Thesis.

Presented by

Thomas Knowles MB & Ch Edinburgh 1889

— to the —

Dean of the Faculty of Medicine & Senatus Academicus of the University of Edinburgh for the Degree of "Doctor of Medicine"

— on —

"The Action of Primula Obconica on Cutaneous Surfaces".

April 1901.

Thomas Knowles MB Ch
The Croft
Laygrave
via Leeds.

Introduction

I first as a student of medicine in the Edinburgh University & afterwards in private practice at Cargrave (via Leeds) I have been very much interested in the subject of "The action of Primula Obconica on the cutaneous surfaces".

I have met with a great many cases of dermatitis due to this plant, living as I do in a country place where it is very much grown in private greenhouses & in the cottages.

I feel sure that the Primula Obconica is a far more prevalent cause of Eczema than is generally supposed - though this fact is much more generally recognised now than formerly when I first began to study it -

It was brought into this country from China in 1880 as a small insignificant plant, but cultivation soon began to shew its possibilities as a decorative plant & now it is a great favourite in

~~in~~ Cottages & Greenhouses throughout the Country. —

Description of the Plant

Primula Obconica was first described by Dr Hance in the Journal of Botany 1880 p. 234 from specimens collected by Mr T Watters in the Spring of 1879 near Ichang, in the province of Hupeh, Central China

Allied to Primula Sinensis Lindl, Primula Cortusoides Linn; & Primula Kauffmanniana Regl; quite distinct from all however in the leaves being scarcely lobed ("hand lobatis") & in the form of the calyx.

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described with a coloured plate in the Botanical Magazine 1881 t. 6582 under the name of Primula proculiformis by Sir J. D. Hooker who, at the time, was not aware that Dr Hance had already published it as Primula Obconica

Sir Joseph Hooker says: —

"I find the description of this elegant

primrose, which with the habit & foliage of P. Cortusoides has the calyx of the Himalayan P. filipes Watt in S.S. & is one of many instances of China containing species of plants intermediate in character as in position between those of northern India & Japan. It was discovered by the Maries when travelling for Messrs Veitch in the interior of China, at the Ichang gorge, & flowered in Chelsea in September of last year.

P. filipes on the other hand is a native of rocks at Chuka in Bholan, at the elevation of 6,500 feet, where it was discovered by Griffith, who figured it in his "Icones Plantarum Asiaticarum" t. 485 (Posthumous Papers vol II p. 123 n. 396, & Notulae part IV p. 299) but without a name, it is very nearly allied indeed to P. poculiformis in both habit & form of leaves, calyx & corolla, but is very much smaller in all its parts with filiform petioles & scapes & more rounded leaves.

P. poculiformis (so named in reference to the form of the Calyx) is probably a very variable plant - The earliest flowering specimens sent by Mr Veitch were less hairy & had rounder & nearly entire leaves, & very much smaller flowers than that here figured - It is an autumn flowering species & as it is no doubt hardy it is sure to be a favourite.

Description Softly hairy & nearly glabrous. Leaves many, from the root, petioled, broadly ovate-oblong, Cordate or rounded-cordate, membranous; margins lobulately toothed or nearly entire, surface much raised between the deeply sunk reticulated nerves; petiole 2 to 4 inches long.

Scapes several from the root-stock, exceeding the leaves.

Flowers drooping, umbellate; bracts small, few, spreading, linear or subulate, very unequal, pedicles very unequal in length, a quarter to one inch long, pubescent. Calyx small,

between campanulate & funnel-shaped, obscurely five-angled, pubescent-, mouth very shortly, five-toothed, teeth very much broader than long, acute.

Corolla-tube cylindric, twice as long as the Calyx or more; limb quite flat, one inch in diameter, pale lilac or purplish, throat with a very obscure thickening at the mouth; segments obcordate with rounded lobes. Ovary globose"

Mr. W. Botting Hemsley, in his Enumeration of Chinese Plants in Journ. Linn. Soc. (Botany) Vol XXVI p. 40 (1889), gives the following bibliography & synonymy:—

"Primula Poonica, Hance in Journ. Bot. 1880, p. 234, et 1882, p. 154; Franchet in Bull. Soc. Bot. France XXXIII p. 66 (excl. varietates rotundifolia et glabrescens; Pax, Monogr. in Engler's Jahrb. X p. 167, reprint, p. 95.

Syn Primula proculiformis Hook f. Bot. Mag. t. 6582.

Hupeh: Ichang, Patung & immediate neighbourhood (A Henry);

Szechuen: Mount Omei at 3000 feet (Faber), banks of the Blue river at Chapato (Delavay).

"Pax refers Griffith's figure (Ic. Pl Asiat. t. 485, sine nomine) to this, whereas Hooker (Fl. Brit. Ind. III p. 485) refers it to the very closely allied P. filipes, Batt"

Franchet in Bull. Soc. Bot. France XXXIII p. 66:-

"The Paris museum possesses the following forms or varieties of this curious species:-

"A. hispida - Pubes dimorpha ex parte pilis brevissimis, ex parte pilis articulatis elongatis, praesertim in parte inferiore pedunculi et in petiolis, constans; folia ambitu ovata, nunc grosse serrata, nunc angulata, nunc obscure repando dentata.

Eastern Thibet, Moupine at the base of the rocks, end of February 1869 (David); Su-tchuen on the banks of the Blue river at Che-pa-to, 18th April 1882 (Delavay); Komitcheon (Simon);

province of Hopé, circa Y-tchang (Watters ex Hance, Delavay)

* " B. rotundifolia - Pubescentia ut in bacca; sed folia ambitu rotundata limbo saepius parvo; flores fere duplo minores quam in varietate praecedente tubo gracili

" Yun-nan, gorge of Pee-cha-ho at Tho-so-gun, near Lan-kong 3rd March 1883 (Delavay); gorges of Lan-kien-ho alt. 2800 metres (Delavay)

* " V. glabrescens - Pubescentia pilis brevissimis constans, exclusis pilis articulatis elongatis; folia ovata vel ovato-rotundata, pallide virentia, grosse crenata vel acute angulata; corollae subparvae; tubus gracilis ut in varietate B.

Yunnan rocks of Tsang-chan above Yali 31st March 1883 (Delavay)

A very variable species with flowers rosy or of a pale lilac, very rarely of a yellowish white (Delavay) - Its diverse forms might be easily taken for distinct species -

* Excluded by Mr Hemsley -

History of the Poisonous Effect of P. Obconica

The first mention I find of it is in Garden & Forest (1888) p. 118.

"To the Editor of Garden & Forest:

"I have been consulted recently by one of our largest dealers in flowers, for an inflamation of the skin of the hands & face. The appearance which these parts presented indicated a dermatitis venenata of an eczematous type, & the patient expressed the opinion also that the inflamation had been caused by contact with some "poisonous" plant in his shop.

He stated moreover that some of his assistants were affected in a similar way. The trouble manifested itself in all of them for the first time within a few weeks, & in his own case there had been 3 distinct recurrences of it within that period.

His impression was that it had begun about the time that he had

been handling large quantities of Acacia pubescens & Primula Obconica & he suspected one of these plants to be the cause of the inflamation.

"I visited the shop & found one of the salesmen presenting a similar disorder of the face & hands.

The former was red, & somewhat swollen, & irritable, & the latter exhibited a papular eruption.

Another salesman stated that his face had been irritated, but it presented slight visible changes.

There were several other employees in the establishment, whose skins were unaffected.

I was told by some of them that it was a well known trick in greenhouses to shake a plant of Acacia pubescens over a green workman to excite an itching of the skin. Primula Obconica was the only plant sold for the 1st time this season, & large quantities had been handled. I made a list of the plants which were then

or had been during the preceding month, for sale in the Shop: ××××

In my work on "Dermatitis venenata" recently published, I give a list of 86 genera of plants, one or more species of which have been known, on good authority, to produce some degree of inflamation of the skin by contact, but in the collection above named there was but one species which finds a place in my list, viz:- Tropaeolum majus or Garden Nasturtium.

This I have known, in a few instances to give rise to a severe inflamation of the skin of persons handling it, although it is ordinarily innocuous. It had been always handled however, by all the persons affected in this instance with impunity

The only other plants above named, which are closely allied to species known to be "poisonous" are Anemone, Cypripedium & Marguerite. Several of the Anemones, especially A. nemorosa

A. palens & A. borleusis, possess irritative properties, & are even capable of vesicating the skin, but I have no knowledge of such action on the part of that in question.

I know on the authority of the late Professor Babcock, a distinguished botanist of Chicago, that our native Cypripedium pubescens is capable of producing as severe inflammation of the skin as Rhus Toxicodendron. The French daisy or marguerite is also, so far as I know, innocent, but its relationship to Leucanthemum vulgare & Anaula Cotula, our whiteweeds, makes it a possible object of suspicion.

"There can be no doubt, in my opinion, that the cutaneous affection in these cases was of an artificial character, & that the exciting cause is to be sought among the plants recently handled in this extensive establishment."

if it be some one of these lately introduced into cultivation & the public market, it is important that it should be discovered.

It was suggested as a possible explanation by the proprietor, my patient, that some of the fertilizers used about low growing plants, as violets, might have accumulated upon the leaves, & thus be transferred to the hands in making up bundles for sale, or that some of the mildews upon the foliage might, perhaps, be irritating when handled.

Ustilago hypodites, parasitic upon arundo donax, is a frequent cause of cutaneous inflammation among the workers in this reed in France, but I am acquainted with no other fungus with such properties.

"As it seems probable that the offender in this case is some new plant, I wrote to Professor Goodale asking him if he had known the suspected Acacia or Primula to cause

such irritation". He replies:

"Our gardeners say that they have not experienced any trouble from a. pubescens or P. obconica, but that there is a plant, as yet undetected, which has lately given them a good deal of irritation".

I do with the hope that some cultivator of, or dealer in flowers may be able to throw light upon the matter, that I send this communication to Garden & Forest." James C. White
Harvard Medical School
Boston.

I find Primula obconica again mentioned in Garden & Forest 1888 p 21 but no suggestion of its poisonous effect on the cutaneous surfaces big.

(Extract from note by "W.F.")

Soon after its début into English gardens it found its way to America, & so well has it behaved that it has become a fixed favourite wherever grown.

Indeed, so favourable an impression has it made that one florist near Boston has made a specialty of it for cut flowers, & the Boston Seedsmen this year offer it as their most important novelty." xxx xxx.

The poisonous qualities of P. Obconica were next mentioned in Garden & Forest II (1889) p. 94. by:

"In your issue of May 2nd 1888 you kindly inserted an account of cases of inflammation of the skin of the hands & face of a florist & some of his assistants, which was attributed to the irritating action of some plant. Primula Obconica the only one handled by them for the 1st time that season, was held in especial suspicion as the possible offender. The cutaneous disturbance therein described, dermatitis venenata subsided in a short time, & the skin of the three affected persons has remained

in a healthy condition until recently within the last 2 or 3 weeks however, they have all manifested a recurrence of the same symptoms an ecymatous inflammation of the hands & face & in about the same degree as last year. They now feel assured that the trouble is caused by "Primula obconica", for the condition did not develope until a few days after this plant was first offered for sale in the shop where it was freely handled by them

The proprietor informs me that his hands & face become affected immediately after making it up into dinner-table decorations. He states also that some of those engaged in cultivating it have complained to him of a similar inflammation of the skin, which it has produced upon them. His other assistants in the shop, who were not thus affected last season, remain exempt this year. It is desirable to know

if other cultivators or florists have had a similar experience with this newly introduced plant, or if other species of this large genus have exhibited irritating properties.

James C. White
Harvard Medical School
Boston

My next Extract from Garden & Forest 1889. p. 154.

"It having come to my knowledge that a florist of this place, David Cliffe, was suffering from poison supposed to have been caused by some plant, I was led by what has appeared in Garden & Forest to suspect that perhaps "Primula Obconica might be that plant. I wrote him of my suspicion & this is what he replies:

"I am positive that Primula Obconica is poisonous to some persons As you know I was under treatment for poison which I received from Poinsettia through cuts in my hand. Feeling much better I busied myself

potting my Primulas. In the evening I was completely blind from my face being swollen. It remained in this condition for a day. Since this my foreman, after packing up some of the plants, had his hands & arms poisoned. Last week a customer who had taken some of the plants refused to take any more, saying, some who had handled them, were poisoned by them".

It is hard to believe this of any Primula & probably the cases in which it poisons are very few, as there is no doubt that hundreds handle it with no ill effects, just as is the case with many other plants.

Personally I am compelled to avoid any contact with the common Poison Ivy; & even the seeds of the Oregon Maple (acer macrophyllum) & of the Osbeya virginica, both of which are covered with minute hairs, & excite an itching & inflammation of my hands, while many others who

have handled them are not at all affected. The Primula Obconica is such a beautiful & useful plant that it will be much regretted if it should be proved to be really poisonous to many persons

Joseph Meehan
Germantown Phila.

Next is an Extract from G & Forest II (1889) 286

"A friend whose son is a large grower of flowers in England, writes me, expressing obligation to Garden & Forest for the note on poisonous properties of Primula Obconica. She says, in substance, this has solved the mystery for us of the very troublesome inflammation of face & hands from which not only I but two of my daughters have been suffering this last year.

It is undoubtedly P. Obconica that has been the cause of it for since we have avoided handling the plant the symptoms have gradually disappeared. I do not suppose any but those who grow the plant in

large quantities suffer. Gardeners have decided & repotted a large number without ill effects, so that it is only injurious to certain persons.

It so happens that I have taken special trouble about our picking dead leaves &c, little thinking that the evil was thus continually kept up. My eldest daughter, who has charge of boxes of cut flowers, has suffered greatly in her hands & arms &, in some degree in her face & eyes. Another daughter who has used the flowers in wreath-making, of late showed similar symptoms, which puzzled our Dr extremely, though he said he was positive there was some local cause. It is such a charming plant that we are truly sorry, but I am afraid the fact remains".

As P. obconica is now being so largely grown it seems well that this evidence confirmatory of your note should be given as a warning

to those who are susceptible to plant poisons

Jno. H. Gerard.
Elizabeth, N.J.

Next from Garden & Forest (1890) p 76

" xxx The following plants are now flowering freely at Kew in an unheated greenhouse where early flowering tender alpine & herbaceous plants are accommodated x xx I P. Obconica is grown in quantity. The poisonous properties attributed to this species have never been experienced at Kew xxx "

W. Watson.

Next from Garden & Forest iii (1890) p. 104.

a so called "Poisonous Primrose"

The literature of the alleged poisonous character of the Primula Obconica commences in G & Forest. In its issue for May 2nd 1888, Dr James C. White, of the Harward Medical School & a specialist in skin diseases, states that he was consulted "by one of our largest dealers in flowers for an inflammation of

the skin of the hands & face. The appearance which these parts presented indicated a "dermatitis venenata of an eczematous type". The florist attributed his trouble to some plant that he had been handling, & suspicion fell upon an Acacia pubescens & Primula Obconica. Some of the florist's assistants were attacked in a similar manner. This skin trouble did not appear until after the plants were brought into the shop & were handled in large quantities - To confirm his suspicions - & while about to Professor Goodale of Harward, asking if he had ever known this Acacia or Primula to cause skin troubles.

Prof. Goodale referred the matter to the gardeners at the Botanic Garden, & replied "Our gardeners say that they have not experienced any trouble from A. pubescens or P. Obconica but that there is a plant, as yet undetected, which has lately given them a good deal of irritation."

Early the following year Mr White returns to the subject, & in Gt Forest of Feb 20th 1889 p. 94, after referring to the issue of the previous year, he says: "The florist & some of his assistants, whose skin disturbance, therein (last year) described, dermatitis venenata, subsided in a short time, & the skin of the three affected persons has remained in a healthy condition until recently. Within the last 2 or 3 weeks, however, they have all manifested a recurrence of the same symptoms in about the same degree as last year".

Primula Obconica, one of the suspects of the former year, they now feel assured is the cause of the trouble as this did not manifest itself until this plant came into the store for sale & had been freely handled in making up floral decorations.

"The next evidence comes from Joseph Meehan, of Germantown Pennsylvania. In Gt Forest for March 27th 1889

Mr Meehan quotes from a letter of David Cliffe, who, after potting a lot of Primula obconica had his face so swollen that he remained completely blind for a day. This was the severest case yet reported; but it should be stated that Mr Cliffe was at that time suffering from poisoning by Euphorbia (Poinsettia) pulcherrima. Mr Meehan states that he himself is obliged to avoid contact with Poison Ivy (Rhus toxicodendron) + that the Seeds of Oregon Maple (acer macrophyllum) + of Hop Hornbeam (Ostrya virginica) excite itching + inflammation of his hands, while many others who have handled them are not at all affected. These seeds, he states, "are both covered with minute hairs".

On June 12th 1889 G. & Forest published a note from Mr John N. Gerard, of Elizabeth New Jersey. in which he gives the testimony of a lady, who, with several daughters, had experienced

most serious inconvenience from handling Primula Obconica

"English gardeners, as a rule, do not appear to be so susceptible to the irritation caused by Primula Obconica as do our own, or it may be that the plant grown in the humid climate of Great Britain has its irritating properties less conspicuously developed than in this country.

It is certainly singular that so many should have suspected Primula Obconica as the cause of annoying skin troubles in themselves & others, without closely examining the plant.

A pocket magnifier of moderate power would have revealed such a condition of hairiness that would have suggested further examination with a compound microscope.

Both surfaces of the leaves & especially their margins, shew a great abundance & variety of hairs, while the petioles or leaf stalks are conspicuously hairy, as may be seen without the aid of

a glass. [illegible] becomes
this plant presents material for study
in great abundance & variety -

At my request, Mrs John Payne has
made a drawing of a fragment of a
leaf as it appears under the microscope.
This shows the hairs which fringe the
margins of the leaves & the calyx-lobes.
The large projection in the engraving
is one of the teeth upon the margin
of the leaf. The surface of the leaf
shews some hairs like those on the
margin, other much shorter & some
much longer & weaker. The hairs
upon the petioles, so long as to give
them a shaggy appearance, present
under the microscope a great variety
in appearance. The hairs are seen
to be made of many cells placed end
to end. These cells are oblong in
outline & diminished slightly in
size from the base upwards.

Frequently one of these cells is
much narrower than the one above
& the one below it, appearing like a

mere stem connecting two parts of the hair. This occurs in no particular portion of the hair, & sometimes there are two constrictions of this kind in the same hair. In many plants the cells have a deposit of silex. This is the case with Primula Obconica. If a portion of the leaf, including a portion of the margin, or of the calyx, be simply boiled in nitric acid, the contents of the cells will be removed, leaving a skeleton of the cells in silex, & in this Primula the hairs are shown to have a silicious skeleton. All traces of the acid being removed by abundant washing, the specimen may be mounted. The large proportion of silica in the hairs of this Primula would tend to render them brittle, it would also give them firmness to penetrate the skin when the plant was handled, &, breaking off, they would remain & cause irritation. Has anyone examined

the skin of an affected person with a magnifier to see if the hairs were remaining in the skin? I did not meet with the only person among my friends whom I know to be affected by the Primula until long after the irritation had ceased.

Some have likened the effects produced by Primula Obconica to those of Rhus Toxicodendron, the Poison Ivy, but it is a well-established fact that many persons are poisoned by Rhus without coming in contact with the plant. Merely passing near it or being near a fire where it is being burned is sufficient to cause serious poisoning, indicating that the active principle is volatile.

In stinging with nettles an acrid liquid is said to be injected into the wound made by the stinging hairs

Is the irritation caused upon the skin of those who handle Primula Obconica any different from what

would be caused by a multitude of very fine pine or other splinters?

Those who have travelled in the cactus region of Arizona & neighbouring territories are well aware of the irritation that may be & often is caused by the entrance of minute spines into the skin, & do not need to consult a work on dermatitis venenata to learn if the order Cactaceae has furnished, among its eighty-six genera, one or more species which have been known, upon good authority, to produce some degree of inflamation of the skin by contact.

The one thing needed in the case of P. obconica is a careful investigation as to the character of the disturbance it causes & how it produces it. If, as now appears probable the hairs, with which the plant is abundantly provided, are the cause, do these hairs

inject any acrid liquid or other substance into the skin?

Though contact with the plant is said to produce skin poisoning is there any proof of the presence of a poison of any kind as that term is generally understood?

What proportion of those who handle the plant are unpleasantly affected? Are persons of a peculiar habit or complexion more susceptible to its effects than others?

If these points appear trivial, it should be considered that no plant has been introduced into cultivation in a long time possessing so many elements of popularity as Primula Obconica It is of great value to the florist to whom its readey propagation, its abundant & continuous bloom & its adaptability to bouquet & decorative work all commend it.

But to the amateur cultivator & lover of plants, whether he

cultivate it in the window garden or elsewhere, it is an almost perfect plant. In view of its irritating qualities, some conscientious florists have ceased to offer it for sale, & it promises to pass out of cultivation altogether, with the hope of averting what would be a floral calamity, I plead for investigation, that we may know the extent of the evil.

Before it is too late it will be prudent for those microscopists interested in the study of minute plant structure to secure material while it is still to be had.

George Thurber
Passaic, N. J.

My next Extract is from G. & Forest VIII (1890) p. 217

"Perhaps a few notes on the irritation of the skin by Primula obconica may still be in order. The plants on which my observations were made were fully developed specimens &

had been propagated by division of last years plants - not raised by sowing seeds after the more natural method. About five hours after the work of picking dead leaves & flowers from about a hundred of them, the backs of the hands & portions of the arms began to itch, & a slight swelling of the parts affected was noticeable some five hours later. The swelling disappeared in twenty four hours, but the irritation was not wholly gone until the seventh day.

It was very slight at its most acute stage, while the swelling caused no inconvenience whatever

The application of soap & water to the affected parts hastens & increases the irritation, moisture appears to aid the injurious propensities of the plant, for it is noticeable that the irritation & swelling are more severe when either the skin or the plant is wet.

"A good botanical dissecting microscope fails to reveal any trace of vegitable hairs in the skin after contact with the plants: & this fact suggests the belief that the plant secretes a poisonous fluid.

The irritation differs from that caused by minute spines entering the flesh. In the latter case a sharp sense of pain is experienced & guided by it, each individual spine may be located; but in the former, larger surfaces appear to be affected. I have consulted with several persons who have grown the plant in quantity, & a few others have experimented at my request, so that I have information concerning its effect on thirty nine persons.

From the facts I have calculated that about 50 per cent of those who work among the plants are subject to their peculiar effects.

Temperament & complexion appear

to be unimportant factors in the matter; but two coloured men whom I persuaded to test the plants remained wholly uninjured after prolonged contact with them.

The experiences of some white gardeners & florists are similar to those of these two coloured men, no amount of contact with the plants affecting them in the slightest degree. The irritation varies in intensity, & in some cases it is extremely slight.

It is generally confined to the arms & backs of the hands, but there are important exceptions to this rule. Mr K. Finlayson, a gardener at Brookline Massachusetts, had his eyelids affected, though no part of his face had come in direct contact with the plants.

He had been cleaning a number of plants, & his hands, he says, which were also affected afterwards may have been brought in contact

with his face while that operation was proceeding. Wm M. Hutchins a florist of North Cambridge Mass. had a similar experience.

Mr Finlayson believes that the hairs which clothe the flower-stalks are in some way the cause of the injury, & says: "My belief in this is strengthened when I remember that I can handle all other parts of the plant with impunity"

Plants raised from seed appear to be less injurious than those propagated by division of the old plants; indeed, I have yet to find a case in which the irritation can be traced to one year old seedlings.

Perhaps the hairs grow harder & sharper, or more virulent, as the plants grow older? It is somewhat difficult to get reliable information on this point, as the plants are propagated by both methods & mixed in most establishments. Seedlings do not injure Mr Findlayson.

thought he is particularly liable to be affected by the older plants. Some further information on this phase of the question would be very desirable

M. Barker
Botanic Garden, Cambridge, Mass.

Next extract:- Garden & Forest III (1890) p 256

"The Illustrirte Gartenzeitung, of Vienna, says that Primula Obconica was brought to notice in Germany by descriptions & an illustration, which, in 1886, it reproduced from an American journal. At a horticultural congress held two years later it was agreed that the plant "did not fulfill the expectations that it had excited" but, the writer continues, later experience has been different, as admirable plants of Primula Obconica were shown, during the winter just passed, by all the florists of Vienna.

Now, he doubts, however, whether it

will preserve its popularity, owing to the alleged poisonous character with which it is credited by American florists."

Garden & Forest iii (1890) p. 292

"Le Jardin commenting upon the poisonous properties of Primula Obconica says that the common European Primrose will irritate & burn the lips if bitten."

Garden & Forest 1890 p. 495

"'Primula Obconica poisonous' has so frequently been the heading of articles in many horticultural journals, foreign as well as American that the irritating qualities of the plant may now be considered proved beyond a doubt."

Gardeners' Chronicle, Ser. 3. vii. (1890) p. 175

"No excuse need be offered in again referring to this handsome Primrose, which has already taken firm hold as one of the best of our

winter & spring-flowering subjects.

It flowers with profusion, & if treated liberally, for so long a time as to be hardly ever without bloom. The improvements in size of flower & in depth of tint have been very striking, within the last few years; & if the process of selection should go on, we may expect many valuable additions, & some, perhaps, capable of being cultivated in the open air.

It seeds very freely, & if seeds are sown when gathered, no trouble will be experienced in raising plants. Its poisonous properties have not made themselves manifest to me, at least I have handled the plants in every way in the course of potting, trimming, & staking with no bad result whatever.

This, of course, does not prove that the plant may not cause irritation to others" &.

N.B. "L" no doubt is Mr. T. Lewar, - at that time foreman of the Herbaceous Department at Kew. J.K.

Gard. Chron. Sec. 3. XI (1892). p. 469.

"Stinging of the Skin by P. Obconica.

In a Birmingham nursery, where this plant is grown extensively, the young men who were engaged in potting the plants experienced an itching sensation in the arms & hands, followed by blotches, & it occurred to the manager's wife that an application of Condy's fluid might be beneficial, & half a wineglassful was placed in cold water & the arms & hands were bathed with it, allowing the lotion to dry on the skin, & relief very soon followed, & soon afterwards the itching & blotches disappeared. I recommend all who have to do with Primula Obconica to have a little Condy's

fluid by them in readiness.

It is not everyone who suffers, but those who do will find nothing better as a remedy. W.T."

Other references -

"Garden" Sept 6th 1884 - in which a coloured plate is shown -

Gard. Chron VI. (1889) p 134.

(This is a repetition of the account given in Garden & Forest June 12 1889)

Gard. Chron. VII 1890 p 175

Gard. Chron. IX 1891 p 401

Dr E. Burdett Pooley writing in the Lancet of 22nd July 1893 mentions a case of Primula Obconica poisoning which he had under his care, in which he was led to believe, that Erysipelas had left the patient susceptible to the influence of the plant, as he (the patient) was a gardener & had been accustomed to handle the plant for some years.

previously without any ill effects.
But after suffering from Erysipelas he always suffered from acute dermatites when he came in contact with Primula Obconica

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After giving the history of the plant & the literature which I can gather concerning it. I will now pass on to my own experience of it.

I have had a great number of cases of Primula Obconica poisoning under my care since I have been in practice. Three of these I had special facilities for studying & therefore I propose to give them in detail.

I The 1st case was that of Miss J.S.R. of Edinburgh who is remarkably susceptible to the influence of any part of the plant. She had been treated in 1890 for several weeks for an intractable form of Eczema of hands arms & face, but with no apparent benefit.

She was then sent to Harrogate where Dr Myrtle Sen. had charge of the case. He was gratified by the result of the Harrogate waters & at the end of a month she returned home apparently quite cured. Shortly after she returned home however the dermatitis reappeared.

It was about this time that I saw an account of supposed poisoning by Primula Obconica in "The Scotsman".

As the patient was in the habit of attending to a very fine & favourite specimen I persuaded her to have it removed. Shortly afterwards the skin eruption began to disappear.

I have since carried out a series of experiments on this patient with her permission, after having satisfied myself that the plant alone was the cause of her trouble.

I carefully separated & collected different parts of the plant

& rubbed these on separate surfaces of the skin, with the following results.

1st Experiment The Pollen was well rubbed into the skin of the arm The root & expressed juices of the root were rubbed into the skin of the other arm. Then a light bandage applied over each.

The result was entirely negative the patient experiencing no discomfort

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2nd Experiment The petal was rubbed on the Right arm &

The Leaf was rubbed on the left-arm Each was then lightly covered with a bandage.

In about Six hours a burning sensation was felt on both surfaces & next morning (about eighteen hours after the application) when the parts were inspected. It was found that both arms presented a localised dermatitis of a severe character - The petal had caused

an erythema with small groups of papules dotted about like insect bites

The Leaf caused a more severe inflammation It had quite a different macroscopic appearance, it looked more like a bruise recently received

On examining the different surfaces with a lens, I could find no trace of hairs or any other part of the plant - At the time I wondered at the different appearance of the inflamed surfaces, & thought that the one shewing the "insect bite" appearance might have been from the hairs pricking into the skin.

This however could not be the case as it was caused by the petal (which is devoid of hairs)

No remedy was tried for this dermatitis for nearly 3 weeks, at the end of which time the inflammation was still very severe - Ung. Boracis was then applied & gave great relief, the dermatitis

& the itching gradually subsiding, though it was weeks before the itching was quite gone & three months afterwards, she writes to say, that the marks are still present on her arms.

During this experiment the face was also slightly affected.

I think I may mention here that in this patient, the dermatitis caused by Primula Obconica has always run a regular remittent course, dying down towards the end of the week only to recommence with fresh vigour on the 8th day, again on the 15th day & so on.

3rd Experiment. The Stalk was laid lightly on the arm for two or three seconds.

The following morning a raised line of severe dermatitis about one inch in diameter, along the line of actual contact, was found. This dermatitis presented the appearance of acute

weeping eczema & was very painful -

4th Experiment The juice - obtained by collecting fresh leaves & young stalks & pressing them -

The liquid thus obtained gave a strongly acid reaction & contained hairs, which could be distinctly seen under the microscope -

This gave a dermatitis very similar in appearance to that caused by the leaves, but not nearly so severe

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5th Experiment The distillate - obtained by bruising the fresh leaves & stalks, macerating in water for 12 hours & from this making an aqueous distillate - This gave a slightly acid reaction -

After being freely rubbed on the skin this gave no result -

6th Experiment The Extract - obtained by bruising fresh leaves & young stalks

pressing out the juice, heating gradually to 130° F. & separating the green colouring matter - I. Evaporated the filtrate & added the green colouring matter & then slowly evaporated at a temperature not exceeding 140° F. to a soft extract -

This was applied to the skin of the arm at night & covered lightly with a bandage -

Next morning on inspection a distinct blister was found, at the part of contact.

This patient shews an extraordinary sensitiveness to Primula Obconica poisoning - She writes to me :- "Miss T. took me to see a cactus in her green house - the sun had been very strong on the glass all the afternoon - I had not been in the place two minutes or at the most three - when I saw a P. Obconica & went out at once <u>without touching it</u> - & I was very bad

for several days after on hands & face" —— " She writes again later in the same year that she has had another attack of P Obconica poisoning which came on a few hours after being in a greenhouse with it. & she is quite sure that she did not touch the plant—

This is the only case of Primula Obconica poisoning which I have seen, without being able to distinctly make out a history of actual contact with the plant.

This patient is of dark complexion rheumatic constitution, (or a mixture of rheumatic & nervous constitution) but has never had any skin affection before coming in contact with this plant.

II The next case which came under my notice was that of Mrs A.B. who had her greenhouse crowded with Primula Obconica.

She suffered from a severe form of

eczema for which she was in the habit of going to Harrogate or Southport each year, for several weeks at once - On enquiry I found that when she tended her plants, she always suffered more acutely from this eczema

I suggested Primula Obconica as a possible cause & advised her to avoid contact with the plant with the result that she never had it again excepting when I carried out the following experiments - I was anxious to try all the different parts of the plant, as in the case of Miss J.S.R. & without inflicting more punishment than necessary -

I first tried those parts which had given a negative result in Miss J.S.R's case

1st I applied to different parts of her arms the pollen, the Root & the distillate but got a negative result in this case also -

2nd A few days afterwards the petal was applied to the Right Arm & the expressed juice to the left arm

Next morning there was a distinct (though slight) dermatitis on both arms. "very irritable" & both presenting much the same appearance, red & slightly swollen

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3rd When the dermatitis had quite disappeared, I applied the Leaf to the right arm & covered it with a bandage. & the Extract to the left arm, covering it in the same way.

This was done at 11 A M & she writes to me 7-30 P M saying that at 5-30 P M she felt slight irritation in both arms, but did not disturb the bandages until 6-30 P M - when she found both arms hot, red & swollen -

When I inspected the arm next morning I found that the Extract had produced two

well marked blisters, surrounded by a zone of inflammation about two inches broad, the arm was very much swollen & had an erysipelatous appearance.

The leaf had produced much the same appearance but without the blisters ~~&~~ the swelling was not so severe —

The stalk was not tried on the patient — She objected to any further experiments being tried.

This patient is also of rheumatic constitution, phlegmatic, & is of a fair complexion — She has never suffered from any skin disease except as the result of Primula Obconica poisoning.

III Mr B. gardener came to me suffering from a severe form of dermatitis, which I treated with Lassars Paste & other remedies.

these however gave no relief.

I began to suspect Primula Obconica as the cause of the rash & on enquiry found that he had been potting some recently -

I advised him to wear gloves when at work & told him of the undoubted property of P Obconica of producing such an effect in some persons - He scoffed at the notion but followed my advice, with the result that he was soon quite well again -

Sometime afterwards I met him casually & remarked that it was curious that such an innocent looking plant should cause so much trouble - To my surprise, he did not believe that the plant was the cause of his trouble - but said that it was caused by washing carpets with ox-gall

He had been using this about a week before the dermatitis appeared - He pointed out that

he had been in the habit of handling R. Obconica for years & had never been affected by it.

He said that he had no objection to my experimenting on him with the plant so I asked him to call at my surgery in the evening.

I laid the stalk gently on one arm & the leaf on the other.

He came in next morning & complained of great irritation.

On inspecting the arms I found that the stalk had produced the appearance of a wheal & the leaf had left a red inflamed & swollen surface, weeping like an acute eczema.

These results being very similar to the ones caused in Case I, & the patient being very unwilling to submit to any further application, I did not try any other parts of the plant.

Later I prevailed on him to allow me to try the distillate, pollen & Root

& got a negative result as in cases I & II

This patient is of ~~dark~~ fair complexion, has never suffered from erysipelas or any other skin affection, he is of phlegmatic constitution, has always been very healthy, but has once had Sciatica which indeed is the only illness he can remember -

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These three cases are the only ones on which I have had the opportunity of carrying out systematic Experiments, though I have treated many others suffering from P. Obconica poisoning in my practice.

I have however applied the different parts of Primula Obconica to 25 individuals of my acquaintance of different complexions & constitutions & have in no one case been able to produce poisoning though I never used 1 year seedlings

We may therefore safely conclude that in America (where M. Barker -

Botanical Gardens Cambridge Mass. studied the plant) its poisonous properties are much stronger, or the patients more susceptible to the poison than in this country.

Mr Barker Calculates that 50% of those handling the plant are affected by it - I consider the percentage in this country much lower. say about 4%.

He, Mr Barker, also says that he has yet to find a case where one year old seedlings caused trouble - My patient - Case I. was readily affected by one year old seedlings though the irritation caused, was not so severe, as in the older plants -

I am of opinion that the plant becomes more virile under cultivation in its poisonous properties

For Case III had handled the plant for several years before he was affected by it - & another gardener of my acquaintance handled it for

ten years before he felt any irritation.

I do not consider that the age of the patients has anything to do with it, for I have known it occur in all ages, from a child 2 years old to a man of 63 yrs.

Dr S. Burdett Pooley in Lancet 22/7/93 quotes a case, in which a patient had suffered from an attack of Erysipelas which had probably rendered him susceptible to the poison of P.O.

I am inclined to think that this was a coincidence, as I have rubbed different parts of the plant well into the skin of two patients, who have previously, (one quite recently), suffered from Erysipelas, & in neither case was there any poisoning caused by the application.

It is rather remarkable that in most of the patients I have treated for P. Obconica poisoning, there has been some rheumatic taint - though all people who suffer from rheumatism

are not affected by the plant.

Dr George Thurber asks if the complexion of the patient has any influence on the poison -

I am inclined to think not, as I have seen fair & dark people alike suffer from its influence

He also asks if the dermatitis caused is similar to that which would be caused by sharp spines pricking into the skin.

I agree with Mr Barker in thinking the dermatitis quite different -

There is no pricking pain on pressure, the inflammation extends in some cases an inch beyond the point of contact in a few hours & the sensations are of a tingling, burning, or intense itching character -

I have carefully examined the skin of those affected by the plant with a lens & have been unable to find any hairs present in the skin, though this is what I expected to find after I had examined the hairs microscopically

& seen their formation & composition (which I will describe later)

The fact that those parts of the plant possessing hairs gave a more severe inflammation than those without them, made me think that they (the hairs) had some direct influence in producing the dermatites. I still believe that there is an acrid substance secreted at the base of the hairs which is the cause of the poisoning & that the hairs as a rule carry it through the skin, but that it is sufficiently powerful to affect some susceptible people when it comes in contact with the unbroken skin.

There seems no reason to doubt that Case I was affected by mere presence of P. Obconica in her vicinity

I thought that this might be due to the pollen floating about in the air, but this is proved, not to be the case by the fact, that when the pollen

was applied separately to the skin of the patient it produced no result -

There seems to be no other solution, than that the poison is volatile, & able to affect certain individuals, under exceptional circumstances (such as excessive heat)

Cases I & II were affected on both face & hands, but I have met several (Case III included) who are only affected on the parts actually touched by the plant itself.

Primula Cortusoides which is very closely allied to P. Obconica in habit & foliage, did not produce any irritation in Case I though she is so susceptible to P. Obconica

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I will now pass on to the microscopical examination of the plant - It struck me that it would be interesting to compare it with

the ordinary primrose.

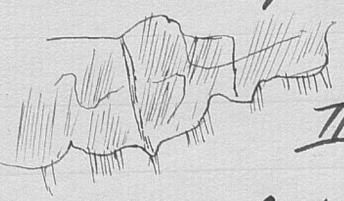
There are no hairs to be found on the corolla of either plant neither are there any on the throat or tube of either corolla.

There are hairs to be seen on the calyx, the stalk, & the ribs on the under surface of the leaf, & the edges of the leaves however in both plants.

The ordinary primrose has a fringe of hairs on the edge of calyx, which are longer, finer & more numerous than those on P. Obconica, each hair is composed of 4 parts & is not bulbous ended.

(Hair seen with micro. 2" I)

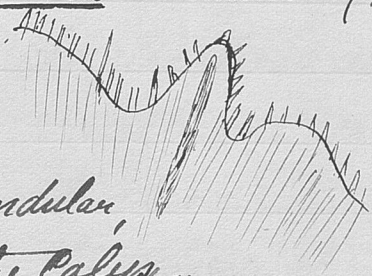
There hairs are irregularly distributed along the edge of calyx as shewn in diagram II.



II

There are a great number of hairs on the ribs on under surface of the leaf & on the stalk, but there are no hairs on the upper surface of the leaf.

Diagrams of Primula Obconica examined by 2" power microscope.

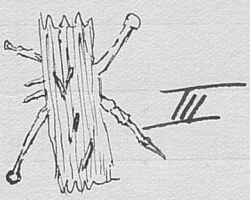


I

I shews the fringe of compound, conical, glandular hairs on the edge of the calyx. These are shorter than those seen on ordinary Primrose, they are segmented as shewn in II

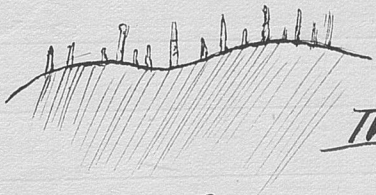
II

III Shews the stalk of the flower. on which the small hairs are capitate & the larger ones are mostly conical they have from 3 to 9 segments



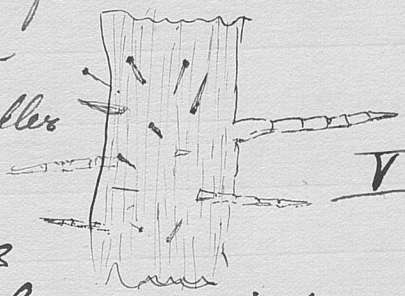
III

IV Shews the edge of the leaf with the regular distribution of the hairs

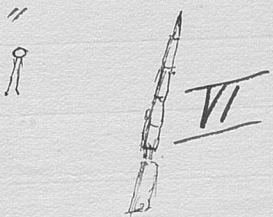


IV

V Shews a portion of a rib of a leaf - The smaller hairs are bulbous ended - The long ones are sharp - These hairs remind one of minature "mare's tail" being distinctly articulated



V



VI

VII Shews a hair magnified in which there is a distinct constriction at one place - I have sometimes seen them with two constrictions

This hair resembles the sting of the Common nettle, which is sharp + glandular, but is not compound as in this case -