudden collapse (after fright) trembling: extensor muscles neck and limbs strongly contracted. Recovery after 10-40 seconds.	McIntosh, 1934, 727 Legg *et al*, 1945, 199
Trachymene ochracea (under *Didiscus glaucifolius*)	Sheep (mature): staggers, inco-ordination. Feeding tests in New South Wales positive. Sheep (lambs); deformation of long bones. Not proved but field evidence very strong.	Everist, 1947, 157. More feeding tests in progress.
Trema aspera	Cattle: dullness, muscular twitching, shallow, jerky fast respiration becoming very feeble, uncontrolled leg movements, coma, death: haemorrhages throughout serous tissue: 5-10 lbs in 3 days fatal to steer but onset of symptoms delayed.	Mulhearn, 1942, 68-72
Verbesina encelioides *Wedelia asperrima*	Sheep: cattle (rarely): pulmonary oedema. Both dangerous to travelling or trucked sheep: losses sometimes very heavy. Confirmed by feeding tests. 3½ ozs *Wedelia* fatal to sheep in 18 hours: 8 ozs *Verbesina* fatal to sheep in 16-36 hours.	Mulhearn, 1939, 397 Hurst, 1942, 419
Xanthorrhoea hastile *Xanthorrhoea* sp. aff. *X. media*	Cattle: asymmetrical locomotory disturbance, urinary incontinence (wamps): animals go down, unable to rise; 467-470 lbs of flower spikes over 73-48 days; delayed action: complete recovery possible but rare in the field because of misadventure.	Hall, 1956*a*, 97-106

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