

Sarracenia

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Newsletter of the Wildflower Society of Newfoundland and Labrador c/o Botanical Garden, Memorial University of Newfoundland, St. John's, NL, A1C 5S7

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2003-04 Executive

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Past President: Howard Clase	753-6415
Sarracenia Editor: Todd Boland	753-6027
Board Members: Maggy Piranian:	754-7182
Judy Blakeley:	437-6852

Any articles from members would be most welcomed and may be sent via email to todd.boland@warp.nfld.net or via regular mail

Todd Boland 81 Stamp's Lane St. John's, NF A1B 3H&

Fall/Winter Programs

Traipsing about the Bruce October 1, 2003

The second North American Native Orchid Conference was held in Hamilton, Ontario in June, with field trips on the Bruce Peninsula. Two of our Wildflower Society's members, Glenda Quinn and Carmel Conway attended and they will share their experiences with a talk and slides.

Orchids of the Avalon November 5, 2003

The creme de la creme of the plant world, orchids, will be Todd Boland's topic, with emphasis on the orchids found on the acidity soils of the Avalon Peninsula. Todd is an ecologist teaching Landscape Horticulture and Wildflower's Field Editor for Newfoundland and Labrador.

Berry Christmas December 3, 2003 - 8:00 PM

Christmas Pot Luck with an emphasis on our wild berries! Bring a dish, savory or sweet, made from blueberries, partridge berries, bakeapples, etc. Don't stay away because you don't have berries in the freezer or preserved, any food dish will do. Members are asked to bring along any slides or photographs from their summer field trips, etc.

Of Pollen and Glaciers February 4, 2004

Studies of pollen enable scientists to form pictures of past landscapes and climate. Dr. Joyce Macpherson, editor of Natural Environment of Newfoundland Past and Present will talk on the pollen record of

postglacial vegetation changes in the St. John's area.

Alien Attack! March 3, 2004

Did you know 1/3 of the province's flora has been introduced? Dr. Wilf Nicholls, curator of the Botanical Garden, MUN, will talk of the joys and problems caused by invasive plants.

A Taste for Wildflowers April 7, 2004 (tentative)

Greg Stroud, Terra Nova Park's interpretation specialist, will introduce us to plants that may tickle your taste buds. Bring a friend and learn about edible wild plants, their characteristics and uses.

President's Message

On behalf of our membership, I want to thank Howard Clase for the time he gave to the Wildflower Society of Newfoundland and Labrador. Howard served as president for five years and during that time our organization benefitted from his dedication and organization skills (and identification skills). Howard and Leila led numerous field trips and mapped hundred of species. An excellent list called List of Plants Recorded on Our Down Town St. John's Walks was complied by Howard and can be found on John Maunder's Newfoundland and Labrador Natural Sciences Website. It's amazing that our former president discovered at least three new species for the province - one in his backyard (for the record: finding new species is not a mandate for the Society's president)! Lesser Water-plantain Baldellia ranunculoides, Broadleaf Helleborine Epipactis helleborine, and Giant Hogweed Heracleum mantegazzianun are the three.

Another season has passed and this one was exceptionally warm. The big trip this summer was to the big land, Labrador, and Howard will feature an article in a forthcoming issue of Sarracenia, describing the Wildflower Society's northern excursion. Our group was also busy exploring in the field, locally, beginning with a visit to the Hawke Hill in June, and then a hike in Harricott. Several of the Grand Concourse Walkways were explored, the one behind the Hindu Temple, and Neil's Pond, Paradise. Labour Day weekend saw us visiting Spaniard's Bay and Bristol's Hope where Lesser Water-plantain Baldellia ranunculoides was the star of the day, and the other rare water plant, Baltic Saltbush Atriplex nudicaulis, coming in a close second. Ruminating on Rumex, perplexed with Atriplex, and in knots over Polygonum made up for a challenging, fun-filled day. Topped with a delightful evening meal at Mama Soula's, the evening was a dual celebrating - our annual Labour Day social and the first day of Howard's retirement as Head of the Department of Chemistry, MUN. In September, we rounded off our outings with a trip to Bowring Park where we were joined by members of the Natural History Society. Thank-you to Todd Boland, Howard and Leila Clase, John Maunder, and Ross Traverse for leading these walks. Your expertise is valued and because of contributions like yours, our society will thrive.

Check out the latest volume of Wildflower, North America's magazine of wild flora. Our editor, Todd Boland, has written an excellent article on botanizing on Newfoundland's Cape Onion and it is entitled Off the Beaten Path. After reading the richly illustrated piece, you will want to hop into your car and head north. Carmel Conway

(722-0121) will gladly lend her copy to anyone who wishes to read it. If you are interested in subscribing to North America's first, oldest and only native plant magazine write: Wildflower, Box 335, Postal Station F, Toronto, ON, M4Y 2L7. One year costs \$40 (4 issues).

I look forward to presiding over the Wildflower Society during the next year.

Glenda Quinn

Island Treasures

by Glenda Quinn

Monday, but the antithesis of Blue Monday, although the day was shades of blue, sapphire and azure. Sky and water, soul mates, conspiring to complete the beauty surrounding us, melded with the warm rays of sunshine; the elements, gentle. As we stepped off the dock onto Flowerpot Island, Earth, too, revealed her gems of ruby and gold - the bright heads of Columbine, nodding a cherry greeting. Anchored to the ancient, speckled grey rocks, the beautiful wildflower bewitched us, convincing me that no gardener of Kew or Claude Monet's Giverny could re-create such a setting, only Nature, herself. What other delicious treasures did this little island have to offer, if it could so casually throw at our feet, such a gift?

Several orchid species are found on Flowerpot Island and I saw two in bloom - Calypso bulbosa and Corallorhiza striata. Two very different ones which illustrate the diverse forms orchids can take while sharing characteristics of the Orchid family. In Newfoundland, the Fairy Slipper may be at risk (COSEWIC) and it can be found only on the west coast where the substrata is calcareous. Finding it in Newfoundland would be exhilarating but it was exciting to see it for the first time on this little island in Lake Huron.

"Calypso" was named for the sea nymph Kalypso. She seduced Odysseus, who was returning from Troy, with her beauty and sexual allure and he spent eight years on her island before returning to Ithaca. I met Calypso on an island, too!

Calypso has a single, oval, basal leaf, a stem with 2-3 transparent sheaths, and grows from three to six inches. Blooming from May to June, the orchid likes the shade of moist, cool coniferous woods on, or near, decayed stumps and logs. Sue told me Viola renifolia was a good floristic indicator of this elusive charmer, or maybe, as Odysseus might say, seductress. The corms are shallow-rooted and are easily damaged by trampling. I wonder of they survived the onslaught of our orchid devotees or if they were loved to death. Calypso is a monotypic genus and the flower is a shade of mauve, with white and yellow. The yellow colour is on the saccate lip and is in the form of hairs which signal bees to come and enter the column. In the fall a single new leaf appears and stays under the snow all winter, dying after the solitary flower withers.

The first time I saw Coralroot (C. maculata) was at Manuel's River and it was the plant's unusual, gangly appearance that caught my eye, rather unattractive, until the wildflower is examined more closely. A camera lens performs magic and only then is its true beauty revealed. That can be said for many plants in the orchid family. Striped Coralroot is a close cousin of Spotted Coralroot and it is more striking because of the beautiful maroon stripes. A costume designer for a Parisian haute couture house would have the perfect inspiration for an elegant gown or hat if he could see the lovely colours and shape of this orchid. The flower of striped petals and sepals form a protective umbrella-like structure over the deep maroon

labellum. Corallorhiza striata is glabrous and can reach a height anywhere from four to sixteen inches and grows on the forest floor where limestone is near the surface. It likes to make its home beside Calypso and is one of the first Coralroots to bloom. It blooms in late May to late June. This orchid is also at risk (COSEWIC) in Newfoundland and is more prevalent in Western Canada and, as Catling said, C. striata has a similar but less pronounced pattern than the Alaskan Orchid which is widespread in the west but very local in the east.

I may have seen only two orchids in bloom on Flowerpot Island but they were two I have very little chance of seeing in my own province. Besides, there were other interesting wildflowers I saw for the first time on this little treasure of an island and I was happy. I did see the leaves and buds of Hooker's Orchid *Platanthera hookeri* and Carmel did capture an image of Heart-leaved Twayblade *Listera cordata* with her camera (we had gotten separated on the trail).

Sometimes I think some wildflowers are cheated because their common names are so unappealing and an immediate prejudice is formed. Scabious! Other times you are immediately charmed by their common name as I am with Goldthread. I think I fell in love with the plant before I even saw it, the name alone captivated me. Goldthread Coptis trifolia flourishes on Flowerpot and was one of the many plants familiar to me, an old friend, reminding me of the day we were exploring Goose Cove and found an old 17th century cannon embedded in the heath on the shore of Trinity Bay. Between the limestone rocks, Herb Robert Geranium robertianum flourished and the rosypurple flowers and fern-like leaves were lovely splashes of colour on the shore. New to me was Trillium grandiflorum and Polygala paucifolia. The Large-flowered Trillium, Trillium grandiflorum, has three white petals which stand

out against the three sepals and three green leaves. If you see a plant with pink leaves it means the plant is growing old and is about to wither. Now that's growing old gracefully! Gaywings, Polygala paucifolia, is not a secretive plant and its bold colour makes it stand out from the surrounding vegetation and it cries out - "take my picture, I'm as pretty as an orchid." The rose-purple flowers are somewhat tubular with yellow fringes on the tips, wings at the tops, and the plant is quite small. Polygala paucifolia has several common names so take your pick - Flowering Wintergreen, Fringed Polygala, Fringed Milkwort, Bird-on-the-wing, or my favourite, Gaywings. Five common names for a plant whose Genus begins with Poly! Another pretty and delicate looking plant growing on the trail was Foamflower, Tiarella cordifolia. A member of the Saxifrage Family with maplelike leaves, its protruding stamens create an effect of white foam. It is not a native of this province, probably because it needs rich woods which are not too prevalent on the island, but I did buy it from a nursery years ago and planted it in my garden. It did not survive.

Growing on a boulder covered with moss and dried coniferous needles, a rosette of basal leaves with a dried scape and capsules was a tantalizing preview of things to come later in July. The ovate leaves with the white stripe down each one, were those of Goodyera oblongifolia. It will be the good fortune of someone hiking Flowerpot later in the summer to catch the full production of Menzies' Rattlesnake Plantain. Two hundred years ago, Archibald Menzies, a doctor and naturalist accompanied Captain Vancouver on an expedition voyage (1791 - 1795). It is his name the plant bears today. Menzies was the first to describe the Douglas Fir and other conifers on North America's western seaboard. Goodyera oblongifolia has a

similar distribution pattern as the Alaskan Orchid and the Striped Coralroot - the further east you go, the less you see it. In Newfoundland it may be at risk (COSEWIC). Rattlesnake is a word that popped up often in the few days we were away. Sometimes it referred to the slithery creature and sometimes to plants. On Flowerpot, beside the orchid, Menzies' Rattlesnake Plantain, I saw a beautiful fern and I didn't have to trouble myself with its identification, Sue was standing beside me - Rattlesnake Fern, Botrychium virginianum. It grows back home, but only in w/nw Nfld. to central Labrador, so chances are, I was seeing it for the first time. The sporangia are clustered toward the tip of a fertile stalk and it stalk arises at the base of the lacy blade. The fern is a member of the Adder's- Mouth Family (Ophiologlossacae) which includes Moonwort and the Leathery Grapefern. Another fern I saw was Maidenhair Spleenwort Asplenium trichomanes which has a dark and wiry rachis. This fern, a disjunct in North America, is considered very rare in Newfoundland and only two locations are known on serpentine and limestone talus. It, too, was growing on a rock.

Flowerpot Island lived up to its name and left me with some great memories - a time spent with friends and flowers, a good combination. As we climbed aboard the Zodiac it occurred to us we had another "getting about" challenge - find a ride back to Sauble Beach, about 100 kilometers. But that's another story.

Flowerpot Island gets its name from two rock formations on its eastern shore and is one of many islands of Fathom Five National Marine Park. It is 200 hectares and is located 6.5 kilometers northwest of Tobermory at the tip of the Bruce Peninsula. The island of limestone bedrock is covered with a forest of cedar, spruce, white pine, birch, tamarack, balsam fir, mountain ash, and trembling aspen. The western side of the island faces Lake Huron and the

eastern side, Georgian Bay. Glenda Quinn and Carmel Conway attended the North America Native Orchid Conference in June 2003 and spent a day hiking Flowerpot with a group of participates.

Aliens large and small: Heracleum mantegazzianum, Veronica peregrina and V. arvensis in St John's.

By Howard Clase

Introduction.

While it is difficult to discover new native plants around St John's unfamiliar aliens turn up with surprising regularity, finding their way here by a variety of methods; one that seems very likely these days is by hitching a ride as seeds or seedlings in the potted garden plants that are brought in by the thousands by both reputable nurseries and chain stores, and that is very likely the source of the *veronicas*, but how the *heracleum* got here is anyone's guess – maybe it came in by air!

Veronica peregrina.

From the beginning of our gardening I was aware of a small speedwell with tiny white flowers growing as a weed amongst the vegetables, and in the mid 90's, when we decided to practise our botanical identification skills on our weeds, we soon keyed it out as *Veronica peregrina*, the Purselane Speedwell or Neckweed. It remains a persistent weed to this day appearing in cultivated soil in all parts of our garden, although we have never seen it anywhere else. It was listed in Rouleau's checklist, but when the new checklist

(Meades et al. 2000) came out we were surprised to see that it was not included except in appendix 1 as a plant with no satisfactory specimen, the original collection having been annotated as *V. serpyllifolia*, the Thyme-leaved Speedwell, which is also in our garden since it is a widespread local weed that must be familiar to most Sarracenia readers. There is now a specimen of *V. peregrina* in the Newfoundland Museum collection.

V. peregrina is similar to V. serpyllifolia in that it has small bright green, hairless leaves but has an upright habit compared with the latter's creeping mat forming behaviour and has quite different flowers: those of V. serpyllifolia are light blue, 3-4 mm across and like most speedwell flowers open out flat, while the tiny white flowers of V. peregrina are only 1-2 mm and hide only partly open amongst their bracts in the leaf axils. Another distinction is that the lower leaves of V. peregrina are crenate like tiny oak leaves. These differences are almost certainly much easier to see on living plants and may explain why there was some confusion over herbarium specimens, especially since the flowers of most veronicas seem to be very loosely attached and tend to fall off when the plant is picked let alone pressed. The Purselane Speedwell is native to North and South America and a common introduced weed of cultivation in Europe, so it is difficult to say what route ours may have taken on its way here, but, of course, we do live right next door to a nursery!

Veronica arvensis.

We actually have a five *veronica* garden, but the only other one of special interest is *Veronica arvensis*, the Wall Speedwell, which is native to Europe. While it is in the checklist it doesn't seem at all common in the city. I have also seen it growing on the walkways in SWG College in Corner Brook. Similar to *V*.

peregrina in size and habit it is distinguished by its hairy leaves and intense blue flowers. Although they are only about 2 mm across their colour is noticeable several feet away. It seems to prefer the packed soil of walkways rather than the cultivated areas that *V. peregrina* favours. I should be interested to hear from anyone who finds either of these two species, both of which are described in the standard North American field guides

Heracleum mantegazzianum.

While the first two plants in this note are easily overlooked this cannot be said of the third since it is taller than most people! When we were scouting out the Grand Concourse trail which runs from the Hindu Temple up towards the airport for the first Sunday field trip of the year in late May Leila noticed some very large leaves that obviously belonged to an umbellifer of some sort, but didn't look like any we were familiar with. The leaves were glossier green and more divided with sharper teeth than we remembered for the largest known native species, Heracleum maximum. We kept an eye on these plants as they grew and grew during the summer, eventually topping out at something like 2 -3 m. One plant growing alongside the wooden walkway just north of the tunnel under the ring road had its main inflorescence at head height and it started off nearly a metre below our feet. The main flower heads were half a meter across, with hundreds of white petalled flowers. All this was confirming our original suspicions we had found the Giant Hogweed, Heracleum mantegazzianum, and both John Maunder and Bill Hay, who knows the plant from Scotland, agreed with us. While on our Labrador trip we came across many specimens of the native H. maximum which

seemed quite modest plants by comparison. We were happy to leave the problem of exactly how to make a herbarium specimen of such a large plant to John Maunder!

The plants are growing in a boggy area along that portion of the Virginia River that runs by the new outer ring road just east of Portugal Cove Road. The gaunt skeletons are still visible from the highway, towering above the surrounding vegetation if you know where to look. Like many of their family they die after setting seed and are probably biennial with us. There must have been about twenty flowering plants in all and there are plenty of leaf rosettes of first year plants too.

Heracleum mantegazzianum originates in the Caucuses, and was brought to Europe as a garden plant in Victorian times. It gets its name from the Italian botanist who discovered it. It soon escaped from garden confines and is well established in the wild in the UK where it has been known to reach a height of 5 m (16 ft). Mabey (1996) mentions that a few years ago children in England started turning up in emergency departments with curious round rashes and these were eventually traced to this plant. Its large hollow stems make wonderful play telescopes and pea shooters and it turns out that the the plant juices acting together with sunlight were responsible. The photo-sensitising chemicals concerned are present in other large members of the family too, but this one got a bad reputation, and it is illegal to introduce it into the wild in the UK – although this particular horse bolted long before the stable door was locked. However, Richard Maybe (1996) considers that the dangers of this plant are over-rated. According to the web it is already established in the wild in Ontario, Vancouver Island, and Washington State, and appears on the US noxious weed list. It does not appear in any

North American flora or guide that we have access to.

Stace (1997) mentions in passing that there are other large relatives such as *H. persicum* that are quite similar, but does not give the distinctions and this one fits *H. mantegazzianum* pretty well so that is what we shall call it until someone proves us wrong.

References:

Mabey, R. 1996. Flora Britannica, Sinclair-Stevenson, London.

Meades, S.J, Hay, S.G. & Brouillet, L. 2000. Annotated Checklist of the Vascular Plants of Newfoundland and Labrador. http://www.nfmuseum.com/meades.htm

Stace, S, 1997. New Flora of the British Isles, 2nd Ed., Cambridge U.P.

using flowers for unusual purposes. All of us are used to lectures and articles on pollination, where insect or other animals are discovered to pollinate certain species of flowers, but to the observant, there are many cases where an insect, such as a preying mantis or spider, will hide near a recently opened flower and seize and eat pollinators as they approach.

This summer I came across crab spiders on four different orchid species and decided to do some investigation. Certainly, many wildflower enthusiasts have run across these little yellow (usually) female spiders, with long outstretched legs on flowers awaiting their prey. Of course, these spiders that look like crabs, are not limited to hiding in orchids; very often they lie in wait on yellow daisy-like flowers and goldenrods, where they are well camouflaged.

Although there are quite a few species of so-called hunting spiders, which use flowers as the attraction to draw their prey, the one we see most often is *Misumena vatia* in the family *Thomisidae*. Known as goldenrod spider or flower spider, this crab-shaped spider ranges across North America and Europe.

AND ALONG CAME A SPIDER

by Hal Horwitz

This summer my wife and I spent a delightful month in Newfoundland, photographing the spectacular flora, learning history and meeting wonderful people. Like many who photograph wildflowers, I tend to examine, in detail, many plants in a population before deciding which to photograph. Over time, I have noticed insects

So here is the lowdown on these feisty little creatures – and I do mean feisty. On occasion, I have seen them rise upward and flex their front pincers at me as I closed in for a close-up, just daring me to disrupt their hunting. Females of this species are lighter in color and much larger (6-9 mm) than males (3-4mm). Like all crab spiders, it has a short, wide and flattened body, with four pair of legs, eight eyes and a pair of fangs to inject venom. The front two pair of legs are much longer than the remaining two pair, and the foremost pair is equipped with pincers, which are used to grasp their prey.

The spiders we see on flowers are usually females. They are typically white or yellow and have a limited ability to change color over time. Males, on the other hand, are darker, spend most of their lives foraging for food on the ground and only come to flowers to mate.

The female hunters do not spin a web to trap their victims, but take up position, with front legs extended, on a flower to ambush their prey. Flower spiders feed on invertebrates, butterflies, bees, flies and other visitors. You would think that with eight eyes - arranged in two rows of four - that flower spiders would have marvelous vision. Actually, these tiny eyes serve mostly as motion detectors. When appropriate target approaches, the flower spider uses their slender but powerful front leg pincers to grab and hold onto the quarry and then sink two slender fangs into the victim's body, injecting toxin to immobilize them, and then suck out all the vital fluids. The amazing part of this process is that the prey is many times larger than the hunter, and the thought has often occurred to me that the bee or skipper could easily fly away, taking the spider along. However, the spider has developed a solution. It builds an anchor line of silk, attaching itself to the host flower. If the larger prey tries to fly away before the spider venom takes effect, the strong silk anchor prevents the escape.

A female flower spider also uses its silk to produce a cocoon for its fertilized eggs. She first wraps them in a folded leaf and then covers it all with a sheet of silk. She actually stops eating and watches over the cocoon until she sees movement; the female then cuts a hole in the cocoon, releasing the next generation. By then the emaciated mother dies.

Therefore, the next time you see an insect on one of your favorite flowers, please do not just shoo it off. It needs the flower as a matter of life and death. Our purpose in photographing it is hardly so important. As well, your photograph with insect in place will be much more enticing and interesting.

And do not worry; the venom of *Misumena vatia* is not dangerous to humans.

(Hal Horwitz, a native of and resident of Richmond, Virginia, has taught numerous photography courses and has had one-man exhibitions mounted in private and public galleries and museums in the U.S. His images have been published worldwide in magazines, books, advertisements, and digital productions. Presently, in addition to his work on North American Native Orchids, Hal is writing a book on the Wild Orchids of Israel.)

BOOK REVIEW: ORCHID FEVER

A Horticultural Tale of Love, Lust and Lunacy by Eric Hansen.

Reviewed by Carmel Conway

Orchid Fever is an incredible real-life adventure about the orchid world. Eric Hansen travelled to remote corners of the earth in search of rare orchids and introduces the reader to some of the most eccentric and wildly exciting orchid experts. Within two chapters, I was hooked. I have always felt that orchids were strangely

beautiful seductive little plants, perplexing in their pollination, but the true extent of human fascination and obsession with them, took me by total surprise!

I was particularly fascinated by the flamboyant orchid collector, Henry Azadehdel.

Azadehdel was arrested in 1987 of smuggling thirteen seedlings of the rare orchid, Phragmipedium besseae into Great Britain. The whole affair caused quite the sensation at the time with Azadahdel portraved as a shady figure. Interestingly, we learn, he had been a British diplomatic aid in Tehran at the time of the Shah and had been instrumental in organizing the delivery of hundreds of tons of food and medical supplies to Kurdish refugees on the Iran/Iraq border. Through his research Hansen uncovers very credible evidence of Azadehdel''s procurement of rare orchids for the Royal Botanic Garden at Kew. If the book is to have an antagonist, Dr. Phillip Cribb of the Kew is well cast. I will say no more but would encourage you to read about this fascinating story.

In Orchid Fever we learn about the multi-billion dollar business that the orchid trade has become. We also learn about the botanical rivalry and bizarre international regulations for the protection of endangered species. What we mostly learn is how this magnificently beautiful little flower continues to bedazzle the world, and drive its admirers wild.

BOOK REVIEW: REMARKABLE TREES OF THE WORLD by Thomas Pakenham.

Reviewed by: Carmel Conway

Last fall I was delighted to attend our "Tree Walk at Bowring Park", lead by wildflower member Ross Traverse. Since that time my lens has been pointed up, in addition to down! It was a beautiful sunny day and the park was ablaze with colour. Ross showed us the many park treasures. The most memorable for me was the beautiful Weeping Nootka False Cypress (Chamaecyparis nookatensis 'Pendula'), the majestic weeping beech (Fagus sylvatica 'Pendula'), the stately lime tree (*Tilia cordata*) planted by the Duke of Connaught, a very young but thriving ginkgo (Ginkgo biloba), and a quite rare very but unassuming, dawn redwood (Metasequoia glyptostroboides). Following that walk I was eager to see more, and know more about trees.

Luckily, I happened upon <u>Remarkable</u> <u>Trees of the World</u> by Thomas Pakenham.

Pakenham is a historian, having written Scramble for Africa, which won the W.H. Smith Award. He also wrote The Boer War and Year of Liberty. Pakenham grew up on a large estate in Ireland, which boasted some 200 year old beeches. Storm damage in the early 1990's, and the loss of a huge family beech in December of 1999, culminated in his homage-like fascination with trees.

In 1996, he wrote Meetings with Remarkable Trees, a book of carefully chosen pedigreed trees from Britain and Ireland. The book was such a success that he set off with his

30 lb. Linhof and tripod on an intense three year journey around the world searching for more tree marvels.

The book is divided into five categories; Giants, Dwarfs, Methuselahs, Dreams, and Trees in Peril. The giants, as one would suspect, are truly spectacular. He begins with the baobabs (Adansonia spp.) of Botswana, the trees that prior to the age of exploration had astonished the world of science. The Green's Tree Baobab and Chapman's Tree are monstrous and stunningly beautiful. Of course, he included the great Montezuma cypress (Taxodium macronatum) at Tule, Oaxaca Province, Mexico with its 190 foot girth. There is General Sherman, the sequoia of the National Park in California, which weighs in at some 1500 tons, considered to be not only the largest tree in the world, but the largest living thing in the world. One of my favourite photographs is from the great giant sequoia (Sequoiadendron giganteum) grove at Yosemite National Park, where thrives some 500 giants. Pakenham has singled out the magnificent Bachelor and the Three Graces. No one knows their exact age, but 700 years seems to be a reasonable figure.

In the Methuselahs, Pakenham charms us with the ragged beauty of the famous bristlecone pines (*Pinus longaeva*) of White Mountains, California. There are considered to be 4,600 years old, our oldest living trees!

Of the Methuselahs, I found the most intriguing to be the Bo Tree (*Ficus religiosa*) or Pipul Tree of Anaradhapura, Sri Lanka. It is a cutting from the original fig tree under which Buddha found enlightenment in the 6th century.

Though not as old as many of the trees captured in this book, the 250 year old fig tree, The Tree with Nine Wives (*Ficus baronii*) of the Royal Palace of Ambohimanga, Madagascar, deserves special recognition. Pakenham spotlights this fig with is beautiful root structure, which adds to its mystery and charm.

However, the highlight of the book would have to be the baobabs of Madagascar. Shaped like jugs, bottles, teapots, they are a photographer''s delight, not only for their size, but their sheer unusualness. The author clearly had camera fun with the twin-trunked baobab of Maranta, entwined like two lovers, so-called "les baobab amoueaux" the amorous baobab! Sadly, like the giant spruce, and Douglas fir of Western Canada, they too are becoming endangered.

While this book is fascinating from a historical perspective, the passion and deep love he has for his subject is clearly evidenced by the incredible beauty of his photography. I think both John Muir and Ansel Adams would have greatly admired this man's work.