

## Recent Investigations into the Toxicity of Known and Unknown Poisonous Plants in the Union of South Africa.

By D. G. STEYN, B.Sc., Dr.Med.Vet., Veterinary Research  
Officer, Onderstepoort.

(Continued from the 18th Report D.V.S. 1931.)

### AIZOACEAE.

*Psilocaulon absimile* N.E. Br.

See the article "*Psilocaulon absimile* N.E.Br. as a Stock Poison" by  
C. Rimington and D. G. Steyn published elsewhere in this report.

### ASCLEPIADACEAE.

*Cynanchum capense* Thunb.

Registered Number.—Onderstepoort Spec. No. 2406; 31/8/31. Nat.  
Herb. No. 14360.

Common Names.—Klimop.

Origin.—Baviaansdrift, P.O. Eastpoort, Bedford.

State and Stage of Development.—Wilted and in preflowering stage.

Sheep 29669.—Received 2,700 grams of wilted and dry leaves and stems  
in the course of five days.

Result.—Negative.

### COMPOSITAE.

*Senecio albanensis* Harv. (Vix. DC.).

Registered Number.—Onderstepoort Spec. No. 5670; 4/2/32.

Common Names.— —

Origin.—"The Willows," P.O. Silverton, Pretoria.

State and Stage of Development.—Fresh and in flowering stage.

Sheep 28203.—Received 750 grams of the fresh plant on two consecutive  
days.

Result.—Negative.

*Senecio venosus* Harv.

Registered Number.—Onderstepoort Spec. No. 5669; 4/2/32.

Common Names.—

Origin.—"The Willows," P.O. Silverton, Pretoria.

State and State of Development.—Fresh and in late seeding stage.

Sheep 31877.—Received 1,500 grams of the fresh leaves, stems and seed-  
heads on two consecutive days.

Result.—Negative.

## CRASSULACEAE.

*Adromischus umbraticolis*, C.A. Sm.

*Registered Number.*—Onderstepoort Spec. No. 6794; 31/3/32, Iron Peg No. 67.

*National Herbarium Number.*—12432.

*Common Names.*— —

*Origin.*—Magaliesberg, Pretoria North.

*State and Stage of Development.*—Fresh and in postflowering stage.

A 96 per cent. alcoholic extract of the leaves was prepared and injected subcutaneously into guinea pigs. 100 gram equivalent of fresh leaves caused attacks of clonic spasms closely resembling those seen in Cotyledonosis in guinea pigs, death occurring five hours after injection. 30 grams equivalent of fresh leaves had no effect on guinea pigs.

## EXTRACT FROM THE MANUSCRIPT OF C. A. SMITH, AT THE NATIONAL HERBARIUM, PRETORIA.

*Adromischus umbraticolus* C.A. Sm.

The generic name *Adromischus*, was first assigned to several species of *Cotyledon* § *Spicatae* (sensu Fl. Cap. 11.370) by Lemaire (Jard. Fleur. II Misc. 59: 1852) but was not taken up either by Harvey in the "Flora Capensis" or by Schonland in his classic papers on the South African species of *Cotyledon* and it was not until recently that Berger resuscitated Lemaire's generic name (Engl. & Prantl. Nat. Pflanzenfam. VIII, a 416: 1930) under which he affected a number of new combinations for species previously described by other authors—Baker, Schonland, Marloth—under *Cotyledon* (§ *Spicatae*) as well as giving a key to the 15 known species.

The species represented by *Smith* 3432 and other specimens quoted below cannot be identified with any of these existing species and is therefore here described for the first time. In the National Herbarium it has previously been mistakenly identified as *Cotyledon trigyna* Burch.

*A. umbraticolus* sp. nov., affinis *A. trigono* (Burch) C. A. Sm., sed forma alternorum immaculorum foliorum differt.

*Planta* perennis, succulenta, parva. *Caulis* ad apicem foliosus, usque 12 cms. altus et 2 cm. crassus, simplex vel ramosus, teres, glabror. *Floria* alterna, carnosissima, ad apicem caulis (vel ramorum brevius) congregata, oblongocuneata usque obovata et ad basin cuneata, apice plerumque obtusa, usque 6 cm. longa, 2 cm. lata et (prope basin) 4 mm. crass, basi teretes, ad apicem planiores, superne convexa vel plana, infra convexa, immaculata sed saturate virides et saepe circum apicem purpurea vel rosea, omnino cereo pulvere tenuiter tecta. *Inflorescentia* terminalis, simplex cœl 2-3-ramosa, laxè in dimidio anteriore racemosa, omnino ceres pulvere tenuiter tecta. *Flores* numerosi, singuli, pedicellati. *Pedicelli* ascendentes patentisque, usque 6 mm. (in fructu usque 1.5 cm.) longi, plerumque 2-3 bracteis; bracteis lanceolato-ovatae, usque 1.5 mm. longae, carnosae. *Dentes calycis* ovato-deltaidei, acuminati, usque 2.5 mm. longi, corolae adpressi. *Tube corollae* cylindricus, *rextus*, obtuse 5-angulatus et 5 su. catus, usque 1 cm. longus, purpureus, fauce saturate purpureus, ovato-deltaideis usque 2 mm. longis stellatis deinde reflexis delicatis purpureis lobis. *Filamenta* filiformia, purpurea; 4 plus minusve in medio tubo corollae exserta; 4 prope basin inserta, inclusa. *Ovaria* 4-5, oblongo-ovoidea, usque 5 mm. longa, in stylo subulato viride instructa. *Squamae nectarii* oblongae, usque 1.5 mm. longae, minute emarginatae, pallide virides.

*Transvaal Highveld.*—Pretoria Div.: On the Magaliesberg at Silikaats Nek, in rocky crevices on northern slopes, C. 1500 M., Nov. 1926, *Smith* 3432: (Type). In Wonderboompoort, along rocky ledges and in crevices of precipitous sides of cliffs, C. 1470 M., Dec. 1925, *Smith* 1766: At Pretoria, along north slope of Meintjes Kop range, in rocky crevices near the old fort, C. 1470 M., Sept. 1925, *Smith* 693A; in rocky fissures and crevices in rich humus, below the Reservoir, C. 1470 M., Nov. 1926, *Smith* 3456: and in eod. loc., Jun 1931, *Smith & Ward* 3: Witwatersrand Div.: Braamfontein, Johannesburg, on rocky hills, 1800 M., Dec. 1898, *Gilfillan* 60: Grown at Onderstepoort, Steyn in *National Herbarium* No. 12432. (N.B.—The specimens quoted are preserved in the National Herbarium, Pretoria.)

The above species is very common on the ranges round Pretoria and on the Magaliesberg, being nearly always found on rocky ledges with the rootsystems under rocks, or in the crevices of these rocks. The vegetative parts are almost invariably found in the shade of other plants, while the long peduncles thrust the opening flowers beyond the shade so as to render them accessible to insect visitors.

In the Meintjes Kop localities above cited the numbers quoted were found growing under moderate-sized specimens of *Combretum holosericeum* Sond., *C. zeyheri* Sond., *Burkea africana* Hook., *Strychnos pungens* Sol., *Vangeria tomentosa* Hochst., and tangled masses of *Landolphia capensis* Oliv., being associated with specimens of *Crassula orygraphylla* Diels (very generally), *Euphorbia schinzii* Pax (frequently), *Salacia regmanni* Schinz., *Kalanchoe paniculata* Harv., *Aloe duryana* Schönl., *Cyphocarpa angustifolia* Lopr., *Eulophia Hums* Spreng., *Pachystigma zeyheri* Sond., *Parinarium capense* Harv., *Leonotis microphylla* Skan., and *Cotyledon leucophylla*, C.A.Sm., along with several grasses.

In Wonderboompoort, the plants grow in large colonies and in one place, have completely overrun a fair area.

The leaves of the species behave like those of other species in the genus, e.g. *A. mariannae* (marl.) Berger, for when they drop off fine „rootlets” develop at the base, and eventually new leaves (in time giving rise to a fresh plant) appear.

#### CRUCIFERAE.

##### *Lepidium draba* Linn.

*Registered Number.*—Onderstepoort Spec. No. 3578; 24/10/31.

*Common Names.*— —

*Origin.*—“Carolspoort,” De Aar.

*State and Stage of Development.*—Wilted and in flowering stage.

*Rabbit.*—Received 40 grams of the wilted leaves and flowers on each of two consecutive days.

*Result.*—Negative.

*Sheep.*—Received 8,700 grams of the wilted and dry leaves, stems and flowers in the course of seventeen days.

*Result.*—Negative.

#### CUCURBITACEAE.

##### *Momordica foetida* Schum. et Thonn.

*Registered Number.*—Onderstepoort Spec. No. 6795; 31/3/32.

*Common Name.*— —

*Origin.*—Pretoria North.

*Portion of Plant Tested.*—Fresh green fruit.

*Rabbit.*—Received 100 grams of the fresh green fruit on two consecutive days.

*Result.*—Negative.

#### DICHAPETALACEAE.

##### *Dichapetalum cymosum* (Hook.) Engl.

*Registered Number.*—Onderstepoort Spec. No. 5596; 27/1/32.

*Common Names.*—Gifblaar, blaargif, blinkblaar, magou, makou, “Umbetti” (native name in South West Africa).

*Origin.*—Grootfontein, South West Africa.

*State and Stage of Development.*—Dry mature leaves of plant in the fruiting stage.

This plant was suspected of having caused death in camels.

*Rabbit.*—Received 30 grams of dry leaves on one day.

*Result.*—Negative.

EQUISETACEAE.

*Equisetum ramossissimum* Desf.

*Registered Number.*—Onderstepoort Spec. No. M. 18/2/32.

*Common Names.*—Horsetail; perde stert; mare's tail; drilgras, dronk-gras.

*Origin.*—Onderstepoort Poisonous Plant Garden (original specimens from C. J. G. Loock, "Lissie," P.O. Slabberts Siding, O.F.S.).

*State and Stage of Development.*—Fresh and forming fruit heads.

*Sheep* 31599.—Received 800 grams of the fresh plant at 12 noon, 18/2/33.

*Result.*—19/2/32.—Lying down repeatedly and rising again; laboured respiration; accelerated pulse; staggers when driven; slight fever; uncertain gait which resembles that of an animal with sore feet. Received another 800 grams of fresh plant.

20/2/32.—Whole body trembles when standing; symptoms show a slight amelioration; feet do not appear "sore" any more; lying down most of the time.

21/2/32.—Improving.

22/2/32.—Appears normal.

GENTIANACEAE.

*Chironia Transvaalensis* Gilg.

*Registered Number.*—Onderstepoort Spec. No. 5671; 4/2/32.

*Common Names.*— —

*Origin.*—"The Willows," P.O. Silverton, Pretoria.

*State and Stage of Development.*—Fresh and in flowering stage.

*Rabbit.*—Received 10 grams of the wilted leaves and flowers on each of three consecutive days.

*Result.*—Negative.

*Rabbit.*—Received 25 grams of the wilted leaves and flowers on 24/2/32.

*Result.*—25/2/32.—Appears very ill, extremely laboured respiration; accelerated and weak heartbeat; general weakness (paresis); staggers about; unable to keep head up; died at 10.30 a.m.

*Post Mortem Appearances.*—General cyanosis; heart in systole; hyperaemia of lungs and liver; acute catarrhal gastritis with numerous haemorrhages in the mucosa; slight acute catarrhal duodenitis.

*Rabbit.*—Received 30 grams of the fresh leaves in one dose.

*Result.*—Negative.

*Rabbit.*—Received 100 grams of the fresh leaves, stems and flowers on one day.

*Result.*—6/2/32.—Found dead at 7 a.m.

*Post Mortem Appearances.*—General cyanosis; marked hyperaemia and slight oedema of the lungs; dilatation of heart ventricles; small and big intestine distended with a large amount of very fluid contents.

*Sheep* 24273.—Received 400 grams of the slightly wilted leaves, stems and flowers at 12 noon, 22/2/32.

*Result*.—4 p.m.—Apathetic; laboured respiration; accelerated pulse.

23/2/32.—Lying down; apathetic; laboured respiration; cyanosis; frothing at the mouth; tympanitis; weak and accelerated pulse; died at 4.30 p.m.

*Post Mortem Appearances*.—Intense general cyanosis; congestion of subcutaneous bloodvessels especially those of the front quarters; dilatation of heart ventricles; degenerative changes in myocard; pronounced hyperaemia and slight oedema of the lungs; oedema of perportal lymphglands; hyperaemia of and haemorrhages in retropharyngeal and submaxillary lymph glands; degenerative changes in liver; hyperaemia of abomasal mucosa; slight acute catarrhal duodenitis and jejunitis.

*Sheep* 21409.—Received 800 grams of the fresh leaves, stems and flowers at 12 noon 20/2/32.

*Result*.—9 p.m.—Animal appears in distress; laboured respiration; accelerated pulse; cyanosis.

21/2/32.—Found dead at 6.30 a.m.

*Post Mortem Appearances*.—Resembled that of sheep 24273 very closely.

*Scilla* sp. (near *Scilla Cooperi* Hook.).

*Registered Number*.—Onderstepoort spec. No. 5660; 4/2/32. Nat. Herb. No. 13397.

*Common Names*.— —

*Origin*.—Piet Retief.

*State and Stage of Development*.—Leaves wilted, bulbs fresh in postflowering stage.

*Rabbit*.—50 grams of bulbs and wilted leaves in one dose.

*Result*.—Negative.

*Rabbit*.—100 grams of bulbs and wilted leaves on one day.

*Result*.—Died the following night.

*Post Mortem Appearances*.—General cyanosis; slight oedema and pronounced hyperaemia of lungs; marked dilatation of heart ventricles.

*Sheep* 32313.—Received 800 grams of wilted leaves and bulbs at 12.45 p.m. 4/2/32.

*Result*.—4 p.m.—Laboured respiration; accelerated and strong pulse; foaming at the mouth; apathetic; inappetence.

5/2/32.—Above symptoms and frequent urination.

6/2/32.—Above symptoms and frequent urination.

7/2/32.—Condition improving.

8/2/32.—400 grams of wilted leaves and bulbs at 2 p.m. 3.30 p.m. same symptoms as at 4 p.m. on 4/2/32.

13/2/32.—Animal appears normal.

*Ornithogalum caudatum* Ait.

*Registered Number.*—Onderstepoort Spec. No. 12388; 29/12/31. Nat. Herb. No. 12388.

*Common Names.*— —

*Origin.*—Entembeni, Hluhluwe, Zululand.

*State and Stage of Development.*—Fresh and in preflowering stage.

*Rabbit.*—Received 40 grams of the fresh leaves and bulbs on each of two consecutive days.

*Result.*—Negative.

*Ornithogalum lacteum* Jacq.

*Registered Number.*—Onderstepoort Spec. No. 0; 29/9/31. Nat. Herb. No. 10056.

*Common Names.*—Chinkerinchee.

*Origin.*—Onderstepoort Poisonous Plant Garden (bulbs originally from "Skilpadbeen," Willowmore).

*State and Stage of Development.*—Fresh and in flowering stage.

*Rabbit.*—Received 40 grams of fresh leaves, flowers and bulbs.

*Result.*—Negative.

*Ornithoglossum glaucum* Salisb.

*Registered Number.*—Onderstepoort Spec. No. 625; 13/5/32. Nat. Herb. No. 11547.

*Common Name.*—Cape Slangkop.

*Origin.*—Prieska.

*State and Stage of Development.*—Fresh and in postseeding stage.

*Rabbit.*—Received 30 grams of fresh leaves in one dose.

*Result.*—Pronounced laboured respiration two hours after dosing; weak and accelerated heartbeat; apathetic; died four hours after dosing.

*Post Mortem Appearances.*—Pronounced hydroperitoneum; hyperaemia of gastric mucosa; advanced cirrhosis of the liver.

The advanced cirrhosis of the liver most probably rendered this rabbit more susceptible to this plant.

*Rabbit.*—Received 50 grams of fresh leaves in one dose, at 12 noon, 13/5/32.

*Result.*—14/5/32.—Apathetic; dyspnoea; weak and accelerated heart beat; profuse diarrhoea.

15/5/32.—Died at 7.30 a.m.

*Post Mortem Appearances.*—Cyanosis; hyperaemia and slight oedema of lungs; dilatation of heart ventricles; subserosal haemorrhages (stomach); acute catarrhal gastro-enteritis; degenerative changes in the liver.

*Scilla* sp.—(Probably undescribed).

*Registered Number.*—Onderstepoort Spec. No. 5250; 2/12/31. Nat. Herb. No. 12389.

*Common Names.*— —

*Origin.*—“ Vaalbank,” Wakkerstroom.

*State and Stage of Development.*—Fresh and in flowering stage.

*Rabbit.*—Received 30 grams of fresh bulbs and leaves.

*Result.*—Negative.

## OLEACEAE.

*Ligustrum lucidum* Ait.

*Registered Number.*—Onderstepoort Spec. No. 1058; 28/5/32. Nat. Herb. No. 11565.

*Origin.*—“ Sandfontein,” Daspoort, Pretoria.

*Common Name.*— —

*Rabbit.*—Received 75 grams of the fresh ripe fruit in one dose.

*Result.*—Negative.

## PORTULACACEAE.

*Talinum caffrum* E. and Z.

*Registered Number.*—Onderstepoort Spec. No. 6172 (b); 25/2/32.

*Common Name.*— —

*Origin.*—Palla Ranch, P.O. Debeeti, Tuli Block, Bechuanaland Protectorate.

*State and Stage of Development.*—Dry and in early fruiting stage.

*Rabbit.*—Received 30 grams of the fresh rootstock.

*Result.*—Negative.

*Rabbit.*—Received 40 grams of dry leaves and stems.

*Result.*—Negative.

## RUBIACEAE.

*Pygmaeothamnus chamaeodendron* (O. Kuntze) Robyns.

*Registered Number.*—Onderstepoort Spec. No. 5572; 2/2/31. Nat. Herb. No. 11057.

*Common Name.*— —

*Origin.*—“ Waveney,” Newcastle, Natal.

*State and Stage of Development.*—Dry and in flowering and early fruiting stage.

*Sheep* 31785.—Received 3,600 grams of the dry leaves and flowers in the course of twelve days.

*Sheep* 31465.—Received 7,200 grams of the dry leaves and flowers in the course of twelve days.

*Result.*—Both sheep showed intermittent fever for about two months after the dosing had been discontinued. Sheep 31465 developed diarrhoea, which lasted two days.

SOLANACEAE.

*Nicandra physaloides* Gaertn.

*Registered Number.*—Onderstepoort Spec. No. P. ; 10/3/32.

*Common Name.*—Apple of Peru.

*Origin.*—Onderstepoort Poisonous Plant Garden. (Seed obtained from plants sent in from Ixopo, Natal.)

*State and Stage of Development.*—Fresh and in fruiting stage.

*Sheep* 31599.—Received 1,200 grams of the fresh leaves, stems and green fruit in two doses administered on one day.

*Result.*—Negative.

*Rabbit.*—Received 100 grams of the fresh leaves on one day.

*Result.*—Negative.

*Nicotiana glauca* R. Grah.

*Registered Number.*—Onderstepoort Spec. No. N. ; 18/1/32.

*Common Names.*—Wilde tabak, wild tobacco.

*Origin.*—Onderstepoort Poisonous Plant Garden.

*Rabbit.*—Received 5 grams of ripe seeds.

*Result.*—Negative.

*Rabbit.*—Received 20 grams of ripe seeds on each of two consecutive days.

*Result.*—Negative.

*Physalis minima* Linn.

*Registered Number.*—Onderstepoort Spec. No. 1149 ; 2/6/32.

*Common Names.*—Wilde gooseberry, wilde appelliefie, kalkoengif.

*Origin.*—“ Zoals-hy-lykt,” Amersfoort.

*Rabbit.*—Received 150 grams of fresh ripe berries in one dose.

*Result.*—Negative.

*Solanum auriculatum* Ait.

*Registered Number.*—Onderstepoort Spec. No. R. ; 2/12/32. Nat. Herb. No. 11404.

*Common Name.*— —

*Origin.*—Onderstepoort Poisonous Plant Garden (seeds obtained from plants growing at Warner Beach, Natal).

*State and Stage of Development.*—Plants 12-18 inches high and in preflowering stage.

*Rabbit.*—Received 55 grams of fresh leaves on one day.

*Result.*—Negative.



*Solanum supinum* Dunal.

*Registered Number.*—Onderstepoort Spec. No. 5341; 8/1/32.

*Common Names.*—Bitter appel; bitter apple.

*Origin.*—"Rocklands," P.O. Klipdam, Griqualand West.

*Rabbit.*—Received 30 grams of the fresh ripe fruit on each of two consecutive days.

*Result.*—Negative.

*Withania somnifera* Dunal.

*Registered Number.*—Onderstepoort Spec. No. S.; 12/2/32.

*Common Name.*—Geneesblaren.

*Origin.*—Onderstepoort Poisonous Plant Garden.

*Rabbit.*—Received 120 grams of fresh green berries on one day.

*Result.*—Negative.

## THYMELAEACEAE.

*Gnidia capitata* Linn.

*Registered Number.*—Onderstepoort Spec. No. T.; 1/10/31.

*Common Name.*— —

*Origin.*—Onderstepoort.

*State and Stage of Development.*—Fresh and in flowering stage.

*Rabbit.*—Received 60 grams of fresh leaves, stems and flowers, in one dose.

*Result.*—Negative.

## VITACEAE.

*Cissus hereroensis* Schinz.

*Registered Number.*—Onderstepoort Spec. No. 5347; 8/1/32.

*Common Name.*—Lakseer bossie.

*Origin.*—"Rocklands," P.O. Klipdam, Griqualand West.

*State and Stage of Development.*—Fresh and in postflowering stage.

*Rabbit.*—Received 60 grams of fresh leaves in the course of two days.

*Result.*—Negative.

## SUMMARY.

The toxicity of twenty-seven plant specimens was investigated and of these the following were found poisonous:—

- (a) *Psilocaulon absimile* N.E. Br.
- (b) *Adromishcus umbraticolus* C.A. Sm. (slightly toxic).
- (c) *Equisetum ramossissimum* Desf.
- (d) *Chironia transvaalensis* Gilg.
- (e) *Scilla* sp. (Nat. Herb. No. 13397).
- (f) *Ornithoglossum glaucum* Salisb.

TOXICITY OF KNOWN AND UNKNOWN POISONOUS PLANTS.

*Equisetum ramosissimum* Desf. administered in the fresh state produced symptoms in sheep closely resembling those attributed to this plant.

No previous records of toxicity of the following plants could be found in the available literature :—

*Psilocaulon absimile* N.E. Br.

*Chironia Transvaalensis* Gilg.

LITERATURE.

Same as that quoted in previous reports.

ACKNOWLEDGMENTS.

I am indebted to Dr. E. P. Phillips, Principal Botanist, Division of Plant Industry, Pretoria, for the identification of Plant specimens.