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KOKUSAI TSUBAKI KAISHI
LE JOURNAL INTERNATIONAL DU CAMELLIA
RIVISTA INTERNAZIONALE DELLA CAMELIA
INTERNATIONALE ZEITSCHRIFT FÜR KAMELIEN
REVISTA INTERNACIONAL DA CAMELIA
INTERNATIONAL CAMELLIA TUDSCHRIFT

AN OFFICIAL PUBLICATION OF THE INTERNATIONAL CAMELLIA SOCIETY

The Camellia on Postage Stamps.

A colourful selection of stamps featuring the camellia flower, kindly loaned by Mr. Ralph Budge.



*CHINA —
Yunnan Camellias*



Set of 10



*HONG KONG
(Grantham's Camellia)*



*POLAND
(Elegans)*



U.S.A.



JAPAN



International Camellia Journal

No. 19 OCTOBER 1987

An Official Publication of The International Camellia Society
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A Message From The President

Un mensaje del Presidente

Messaggio del Presidente

Grußwort des Präsidenten

In this, our Silver Jubilee Year I must first pay tribute to all those whose hard work has built up the International Camellia Society to its present enviable position. We owe a great debt to our founders, the late Professor Waterhouse, Albert Fendig and Charles Puddle. Their vision and ideals have been steadily pursued since and I want to express my appreciation and gratitude to my three Vice Presidents and to all our Directors and Officers for all their hard work. I particularly thank our Patron and Registrar Tom Savige for his devoted work on the Register which has now been officially recognised by the award of the Order of Australia Medal.

I salute all our members in 27 countries and thank them for their continuing support and active participation. Our membership is our strength and the cross-fertilisation of ideas and exchange of material between different countries produce quicker solutions to the problems we all face.

I send fraternal greetings to all the many and various national camellia societies; we value our excellent relations with them and look forward to collaborating more closely with them in the years to come.

Looking back over the last twelve months, Nancy and I recall with pleasure our visit to the New Zealand Camellia Society Convention in Hamilton and the I.C.S. Congress at Sydney. Both were extremely well-run and enjoyable. Before and after these formal events we toured around and saw sufficient to appreciate the generous hospitality of our friends "down under" and the suitability of their climates for camellias. Back home much of Europe suffered another hard winter and the London shows were much depleted. However the Cornwall Garden Society's 75th Spring Flower show at Treliwick was outstanding. It was a great pleasure for us to join with them and to congratulate our Director and former Vice-President, David Trehane on his award by the RHS of the Veitch Memorial Gold Medal.

The future in the colder parts of Europe as in much of the U.S.A. must surely rely more and more on shelter, microclimate and breeding for superior hardiness. Meantime our more favoured colleagues in gentler climates can enrich their gardens with new types of hybrids such as Bettie Durrant's incredibly free-flowering *pitardii* hybrids and more and more fragrant introductions while hybridisers continue to strive for that breakthrough with *C. chrysantha*.

It was a particular pleasure to welcome Dr Zhang Aoluo and his wife Professor Xia Lifang for a 3-week tour of the U.K. Their modesty, charm and knowledge made their visit a delight and their lectures at the Newquay Conference were quite outstanding. We hope and believe that their visit made a positive contribution to international understanding and foreshadows further contacts with their great country.

Nancy and I look forward to meeting many old and new friends at the forthcoming Congress at Naples, where some of the thoughts sketched out above can be expanded and further links of friendship and mutual understanding can be forged.

JOHN TOOBY

Le message du président

En cette vingt-cinquième année d'existence de la Société internationale du camélia, je tiens à commencer par un hommage à tous ceux qui ont oeuvré à la développer pour lui conférer la position enviable qui est aujourd'hui la sienne. Intense est notre gratitude à l'égard de nos fondateurs, le regretté professeur Waterhouse, Albert Fendig et Charles Ruddle; nous n'avons cessé de poursuivre leurs objectifs et leurs idéaux. Ma reconnaissance va également à mes trois vice-présidents et à tous nos directeurs et permanents, pour les admirables efforts qu'ils déploient. Je remercie tout spécialement Tom Savige, qui nous accorde son patronage tout en se consacrant avec zèle à la tenue de notre registre; ce dernier vient d'ailleurs de recevoir la consécration officielle sous la forme de l'Ordre de la médaille d'Australie.

Je salue tous nos membres, dans leurs vingt-sept pays, et les remercie de leur active participation comme de leur soutien, qui ne se dément jamais. Ce sont eux qui font notre vigueur, et c'est par le "croisement" des idées et l'échange de savoirs entre les pays que nous pouvons résoudre plus rapidement les problèmes auxquels nous sommes confrontés.

J'adresse mes sentiments confraternels à toutes les sociétés nationales du camélia; nous apprécions les excellents rapports que nous entretenons avec elles et comptons sur une coopération encore plus étroite dans l'avenir.

Quand nous nous retournons sur l'année écoulée, Nancy et moi-même, nous nous rappelons avec plaisir notre visite à la convention de la Société néo-zélandaise du camélia, qui s'est tenue à Hamilton, et au congrès international de Sydney. Ces deux manifestations avaient été parfaitement organisées et se sont révélées extrêmement agréables. Avant et après les cérémonies proprement dites, nous avons pu effectuer quelques déplacements, ce qui nous a donné l'occasion d'apprécier la généreuse hospitalité de nos amis des antipodes, ainsi que les excellentes conditions qu'offrent leurs climats à la culture du camélia. De retour en Europe, nous avons à nouveau affronté un hiver rigoureux, et les floralies de Londres en ont encore souffert. Cependant, la Cornwall Garden Society est tout de même parvenue à monter une extraordinaire exposition à Trelissick pour son vingt-cinquième anniversaire; nous avons en outre eu la joie de nous joindre à ses membres pour féliciter notre directeur et ancien vice-président, David Trehane, pour la médaille d'or du Veitch Memorial que lui a décernée la RHS.

Dans les régions relativement froides d'Europe comme dans la plus grande partie des Etats-Unis, il faudra dans l'avenir s'en remettre de plus en plus au choix de sites abrités, aux microclimats et à la sélection d'espèces plus rustiques. En attendant, nos collègues

chanceux qui jouissent de climats plus cléments peuvent enrichir leurs jardins de nouvelles variétés comme les hybrides *pitardii* de Bettie Durrant, à la floraison étonnamment abondante, et de nouveaux hybrides de plus en plus parfumés, les horticulteurs, spécialistes de l'hybridation, cherchant toujours à obtenir une véritable percée dans ce sens avec *C. chrysantha*.

Nous avons été particulièrement heureux d'accueillir le docteur Zhang Aoluo et son épouse, le professeur Xia Lifang, pour une visite de trois semaines à travers le Royaume-Uni. Leur modestie, leur charme et leur science ont conféré à leur séjour un agrément rare, et les conférences qu'ils ont données au congrès de Newquay étaient d'une extraordinaire qualité. Nous sommes persuadés que leur venue aura constitué une contribution notable à la connaissance du domaine qui nous intéresse, au niveau international, et qu'elle annonce de nouveaux contacts avec leur grand pays.

Nancy et moi nous réjouissons à la perspective de rencontrer de nombreux amis, anciens et nouveaux, au congrès de Naples; certaines des réflexions esquissées ci-dessus pourront y être approfondies, et de nouveaux liens d'amitié et mutuelle compréhension s'y forgeront.

JOHN TOOBY

Note from the Editor

Note du rédacteur

Nota de la redacción

Note del redattore

Anmerkung der Redaktion

Our Silver Anniversary year has passed with a number of celebrations and festivities to mark the occasion. The forthcoming Congress in Italy in 1988 should prove to be yet another enjoyable event.

Again this year members have been generous in sending contributions to me to be included in the Journal. I tender my thanks and appreciation to you all and particularly to those persons who have been so helpful and supportive to me, in an advisory capacity. I have enjoyed enormously the many letters I have received from members.

Welcome

Bienvenue

!Bienvenidos!

Benvenuto

Willkommen

The Society welcomes the following new Membership Representatives:

Asia

Tsuneo Nakamura will be taking over from Mr Goro Imure.

Italy

Arch. Franco Giorgetta who has generously consented to take over the task of Membership Representative from Dr Sevesi.

U.K. & Other Regions

Mr Geoffrey Yates and Mrs Ann Bushell. Who jointly will replace Mr John Mead who is retiring at the end of 1987.

Major E. W. M. Magor, C.M.G., O.B.E., D.L.

Our society is extremely grateful to Major Walter Magor for his very kind offer to take over the duties of Membership Registrar for the Society for the next 12 months. This has been a tremendous help to the Editor: in the absence of a delegated registrar for membership, the Editor found some difficulty in assessing and equating totals with correct locations for the full membership lists. I know all members will join with me in thanking Major Walter Magor for undertaking this exacting task for us.

EDITOR

Arch. Giorgetta

Curriculum vitae

Degree in Architecture Milan 1965

State Exams Milan 1966

Joined the Architects' Association in 1967

Freelance since 1967

Essential information on professional activity in research and teaching with special attention to Landscape Architecture Research and Teaching

- Organization, coordination of and teaching at the first specialisation course on Landscape Architecture, "the Park and Urban Green", held at the Department of Architecture of the University of Milan, 1985/86.
- Held courses at the Botanical Centre of Milan (since 1982) 1985/86, classes for the cycle on gardens. 1985/86, first and second course on garden designing.
- Co-examiner of Landscape Architecture degree theses at the Department of Architecture of the University of Milan, academic years 1982/83, 1983/84, 1984/85, 1985/86.
- Research for a planning approach to pedestrian systems for a physical and cultural enjoyment of the territory, and for functional transportation towards the outskirts (theory and method) on behalf of Touring Club Italiano, 1979/80.
- Practical guide to walking holidays, part 1: a theoretical, historical and methodological picture, Touring Club Italiano, Milan 1981.
- Catalogue on Camellias, Rhododendrons, trees, shrubs and conifers. Floriculture at Lake Maggiore, 1984, Cerro di Laveno. (Taxonomy and historical/botanical notes for each plant mentioned).
- Environmental information and layout programmes for the City of Milan, projects and coordination:
 - a) Information on avifauna with decoy station and pasturage (Parco Sempione).
 - b) Information on flora through educational programmes (public gardens).

Main recent competitive examinations, projects and works

- Competitive examination for the public park "Navile-Manifattura tabacchi", Bologna, grade II. Green project as part of Ugo la Pietra's overall project. Special acknowledgement from the jury.
- Competitive examination for a project concerning the Teatro Galli, Piazza Malatesta, Rimini, with Paolo Caputo and Claudio Fazzini - project for arranging external areas.
- Project for the development of the Formentini-Fiori area in Brera, with Paolo Caputo - on behalf of the regional administration of Lombardy, displayed at the Triennale, April 1985.
- Planning and designing of urban vegetable gardens at Buccinasco, Milan.
- Competitive examination for the restructuring and restoring of a historical park at Bellagio, with Paolo Caputo and Claudio Fazzini - 1st place, 1981/82.

- Competitive examination for a combined pedestrian-green scheme in the centre of the town of Rescaldina, 1983, with Paolo Caputo and Claudio Fazzini, 1st place ex aequo.
- Competitive examination for a project concerning the public park of Cassano Magnago, 1984, with Paolo Caputo and Matteo Invernizzi.
- Botanical survey and advising for the botanical garden in Brera, as part of Ugo la Pietra's and Vico Magistretti's pilot project, 1984.
- Advising, projects and supervision of works for maintenance and restoring of old private parks, and for creating new gardens in various places.
- Environmental and detail survey concerning public and private green at Palazzolo sull'Oglio, Brescia.
- Environmental development and restoring projects.

Thank You John Mead

Remerciements à John Mead

¡Muchas gracias! John Mead

Molte grazie, John Mead

Dank an John Mead

John Mead, who has acted as Membership Representative for the U.K. and Western Europe for the last two years, is retiring at the end of the year.

He will be remembered by many as the man in charge of the very successful shop which he ran with his wife so efficiently at Brighton. He has been equally efficient in the performance of his duties as Membership Representative and in a short time has become well known to and well respected by British and Channel Island members.

His delightful wife, Rosalind is a New Zealander and she and John are planning an extended visit to New Zealand which will not allow him to continue in his present post.

We acknowledge his hard work with gratitude and wish them both a good trip.

JOHN TOOBY

Mr Goro Iimure

Our grateful appreciation and thanks to Mr Goro Iimure for his interest and hard work as the Membership Representative for Asia for many years.

Award to David Trehane of The Veitch Memorial Medal

David Trehane reçoit la médaille du Veitch Memorial

Presentación a David Trehane de la Medalla Conmemorativa Veich

La medaglia Veitch Memorial assegnata a David Trehane

Verleihung der Veitch-Gedenlmedaille an David Trehane

The Society is glad and proud to report the award of the Veitch Memorial Medal in Gold to David Trehane by the Royal Horticultural Society. The award is made to 'those who have helped in the advancement and improvement of the science and practice of horticulture'. The key word 'helped' is the important one. Over many years David has worked tirelessly for the prestigious Cornwall Garden Society, culminating this year in the tremendous organisation of the Society's very special seventy fifth spring flower show during his third year as the Cornwall Garden Society's President, and it was singularly appropriate that the presentation should have been made personally by the President of the Royal Horticultural Society at the Cornwall Garden Society's Spring Flower Show.

The International Camellia Society is equally grateful for all his help and guidance over many years as a United Kingdom director since 1975. All those members of the Society who have received David's kindly help, whether in organising events, writing interesting and informative articles for the Journal, in the setting up the National Collection of Camellias at Mount Edgcumbe or who have received valuable horticultural advice, patiently given, will rejoice that this award has been made.



*David Trehane receiving the
Veitch Memorial Medal from
RHS President, Robin Herbert*

Tom Savige OAM

DAVID TREHANE

On May 2nd 1978 Tom Savige concluded his first presidential message in the Journal 'Finally, as the Society is the responsible International Registration Authority for Camellias ways and means must be found to make this function effective...'

Today, thirty years after the International Camellia Society was appointed the authority, Tom Savige has circulated to members of the Nomenclature Panels the first ten pages of the Register. In them he pays tribute to those who preceded him, notably Dr Philbrick and Bill Woodroof, but the great bulk of the work is his own. Those first pages estimated to number 6000, in reality exceed 30000. Think of the hours of sitting, searching, sifting, collating and writing, writing, writing, their ordering has entailed, the questing travels to libraries and books, always subject to two discouragements which would have halted a lesser man, one that the money was not there to put the register into print and the other that it would never be a best seller widely read by many members of the society. In fact the first pages reveal to any student of history a fascinating picture of the last two centuries of the English-speaking world, and Chinese and Japanese characters far older. There are the people and places for which the camellias were named - from Kings and Queens, Popes and Napoleon's marshals to Tabbs the cat.

It was unlikely that a membership more concerned with growing and showing camellias would have agreed to put their hands fairly deeply in their pockets to fund the project Growing, feeding and breeding new varieties today took precedence over dusting off the old names and origins of yesterday. But fortune sometimes smiles and, by chance, the Brighton Congress provided the means to finance the work and assure Tom that his labours will bear fruit.

What labours he has undertaken! Who else among us would have extended his house to contain the equipment and papers, mastered the intricacies of a computer, learnt the complex languages, written and read thousands of letters and references gathering information and mastering the techniques of storing, sifting and assembling it?

Every member, the world over, must take the greatest pleasure in congratulating Tom Savige on the award of the Order of Australia Medal, the first most pleasing, but not I hope the last, recognition of his great achievements.

A great man, a whole man, and modest withal but grant him in the concluding pages of his great work a moment's smile of pleasure and deserving pride in entering Wirlinga Belle (Olive, surely!) Wirlinga Gem and Wirlinga Princess.

We salute the whole man, towering above us lesser mortals - Tom Savige OAM, engineer, International Registrar of Camellias, and gardener of Wirlinga.

Obituary

GILLIAN CARLYON

Notice nécrologique

Obituario

Necrologia

Nachruf

Miss Gillian Carlyon, who died last February, was one of the foremost camellia lovers in Britain and certainly the most important British hybridiser of recent years. For generations the Carlyons have been devoted gardeners and had planted their park and garden at Tregrehan in Cornwall with many rare trees. In Victorian times a younger son of the family, one of Gillian's ancestors eloped to New Zealand with the coachman's daughter and settled at Hawkes Bay near Napier where he acquired a large grant of land. Eventually the family seat descended to the New Zealand branch and in 1935 when Gillian was 13 they arrived to take up their inheritance. Her father died on active service in 1942, and her brother became a white hunter in Tanganyika where he was killed in a car crash in 1961, so it was left to her to look after Tregrehan.

When she returned home from the WRNS in 1945 the scene was one of almost total neglect. Her interest in camellias was greatly stimulated when she contacted our founder President, the late and great Professor Waterhouse who corresponded with her and advised her in her hybridisation programme.

For 40 years she worked steadily against considerable odds to restore the property. Looking for ways and means to raise the necessary finance she noticed the strong demand from nurserymen for camellia cuttings and pioneered the supply of unrooted cuttings as a business enterprise in the U.K. Initially she based this on the fine old bushes in the garden but she was quick to bring the best new cultivars from America, Australia and New Zealand as well as from the U.K., so that she soon had a comprehensive list to offer. Then around 1960 she started hybridisation with considerable success.

A succession of hybrids started to flow and her first batch were registered in 1972. These included her favourite 'Tristrem Carlyon' (named for her brother) a vigorous peony flowered bright rose red. In the colder climate of the English Midlands I find 'E. T. R. Carlyon' (named for her father) a more useful plant being a late-flowering semi double to peony form white with large flowers that stand up well to the weather. Her new introductions have continued since and her latest offerings, 'Jovey Carlyon' and 'Duchess of York', double white and semi-double vivid pink respectively look very interesting. She was crippled by a stroke some 10 years ago but continued her activities from her wheel chair. The gardens have been gradually tidied up and more and more camellias have been planted. She was also interested in Lapagerias and Vireya Rhododendrons and planted them at Tregrehan.

Latterly she had been ably assisted by Mrs. Christian Lamb who is now in charge. Miss Carlyon will long be remembered for her devotion to Tregrehan and for her many camellia hybrids.

JOHN TOOBY

Naples Conference 1988

Congrès de Naples

Conferencia de Nápoles

La Conferenza di Napoli

Konferenz in Neapel

In March 1988 a Conference is being arranged based on Naples. There will be a pre-conference tour taking in Capri, Sorrento and a visit to Pompei. After the Congress there are a further two tours taking in Rome, a visit to the Papal Villa at Castelgandolfo, Florence and then proceeding to Lake Maggiore, particulars have been circulated.

Congrès I.C.S. de Sydney, Septembre 1986 - Observations sur le comportement au gel des *Camellia*.

CLAUDE THOBY

Congreso de la I.C.S. de Sidney, septiembre de 1986 -
Observaciones sobre el comportamiento de las camelias en condiciones heladas

Congresso I.C.S. di Sydney, settembre 1986 -
Osservazioni sul comportamento al gelo delle Camelie

I.C.S. - Kongreß in Sydney, September 1986 -
Anmerkungen zum Verhalten von Kamelien bei Frost

Cet exposé a simplement pour but de mettre en évidence, un certain nombre de facteurs qui contribuent, soit à diminuer, soit à accroître les désastres dus au gel.

Qu'il s'agisse du *Camellia* ou de bien d'autres plantes, le gel est un problème grave pour l'économie d'un pays. Ce n'est pas un problème nouveau. Sans remonter très loin dans l'histoire, on lisait déjà, dans la presse nantaise du 27 Décembre 1879:

“Froid intense, le thermomètre est descendu à 18°C au dessous de zéro.

Des expériences sont faites près du pont Haudaudine, pour parvenir à dégager l'abord des ponts avec la dynamite. La Loire charriant des glaçons à plein canal, est prise dans toute son étendue, et des hommes passent à pied d'une rive à l'autre.”

Depuis, de nombreux et rudes hivers ont affecté notre pays: 1895, 1917, 1927, 1939, 1956, 1963, 1985 et 1986. Il ne faut donc pas se fier aux pièges de l'arithmétique pour prédire la venue d'un gel exceptionnel. Nous venons d'en avoir la preuve en subissant deux hivers consécutifs et désastreux.

La température

Une température trop basse, est évidemment la cause première de la perte partielle ou totale des *Camellia*; cependant, ce facteur n'est pas unique, il est seulement prépondérant. D'autres, nombreux, interviennent dans le processus de détérioration de la plante.

Il n'est pas aussi facile qu'on le croit de prendre la température dans son jardin!

Tous les professionnels en sont conscients; ils savent placer les thermomètres au bon endroit, en situation toujours abritée, à une même hauteur du sol, le relevé se faisant tous les jours à heures régulières.

Les thermomètres du commerce sont variables. S'ils ne sont pas parfaitement “étalonnés” d'abord, et mal placés ensuite, il n'est pas rare qu'il fasse +2°C chez l'un, et -2°C chez le voisin immédiat, alors qu'il fait tout simplement 0°C en température réelle.

L'idéal étant bien sûr, le thermomètre enregistreur.

Le microclimat local

Il est indispensable de parler le même langage.

Ce qui est valablement enregistré à Nantes-Carquefou, ne correspond plus aux températures enregistrées à 15 Kms de là, à *fortiori*, pour une autre région de France. Toutes possèdent des microclimats. Les vallées basses étant plus sensibles au froid, que les pentes bien abritées. La proximité des forêts, de cours d'eau ou de villes, influence considérablement l'action du gel sur les plantes.

L'exposition

L'exposition concernant les Camellia, est ici un facteur primordial.

Le camellia croît parfaitement à mi-ombre, et cette ombre est encore plus utile l'hiver que l'été, lorsqu'il s'agit de gel excessif. Ce n'est pas sans raison qu'il est recommandé de planter les Camellia au nord. Cela a son importance lors des hivers rigoureux. Cette exposition évite les écarts brusques et importants de température, l'eau étant progressivement chassée des cellules, si la plante gèle et dégèle lentement.

L'époque du gel

Une même température négative n'a pas la même incidence désastreuse si le gel a lieu à la fin de l'automne, en plein hiver, ou, au début du printemps. Il n'est pas rare de constater que certaines années, la végétation se prolonge plusieurs semaines, par rapport aux années normales. Les Camellia encore en végétation à cette époque sont extrêmement vulnérables au gel.

Une gelée subite de -7°C en Octobre/Novembre, peut avoir des conséquences plus fâcheuses qu'une gelée de -15°C au coeur de l'hiver. Il en est de même au début du printemps, lorsque la sève a commencé son ascension. Une forte gelée n'est même pas nécessaire pour détruire les jeunes rameaux et les jeunes bourgeons qui sont très sensibles. J'ai eu le désagrément de le faire constater à mes visiteurs lors du Congrès ICS de Mai 1977, à Nantes.

C'est pendant leur repos végétatif, que les Camellia sont le moins vulnérables à l'action du froid.

Très souvent, on a dressé des listes de cultivars, en indiquant fort consciencieusement leur résistance au froid. Force est de reconnaître qu'il ne faut pas leur attribuer une trop grande importance; leurs auteurs l'ont d'ailleurs reconnu. Nous sommes surpris de constater qu'une liste établie à la suite de tel hiver, n'a souvent rien de comparable avec une autre liste correspondant à un autre hiver. Cela provient des nombreux facteurs ici énumérés, mais l'époque du gel dont il est question maintenant a une importance capitale. C'est très facilement explicable, car, l'arrêt de sève ne se fait pas à la même époque pour tous les cultivars. Au printemps, tous les Camellia n'entrent pas en végétation le même jour; le décalage varie de quelques semaines environ. Comme le froid attaque d'abord les plantes plus ou moins gorgées de sève, il est évident que ce ne sont pas toujours les mêmes cultivars qui sont victimes du gel.

La soudaineté du gel

J'ai déjà fait allusion à la soudaineté du gel, mais ce facteur doit être souligné. Nous avons vu que gel rapide fait éclater les cellules végétales. Un abri, même léger, ralentit le processus très sérieusement.

La durée du gel

Une température très basse, par exemple -20°C n'a aucune, ou peu d'incidence sur un *Camellia*, si cette température est de très courte durée, sur une plante bien établie en pleine terre. En conséquence, nous saisissons l'intérêt d'interpréter l'indicateur minima-maxima du thermomètre qui affiche une telle température!

Contrairement, une température négative de quelques degrés jours et nuits, qui durera un mois et plus, aura pour conséquence de geler un sol non protégé. Au fil des jours, le gel descendra peu à peu en profondeur, bloquant ainsi le système racinaire. Lorsque le dégel s'effectuera sur les parties aériennes du *Camellia*, et que les feuilles reprendront leur fonction, les racines, ne pouvant absorber l'eau, la plante périra de soif et non du froid proprement dit! D'où la nécessité, dès que la température le permettra, d'asperger le feuillage fréquemment, et d'arroser la terre pour activer le dégel, en atteignant au plus tôt les racines superficielles. De plus, un ombrage supplémentaire sera d'une grande utilité.

De toute façon, lorsque les températures sont négatives, nous pouvons sans crainte recouvrir les *Camellia* d'un paillason, ou d'une couverture quelconque, sans toucher les feuilles gelées bien entendu. Tant que la température sera négative, les *Camellia* pourront demeurer dans l'obscurité totale.

Le gel du sol que nous venons de voir peut être évité, ou atténué facilement, en recouvrant le terre d'un "mulching". Nous avons l'embarras du choix avec la paille, les écorces, le sable, la sciure, les feuilles de fougères, la laine de verre, ou cent autres matières. Il faut protéger le collet aussi haut que possible, car c'est là, que l'écorce commencera à se crevasser.

Il existe aussi un "mulching" naturel qui tombe du ciel: la neige! Elle protège bien des cultures. Il faut être plus réservé en ce qui concerne les *Camellia*, car, en s'amoncelant sur les branches, elle les casse et la perte est irrémédiable. De plus, sa présence n'est guère tolérée par les feuilles lorsque survient le soleil qui les roussit ou qui les brûle.

La fragilisation des plantes

La fragilisation est due à différentes causes; la plus courante étant la chlorose. La plante offrira une vulnérabilité au froid d'autant plus grande qu'elle sera plus chlorosée.

Ensuite, vient l'état plus ou moins virosé d'un *Camellia*. Toutes les feuilles atteintes de virus seront, après le gel, comme grillées par le feu; ces feuilles tomberont, et la vigueur du *Camellia* s'en trouvera très amoindrie. Ce manque de vigueur facilitera les invasions de cochenilles, d'araignées rouges et de pucerons, tout en contribuant au développement du virus; c'est le cercle vicieux complet!

La fragilisation est parfois due à une sortie prématurée de *Camellia* provenant d'une culture en serre chaude ou tempérée, subitement exposés au plein air.

Les *Camellia* plantés peu de temps avant l'hiver, auront moins de chance de s'acclimater si le froid est d'une extrême rigueur. Malheureusement, les meilleurs météorologistes ne sont pas prophètes!

Autres cause des fragilisation, la composition chimique des plantes. A ce sujet, j'ai lu dans la Revue Horticole de 1903, page 394,

"D'après les observations faites de divers côtés, les cultures fumées aux engrais potassiques résistent particulièrement bien aux gelées; c'est ce qui ressort notamment d'une communication faite par M. Paul Genay, au Congrès International

d'Agriculture de 1900. Des parcelles traitées avec un engrais complet, contenant du chlorure de potassium, ont très bien résisté à la gelée, alors que d'autres parcelles, avec ou sans engrais, mais sans potasse, ont été fortement endommagées."

Nous pouvons vous confirmer que ces observations faites il y a 86 ans, concordent parfaitement avec les nôtres. Une fertilisation complète et bien équilibrée est un élément certain, de meilleure résistance au froid.

L'importance variétale

Quand on parle de la résistance du *Camellia* au gel, il faudrait immédiatement préciser de quelle espèce, et de quel cultivar il s'agit. En rusticité, un *Camellia japonica*, *sasanqua*, *reticulata* ou *hongkongensis*, sont de résistances incomparablement différentes: le *C. japonica* étant, et de loin, le plus rustique, le *hongkongensis* le moins. Ensuite, au sein d'une même espèce, la différence est très grande d'un cultivar à l'autre. Le meilleur effort que l'on puisse faire, outre la nécessité de bien respecter les règles de culture, consiste donc à rechercher des hybrides résistant au froid. Le Dr William L. Ackerman, en particulier, du National Arboretum de Washington, a fait sur ce sujet, d'intéressantes hybridations qui nourrissent énormément d'espoir.

A Nantes et Carquefou (Loire-Atlantique) lors du célèbre et triste hiver de février 1956, la température est descendue à -16°C sous nos ombrières pendant plusieurs jours, durant ce mois. Nous n'avons perdu aucune plante parmi les centaines de milliers de *Camellia*, qui se trouvaient en pleine terre, sous ombrière, et protégés par un "mulching" de feuilles de platane. Il est vrai que nous bénéficions du climat doux et océanique qui nous apporte une hygrométrie constante.

En janvier 1985, et février 1986, la température est descendue à -19°C dans mes cultures, mais pendante quelques heures seulement. Le froid persista près d'un mois, entre -10°C et -15°C ; nous n'avons perdu aucune plante intégralement, cultivé en pleine terre, dans les conditions de protection précitées.

Il n'en fut pas de même pour notre culture en conteneurs hors sol. 6,000 plantes détruites à cent pour cent, sans le moindre rescapé, tous cultivars confondus.

Le *Camellia*, comparativement à d'autres arbrisseaux à feuilles persistantes, résiste déjà relativement bien au gel, mais nous ne devons jamais oublier que les racines sont très vulnérables au froid.

Sur le plan de la recherche

Actuellement, de nombreux chercheurs du C.N.R.S. (Centre National de Recherches Scientifiques) et de l'INRA. (Institut National de Recherches Agronomiques) étudient les problèmes du gel, en collaboration avec les professionnels. Les mécanismes du gel sont extrêmement complexes, mais il est indispensable de bien les comprendre, pour trouver les bonnes solutions.

Aux Etats-Unis, à Berkeley en particulier, une découverte intéressante vient de voir le jour: la présence sur les plantes de bactéries glaçogènes. On a observé que les plantes porteuses de ces bactéries, gelaient facilement, alors que celles qui en étaient dépourvues, résistaient.

Cette observation n'est valable que pour les températures allant de 0°C à -10°C . Les gelées printanières sont donc principalement concernées.

Le plus grand nombre des végétaux est infesté par ces colonies de "glaçogènes"; d'autres en sont indemnes, sans que l'on puisse à ce jour expliquer le pourquoi.

Les explorations actuelles s'orientent donc vers la recherche d'une anti-bactérie

glacogène ou d'un virus bactériophage qui anéantirait l'antagoniste.

On a également observé d'autre part, que la lutte chimique à base de cuivre - en dose forte - avait une certaine efficacité; toutefois, le bactéricide total reste à découvrir.

Une chose, cependant, est déjà très important. Comme il est possible de contrôler le degré d'infestation, en dénombrant les bactéries, on peut établir par avance, un bilan approximatif des pertes envisagées dans l'hypothèse d'un gel, et, en conséquence, prendre les dispositions préventives nécessaires.

Cet exposé succinct n'a pas la prétention d'être exhaustif, tant s'en faut! J'ai voulu tout simplement, mettre en lumière quelques principes élémentaires, et pourtant si souvent oubliés, même par les professionnels.

Il n'est pas concevable, sur la question du gel, d'indiquer uniquement un degré de température comme la tendance générale le prouve. Il est indispensable de situer la plante dans son milieu, en exprimant le maximum de paramètres possibles. A mon avis, sur la résistance au froid, toute liste de cultivars de *Camellia* qui ne mentionne *que* la température, est un travail incomplet dont il ne faut retirer des informations qu'avec beaucoup de prudence, de discernement et de circonspection!

Observations on the behaviour of Camellias in frost

CLAUDE THOBY

Observations sur le comportement des camélias par temps de gel

Observaciones sobre el comportamiento de las camelias en condiciones heladas

Osservazioni sul comportamento al gelo delle Camelie

Beobachtungen zum Verhalten von Kamelien bei Frost

This report has the simple aim of demonstrating a certain number of factors which contribute either by diminishing or increasing the disastrous effects of frost.

Whether we consider the *Camellia* or many other plants, frost is a serious problem for a country's economy. Nor is it a new problem. Without going back very far in history, one could read in the Nantes newspapers of 27th Dec. 1879, "Intense cold. Thermometer went down to -18°C . Experiments have been carried out near the Houdanine bridge in order to free the approaches to the bridge with dynamite. The river Loire, bringing down a channel full of drift-ice, has frozen over, and men can walk from one bank to the other.

Since then many hard winters have affected our country - 1895, 1917, 1927, 1939, 1936, 1963, 1985 and 1986. One must therefore fall into arithmetical traps in predicting the advent of exceptional frosts. This has just been proved by the two consecutive disastrous winters we have just suffered.

Temperature

Too low a temperature, obviously, is the main cause of the total or partial loss of Camellias. However, this factor is not the only one, simply the most common. Other numerous factors are involved in the process of plant deterioration. It is not as easy as one thinks to take the temperature in one's garden! All the professionals are aware of this, and they know how to put thermometers in the right places, always in a sheltered spot, at the same height from the ground, with the results being read every day at regular times. Commercial thermometers are unreliable. If they are not perfectly calibrated beforehand, and badly placed afterwards, it is not unusual for the temperature to read +2°C in one garden and -2°C in the next door neighbour's garden, whereas the real temperature is simply 0°C.

The ideal is, of course, a recording thermometer.

The local microclimate

It is essential to speak the same language.

What is correctly recorded in Nantes Carquefou is not the same as the temperature recorded 15km away, and *a fortiori*, as in another region in France. All regions have microclimates, with low valleys being more susceptible to frost than well sheltered slopes. The proximity of woodland, water courses or towns has a considerable influence on the action of frost on plants.

Exposure

Relative exposure is a crucial factor as far as camellias are concerned. Camellias grow perfectly in semi-shade, and this shade is even more useful in winter than in summer, when there is an excessively hard frost. There are good reasons for planting camellias facing north. This is particularly important during hard winters. This exposure avoids sudden marked changes in temperature, water being progressively pushed out of the cells, if the plant freezes and thaws slowly.

Period at which frost occurs

The same minus temperature does not have the same disastrous effect if the frost occurs at the end of autumn, in the depths of winter, or at the beginning of spring. It is not unusual to notice that in some years, growth continues for several weeks beyond the normal growing season in other years. Camellias which are still active at this period are extremely susceptible to frost.

A sudden frost of -7°C in October/November may have much worse consequences than a frost of -15°C in the depths of winter. The same applies at the beginning of spring when the sap has begun to rise, the frost need not be necessarily hard to destroy the young branches and buds which are very tender. I had the disappointment of confirming this to my visitors during the ICS conference of May 1977 in Nantes. It is during their inactive period that camellias are least vulnerable to frost. Very often, lists of cultivars are compiled, with conscientious indications of their frost tolerance. It has to be admitted that they cannot be given too much credence, a fact which their compilers recognise. We are surprised to note that a list drawn up as a result of one winter bears no comparison with a list for another winter. This is a result of the various factors listed here, but the time that the frost occurs is of crucial importance. This may be easily

explained, for the end of the sap flow does not occur at the same time for all cultivars. In spring, not all cultivars start their growth at the same time; the difference may be several weeks. Since cold attacks primarily plants which are full of sap, it is obvious that it is not always the same varieties which will fall victim to frost.

Suddenness of the frost

I have already referred to the suddenness of the frost, but this factor must be underlined. We have seen that sudden frosts explode plant cells; a shelter, however slight, slows down the process very considerably.

Duration of frost

A very low temperature, e.g. -20°C , has very little or no effect on the camellia, if the temperature is this low for a very short period only, and if the plant is well established in open ground. Consequently we appreciate the point of checking the minimum and maximum indications of the thermometer which shows such a temperature! On the other hand, a temperature which is several degrees below zero day and night for a month or more will freeze unprotected soil. As the days go by, the frost will penetrate deeper into the soil, little by little, blocking the root system. When the thaw occurs, the parts of the camellia above ground and the leaves start to function; since the roots are unable to absorb water, the plant will die of thirst rather than cold! Hence the necessity to spray the foliage frequently as soon as the temperature allows it, and also to water the soil to speed up the thaw, reaching the surface roots as soon as possible. Supplementary shade may also be useful; when the temperatures are below zero one may safely cover the camellias with a straw mat or some alternative form of cover, being careful not to touch the frozen leaves. As long as the temperatures remain below zero, camellias can remain in total darkness. The freezing of the soil, which we have just considered, may be easily avoided or diminished by covering the ground with a mulch. We have an infinite choice such as straw, bark, sand, sawdust, fern leaves, fibreglass or a hundred other materials. The neck of the plant must be protected as high as possible, because it is here that the bark begins to split. There is also a natural mulch that falls from the sky – snow! It protects lots of crops. But one must have reservations as far as the camellia is concerned because the snow will pile up on the branches breaking them and causing irreparable losses. Moreover, its presence is not tolerated by the leaves once the sun shines, as it scorches and burns them.

“Fragilisation” or weakening of plants

Plants may be weakened for different reasons, the most common being etiolation. The plant will be more susceptible to cold in direct proportion to how etiolated it is. The next most common cause is the degree of virus attack to which the plant has been subjected. Any leaves attacked by a virus will, after a frost, show scorch marks, these leaves will drop and the plant will be considerably weakened. In this weakened state the plant will be open to invasion by cochineals, red spiders and aphids, and will also contribute to the development of the virus, it is really a vicious circle. Weakening is sometimes due to the sudden premature exposure outdoors of a camellia from a temperate or heated greenhouse. Camellias planted shortly before winter will have less chance if it is exceptionally cold. Unfortunately, even the best meteorologists are not prophets!

Another cause of weakening is the chemical composition of the plants. On this subject, I read the following in the Horticultural Review of 1903, (page 394) "According to observations from different sources, crops manured with potassium-rich fertilizers resist frost particularly well. This was made very clear in a communication by M. Paul Genay, at the International Congress of Agriculture in 1900. Plots treated with a complete, balanced fertilizer, containing potassium chloride withstood frost very well, while those plots with or without fertilizer, but without potassium, were severely damaged."

We can confirm that these observations, made 86 years ago, agree perfectly with our own. A complete and balanced fertilizer is a key factor in resistance to cold.

Importance of variety

When one speaks of the camellias' frost resistance, one must specify which species and what cultivar are involved. As far as hardiness is concerned, a *Camellia japonica*, *sasanqua*, *reticulata*, or *hongkongensis* are completely different. The *C. japonica* being by far the hardiest, and the *hongkongensis* the least. Similarly, within the same species, there are great differences between one cultivar and another. The best that can be done, apart from the need to respect the rules of cultivation, consists of researching for hybrids which are frost resistant. Dr William Ackerman from the National Arboretum in Washington, has carried out some interesting hybridisations which offer great hope for the future. At Nantes et Carquefou (Loire-Atlantique), during the infamous winter of February 1956, the temperature dropped to -15°C under our shelters for several days during the month. We did not lose a single plant among hundreds of thousands of camellias, which were in the ground under shelter and protected by a mulch of plane leaves. It is true that we enjoy a mild, oceanic climate which ensures a constant level of humidity. In January 1985 and February 1986 the temperature fell to -19°C among my plants, but only for a few hours. The cold spell lasted about a month, with temperatures between -10°C and -15°C , and we did not lose a single plant, grown in the ground in the same conditions already mentioned. It was very different with our container grown plants, 6,000 plants destroyed totally, not a single survivor from any of the varieties. The camellia, compared with other evergreen shrubs, withstands frosts relatively well, but we must never forget that the roots are very susceptible to frost damage.

On the research front

At present, numerous workers at the CNRS (National Scientific Research Centre) and INRA (National Institute for Agricultural Research) are studying the problems of frost in collaboration with the professionals. The mechanics of freezing are very complex, but they must be understood properly in order to find effective solutions. In the U.S.A., at Berkeley in particular, an interesting discovery has just been made: the presence on plants of ice-producing bacteria. It has been noticed that plants carrying these bacteria freeze very easily, while those that did not were resistant. This observation is only valid at temperatures from 0°C to -10°C , so that the spring frosts are those mainly concerned. The majority of plants are infested by these colonies of 'ice-makers' and others are free of them; there is at present no explanation for this. Current research is therefore directed towards an anti-ice making bacterium, or a bacteriophage virus which would destroy the invader. It has also been observed that chemical intervention, including high doses of a copper-based product, were reasonably effective. In any case, a fully effective bactericide has yet to be found.

One thing is, however, very important; since it is possible to check the degree of infestation by counting the bacteria, one can establish in advance an approximate tally of expected losses in the event of frost, and consequently take the necessary preventive measures.

This brief report does not claim to be exhaustive, far from it! I simply wished to shed some light on basic principles which are often forgotten even by the professionals. It is not enough, as is the general inclination, to show only the temperature as far as frost is concerned. It is essential to put the plant in context by listing the maximum number of parameters. In my opinion, as far as frost resistance is concerned, any list of camellia cultivars which mentions *only* temperature, is an incomplete work whose information should be treated with prudence, discretion and circumspection!

The International Congress at Sydney

JOHN TOOBY

Le congrès international de Sidney

El Congreso Internacional en Sidney

Il Congresso Internazionale di Sydney

Der Internationale Kongreß in Sydney

I.C.S. members from all parts of the world converged on the Menzies Hotel on Sunday 14 September, 1986 for the Sydney Congress. The Menzies is an excellent hotel in the centre of Sydney and was being refurbished for the coming bicentenary celebrations. The Congress got off to a good start with a friendly get-together on Sunday evening, where many old friendships were renewed and fresh ones created.

On Monday morning the Congress was officially opened by Sir Alexander Beattie, President of the Eryldene Trust, and this set the pattern for the next two days of listening to papers in the mornings and visiting gardens and other places of interest in the afternoons. The papers are reproduced elsewhere in the Journal, so I will deal with the visits. I should mention, however, that several members remarked on the diversity and interest of the papers. On Monday afternoon we visited the Koala Park at Pennant Hills to get better acquainted with some of Australia's unique animals and birds, the koalas being particularly confiding. From here we proceeded to Eryldene, former home of our

Founder President, the late and great Professor Waterhouse. His spirit lives on in the camellias he planted. One of the largest plants was *C. sasanqua* 'Onigoromo' now approaching 9m (30 feet) in height and probably planted about 1913.

Many camellias still had flowers but they were looking a bit hot and at this late stage in the season were outshone by the azaleas. One of the most interesting was a pale pink single *C. reticulata* imported from Hilliers, a form said by Jean Laborey to have stood up to a frost of -15°C in France. Among other camellias looking good were 'C. M. Wilson', 'Chandleri', 'Jean Lyne', 'Moshio', 'Okino Nami' (the striped camellia of which 'Moshio' is the solid red sport), 'Professor C. S. Sargent' and 'The Czar'. Inside the house was a magnificent exhibition of patchwork which was greatly admired,



Right: Mrs Mayda Reynolds, Regional Director, Channel Islands; Centre: Mr Eric Craig, Vice President, Australia; Left: Mrs Craig. In the Prime Minister's garden, "The Lodge", at Canberra

particularly when it became known that some of our members had contributed to it. On Tuesday we saw Sydney at its best and as it should be seen – from the water – being taken on a cruise of the magnificent harbour. Afterwards we toured the Opera House and found the interior as good in its way as the exterior, being beautifully finished with Australian timber. The mural at the rear, however, was not to everyone's taste. From the Opera House we were taken to the Botanic Gardens which were full of interest. On Wednesday we had a full-day tour of the northern suburbs, our first stop being Peter Campbell's fine Camellia Grove Nursery at St Ives. The mass of flower displayed and the immaculate state of the nursery had the cameras clicking overtime, especially when a flower was spotted on one of the plants of *C. chrysantha*. Although he had not been well, Peter was there to greet us, together with his wife Barbara, his foreman Steve

Clark and Peter Campbell Junior. We left with thoughts on how different the climate is in Europe and on how essential it is for us to work for more frost-hardy cultivars. Our next stop was a group of private gardens at Pymble, each with some nice camellias, and each with its own particular charm. We then went on to Ku Ring Gai National Park where we were met by Alec Blombery, an authority on Australian native plants, who pointed out to us many of the distinctive wild flowers which were growing by the side of the road. It was now time for lunch which we took at the spectacular West Head with fine views in all directions and where we shared our picnic with the magpies. From here we went on to the Stoney Range Wildflower Reserve which had a completely different but equally fascinating range of native plants with spectacular patches of orchids.

On Thursday we had the option of visiting Vaucluse House or the E. G. Waterhouse National Camellia Garden at Miranda. Having seen the Camellia Garden on our last visit we chose Vaucluse. This was the home and garden of William Charles Wentworth from 1827 to 1853. Wentworth was a noted barrister, explorer and statesman of that period and the property greatly resembles a small English country house of the period. There were a few old bushes of camellias in the garden. After a free afternoon a splendid banquet brought the Congress to a fitting conclusion.

The Post Congress Tour commenced the following day.

Leaving Sydney we called at Mount Keira, where ICS members Theda Fudge and her husband had laid on morning coffee and snacks at their lovely home. Their garden was full of interest with good azaleas, camellias and other plants, so it was sad to hear they planned to move shortly to a smaller and more easily managed home. We moved on to Browley Sheep Station where we had a barbecue lunch in the old barn that was built about 1829 so as to be defensible in case of emergencies. After lunch we saw merinos being rounded up by a Kelpie (the dog of the aboriginal Australian). We had two full days in Canberra. On Saturday we had a bus tour of the capital city. The high spot of the morning was our visit to the outstandingly impressive War Memorial where we had lunch. In the afternoon we were privileged to visit The Lodge, the Prime Minister's garden, which was quite delightful. There were several camellias looking very fresh including 'Brushfield's Yellow' (very free), 'Laurie Bray' and 'Dr Clifford Parks'. On the way back to the hotel we called at New Parliament House, a grandiose extension of the original Parliament Building and which looked like being rather costly. We called too at the National Library, built in classical style, where some of us could have spent a lot more time.

Sunday was another good day; we spent the morning at the National Botanic Garden which is devoted to Australian native plants and full of interest. In the afternoon we visited Lanyon Homestead. The farmhouse was built in 1859 and the adjacent buildings within a few years of that date. The whole complex is being restored to its original state to preserve for posterity this aspect of Australia's pastoral history.

From here, Nancy and I went on south to visit Tom and Olive Savige while the tour returned northwards via Cowra, where our Japanese colleagues were pleased to see how well the Australians have tended the Japanese War Memorial Garden. The tour then continued to the Blue Mountains where two days were spent at the Everglades, magnificently situated at Leura. The gardens in the Blue Mountains were close to their spring-time peak of loveliness and much enjoyed. Altogether it was a great Congress and our thanks and congratulations go to Eric Craig, the organiser, also his wife Rowena, Nance Swanson, and their splendid band of helpers.

The Post-Congress Tour to Canberra and the Blue Mountains. 19th to 24th September 1986

D. JOHN NAISH, M.D.

Voyage à Canberra et dans les Montagnes bleues (19 au 24 septembre 1986), à l'issue du congrès

El viaje después del Congreso a Canberra y las Montañas Azules, 19-24 de septiembre de 1986

Viaggio post-congresso a Canberra e alle Blue Mountains, 19-24 settembre 1986

Im Anschluß an den Kongreß: Fahrt nach Canberra und zu den Blue Mountains, 19.-24. September 1986

The two coaches which set out from the Menzies Hotel contained just under fifty members of the I.C.S. comprising contingents from Victoria, N.S.W., Tasmania and Western Australia, New Zealand, Japan, France and the United Kingdom. The whole expedition was superbly organised and led by Eric Craig who, like a good sheepdog, hustled us along at a steady pace without making us panic or sweat but who rightly insisted on punctual starts from all stops.

Departure from Greater Sydney via Sutherland and the shores of Botany Bay was suddenly halted about 20 km out by the discovery of an errant Japanese member who had jumped on the second coach in the certain belief that it was to take him to the Airport for a flight to New Zealand. Amid much merriment amongst his compatriots he was eventually despatched by taxi in good time to catch his plane - so we hoped!

Going South along the Pacific Highway towards Woolongong, we had our first appreciation of the vastness of the continent, and even more so when we climbed a winding mountain road to Mount Keira through tall forest trees. Keira is only 457 m high, but as it is only a short distance from the sea, the sense of exposure on the summit and the views of the Pacific coast were thrilling. Down below us under the cliff an invisible coal mine was said to penetrate beneath the cap of the Hawkesbury Sandstone which extends for hundreds of miles along the east coast of the continent. The sandstone, red golden in colour, was named after the Hawkesbury River which runs out into the Pacific through Broken Bay about 40 km north of Sydney, and the River was named after Robert Banks Jenkinson, Lord Hawkesbury, and later Earl of Liverpool, one of Britain's dogged politicians who succeeded the brilliant Pitt in the early part of the 19th century. Jenkinson took his first title from the tiny village of Hawkesbury which lies under the Cotswold edge just a few miles from my home in England, so it seemed strange to me that this vast geological feature which shaped Australia's early history should take its name from that handful of cottages and the church of Hawkesbury where Lord Hawkesbury lies buried.

As the coaches descended the hill in sweeping curves we saw flashes of peach blossom and early green willow leaves beneath the canopy of big timber. Halfway down we stopped at Willow Bend the charming home and garden of Theda Fudge, Past President

of the Illawara Branch of the Australian Camellia Research Society. As we strolled through her beautifully kept woodland garden admiring her camellias and many other plants, both native and exotic, we felt how sad it was that ill health will shortly compel her to leave the garden which she has so successfully created from a steep hillside. Here we saw daffodils and tulips which we had not seen in Sydney.

Refreshed by tea and scones we embarked again to watch a rapidly changing scene as we passed from cattle-grazing pastures into the dense forest of the under-escarpment and the McQuarie Pass up which our driver drove with panache, though it seemed at times as if only a foot or two separated our nearside wheels from the edge of a precipice. Approaching Mother-in-Law-Corner ("Difficult to get around") we were lucky to meet a huge articulated timber-truck on a comparatively straight stretch! Suddenly within a few minutes we broke clear of the forest and were out onto a green and grassy plateau where the scenery reminded me of English downland. We were to become accustomed to travelling for hundreds of miles through the pastoral scenes of the Southern Highlands with sheep, cattle and horses all grazing peacefully on the new spring grass. At Browley Sheep Station where 160 year old mature oak and elm trees indicated a really ancient site of European settlement, we were entertained to a barbecue lunch in a stone barn, which had been built by convict labour, and on some of the lower stone courses we could see their carvings which told stories of farm life or were obscurely allegorical. How universal is the drive towards artistic expression in man whatever his culture or circumstances!

After a more than adequate lunch of steak and dampers we were treated to a display of shepherding by a brown kelpie dog, who was expertly handled by the farm-worker, who later showed us how to shear a large Merino wether. Ian Macpherson, the joint owner of Browley, gave us an interesting talk on the organisation of a shearing shed and the careful sorting of the fleeces, which maintains the fine reputation of Australian wool.

Embarking once more, we skirted Lake George which was almost invisible in the midst of a vast flood plain, on which herds of sheep and cattle were grazing in their thousands, and then climbed some more hills to come down finally into the wide strath in which Australia's Federal Capital, Canberra, is gradually taking shape amidst the hundreds of thousands of trees which its farseeing designer, Burley Griffin, had planted long before the first buildings and roads appeared. Here we stayed at the International Motor Inn, a charming place where a rhomboidal central courtyard thickly planted with shade-loving trees and creepers gave exactly the right atmosphere for a party of gardeners, especially as the foyer and our rooms had been adorned with camellias grown by members of the Canberra branch of the A.C.R.S.

Canberra, in its vast plain is centred around the Burley Griffin Lake which, though long planned, was only filled in 1963. On our first crisp morning when the thermometer was rising from an overnight low of 0°C we went up to the lookout on Mount Ainslie to get a view of the City in bright morning sunshine, then we descended and made a slow coach tour through the park-like grounds of the Dunoon Military Academy and the Ministry of Defence to finish at the Information Centre on the lakeside Regatta Point where we could absorb the beauty of the lake, the reflections of the fine buildings on the opposite shore, the 100 foot fountain and the nearby Commonwealth Gardens where many of us walked peacefully along the waterside paths and lawns which had been skilfully planted with native and exotic trees.

The Australian War Memorial at the upper end of Anzac Parade is a massive structure which houses a fascinating series of exhibitions depicting the Australian experience in two world wars, in Korea, Malaysia and Vietnam. To an Englishman it was a moving experience to appreciate just how great had been the sacrifices made by Australian youth, greater in proportion to the population than those of any other nation.

The afternoon programme included a visit to the huge new Parliament building, a building on top of the conical hill long chosen by Burley Griffin as its eventual site and due for completion in the Bicentennial year of 1988. In the grounds of the Federal Prime Minister's house members admired the walled garden, though the heavy plantings of onions in the vegetable plots caused some puzzlement.

On Sunday, 21st September, the morning mists quickly rolled away to give us a splendid sunny morning in the Botanical Garden which is devoted entirely to Australian native species - no shortage of these, as I understand that 60% of all the plant species in the world are only found in Australasia. First we walked up the rain forest ravine where automatic sprinklers activated by humidity sensors keep the humidity high and minimise frost effects. Here we saw a sample of what could be found in the Australian rain forests stretching from Tasmania to northern Queensland. The experiment seems to be working well and the plants looked healthy.

Coming out into the sunlight at the top of the gully we found a rock garden divided into dry, alpine, calcareous and peaty sections where the bewildering profusion of Australian flowers was seen at their seasonal best. Higher up the hill was a two hectare plantation of Eucalypts, all well labelled, which enabled us to get to know some of the most noble of the forest gums, *Maculata* and *Rossii* being two of the grandest, the trunks of the latter being delicately etched by the larvae of a certain insect which burrows beneath the bark in wandering tunnels thus giving the tree its colloquial name of the "scribbling gum". I looked for and found the few species of mountain eucalypts I can grow in my frosty garden, so I think it must be true that nearly all the 200 or so species of gums native to Australia can be found in this plantation.

Further on we came across whole sections of the garden devoted to the Proteaceae and the Myrtaceae, genera so widely represented in the southern but so sparsely in the northern hemisphere. There were useful areas in which to study and to learn but finally, exhausted by sun and plant abundance, we collapsed at tables outside a charming kiosk where we could listen to and occasionally see the elusive birds whose spring calls were filling the woods. Rosellas, Blue Fairy Wrens, white Cockatoos and Peewees entertained us as we refreshed ourselves in the dappled shade.

In the afternoon we set out for the Murrumbidgee River valley to visit the historic Lanyon Homestead which is set amongst rolling hills with its stockyards backed onto the river and is surrounded by a grove of *Pinus radiata* from California and *Pinus sylvestris* from Scotland. A little less impressive than Vaucluse House which we earlier saw on the southern shores of Sydney Harbour, Lanyon was a mid-victorian time capsule clearly telling the story of the lengths to which the pastoralists of the 1850s had gone in seeking to recreate the comforts of a Victorian home in Europe. The picture of a piano being dragged 300 miles and up 2000 feet on a bullock cart stimulated my imagination! In the grounds of Lanyon we found an exhibition of modern Australian painters' work alongside a permanent collection of Sidney Nolan's work. Whether one liked the latter or not - I did - they certainly gave a powerful impression of the unique quality of Australian art.

We travelled back by the Tidbinbilla mountain forest reserve - a vast area where massive eucalypts showed their age and beauty and where Kangaroos and Emus are to be found grazing the meadows of the valley floor. We were also privileged to visit a series of ponds and lakes where a great variety of Australian ducks and water birds were to be seen in a wild but protected environment. Some ducklings, early arrivals, were following their mothers, and I enjoyed the sight of a spoonbill quietly dredging the shallows.

On Monday, 22nd September, we made an early start as we had a coach journey of nearly 300 miles ahead of us. After driving for some hours through the rolling pastures and wheat fields of the Western Plains and passing through several small townships our first stop was at Cowra where we saw the impressive Japanese Memorial Garden which has been created over the last five years to honour the Japanese who died while in internment there in 1944. A small hill stream with granite boulders formed the ideal setting for the spring, the winding rocky stream, the placid carp pond and the classic tea house set amongst even pebbles on a promontory overlooking the water. The plantings of flowering shrubs and bulbs were perhaps more colourful than would have been considered proper in Japan, but we thought that the whole conception of the garden was an admirable compromise between the aesthetic and spiritual taste of two different cultures and therefore symbolised the reconciliation of peoples divided by fear and war. A magnificent *Magnolia liliflora* Nigra, hedges of *Photinia* × *Fraseri* and *Nandina domestica*, the sacred bamboo, all had their admirers. Much remains to be done and financial contributions to the project are still required. Our congratulations to I.C.S. member Harold Fraser and to others locally for their achievement.

An excellent lunch at the Cowra Ex-servicemen's Club surrounded by the largest array of one-arm bandits I have ever seen outside of Tokyo, set us up for the long journey eastwards towards Bathurst. This town, Australia's oldest inland township, was built to serve the farmers of the Western Highlands who arrived soon after the early explorers had penetrated the barrier of the Blue Mountains. The mixture of Victorian and Art Nouveau architecture was intriguing, but a group of white flowered pendulous peach trees around the War Memorial excited the admiration of the I.C.S.. On our way eastwards past the coal-mining town of Lithgow we began to climb steeply up the convict-built road which snakes its way round an outcrop of the Hawkesbury Sandstone escarpment and then at an impossibly steep angle to cross a chasm in the rock onto the last steep bend before the road finally comes out onto the top of Mount Victoria. From then onwards we were travelling gently downhill through the thickly populated mountain resorts of Katoomba and Leura. Since so much of Australia was so strange it was perhaps no surprise to find that here the resorts were on top of the mountains rather than at their foot as in Europe and Asia. This is really because of the extraordinary erosion of this vast uplifted sandstone cap by millions of years of work by wind and water. Around every corner was a precipitous drop of 1000 feet or more to the wild forest reserves below, but on the plateau all was order and luxuriance; trim golf courses, hotels, tree lined avenues and beautiful private gardens.

We stayed at the Everglades Motor Inn which was within a few minutes walk of the old established gardens of the Leura Gardens Motor Inn wherein we had a foretaste of the mixed plantings of Camellias, Magnolias and Rhododendrons which were such a feature of the Blue Mountains country.

Next morning, Tuesday, 23rd September, we visited four private gardens in Leura,

each memorable in its own particular way. At Ewanrigg a perfectly proportioned small garden supporting very healthy camellias, azaleas and native shrubs together with evidence of careful and aesthetically pleasing methods of pruning and vigour control impressed me. As we left, I was also staggered by the beauty of a 30 foot high boundary hedge of Cupressus which did not appear to have been clipped. Brabourne is a garden with a fine prospect and a sloping lawn shaded by huge pin oaks and liquidambar which provided shade and leaf mould for the smaller flowering shrubs.

Pine Crest was notable for its marvellously designed paths and varied ground cover plants. All the plants were so full of health and colour in the spring sunshine that it was difficult to imagine the garden at other times of year, but we could all appreciate the subtlety of the planting even of a newly developed area so that I am sure Pine Crest must look lovely at all seasons.

A delicious morning tea organised by the Red Cross in the pretty garden of Yarrawin preceded the visit to John Paddison's garden-cum-nursery where, under the shade of tall trees we saw a magnificent collection of 5m high camellias planted in open ground and a lot more in containers. We were also privileged to pry into John's extensive propagation tables - the scene of enormous labour and success in growing camellias and azaleas. At all the Leura gardens we northerners were impressed by some Prunus varieties which we saw at their best, subhirtella Pendula Rosea, the more upright Elvin and, at John Paddison's, a perfect specimen of *serrulata* "Yashida".

A picnic lunch at Wentworth Falls Look-out enabled us to see for miles over the distant forests which in their blue haze appeared like a sea washing up to the foot of the huge precipice beneath us. So peaceful the scene and amiable the behaviour of the camellia people that a Kookaburra came to sit on a branch a few feet above us, allowing the cameras to click without it showing any fear or distaste.

After lunch we walked down a nearby road to see the 5-acre garden of Reg Livermore, the Australian actor and singer who has only recently been bitten by the gardening bug. Most of the garden, surrounded as it is by huge trees and focussed on a small lake over which a delicate *Salix babylonica* wept and was reflected, has only been planted in the last five years but already it has the making of a notable woodland garden in the informal English style. Mr. Livermore entertained us and won our sympathy by a frank admission of the many initial mistakes he has made. Good luck to him.

After coach visits to Echo Point where we again gazed down over the cliffs to the blue sea of forest, we just had enough daylight left to visit Gemas, a beautifully kept small garden on Sublime Point with staggering views of red and ochre sandstone cliffs.

On our last day, Wednesday 24th, September, we travelled to the Mount Wilson area where an outcropping of volcanic rock has enriched the soil and made gardening easier than on the sandstone. On the way to Mount Wilson we visited the Blue Mountains Rhododendron Gardens, a garden of 18 hectares being carved out of the native forest entirely by volunteer labour. Although it was too early in the season to enjoy the rhododendrons at their best we were nevertheless very impressed both by the work already done in landscaping and planting and by the promise of the future.

Our first visit at Mount Wilson was to the mature garden of Nooroo, the home of Mrs. Isa Valder for the past 55 years. Here we saw many fine camellias as well as many mature trees and shrubs originating from Europe, Asia, North and South America. Particularly impressive at the time of our visit was a *Magnolia sprengeri* 'Diva', upright and magenta coloured goblets, and *Magnolia sargentiana* 'Robusta' with its huge nodding flowers.

Both these trees had been grown from seed sent from Caerhays Castle, Cornwall, in 1957. Mrs. Valder's son Peter who had given us a most interesting talk at the Sydney Congress was unfortunately unable to be with us as he had just broken his arm in a gardening accident. It's a dangerous pastime, gardening! We hope that by the time he sees this in print he will have made a full recovery and that he will realise how much we all enjoyed the wonderful garden which his family have created.

Wednesday's picnic lunch was in a forest glade from which we could appreciate the magnificence of the 50m gums and other evergreens which, due to the luxuriance of the soil and high rainfall were growing to perfection, the forest floor thick with tree ferns and tangled creepers.

Such primaevae conditions were also the fortunate basis for our last garden, that of Mr. and Mrs. Sullivan at Lindfield Park on Mount Irvine Road. Here was a garden only 25 years old which was blessed with a superb view, rich volcanic soil, an annual rainfall of 50" evenly distributed and only minor frost problems. Not only the phenomenal growth of the plantings, but also masterly garden design of the Vidlers, Mr. Sullivan's predecessors, were most impressive. Notable were the extensive rock gardens in which difficult subjects like *Daphne cneorum* grew like weeds, over the cunningly placed steps made of tree fern logs, massive groups of reticulata camellias, sasanqua hedges and a grove of Metasequoia trees 12m high but only 20 years old. As Mr. Sullivan said, when I commented on the immense size of these comparatively young fossil trees, "when you plant anything here you have to stand back quickly in case it hits you on the chin!" I am sure that the success of the garden is not only due to a happy climate and soil but to the great skill and energy of the Vidlers and Sullivans; both have contributed to the aesthetic harmony of this lovely hillside garden.

We left Lindfield Park to begin our long and winding descent to the foothills and eventually to the suburbs of Greater Sydney in a dreamy state of satiation having seen so much beauty and grandeur on our travels in the Blue Mountains. Our coach drivers whose intelligent, well-informed and non-obtrusive commentaries on the passing scenes had been much appreciated especially by the ignorant inhabitants of "up over" who had been seeing the wonders of Australia for the first time, had become our friends by this time, and I feel sure that Eric Craig must have felt the sincerity of our thanks to him as we each shook his hand outside the Menzies.

Now we've seen chrysantha, what next?

PETER VALDER

Qu'attendre maintenant que nous avons vu *C. chrysantha*?

Ya hemos vista la chrysantha, y ahora ¿qué?

E adesso che abbiamo visto i chrysantha, che altre sorprese ci sono?

Jetzt haben wir die Chrysanthenen gesehen, und was nun?

Let us suppose that I am setting out to breed a beautiful large-flowered yellow camellia with a delicious scent. It may, for all I know, be quite simple and merely involve the crossing of a stunning red, pink or white, large-flowered, scentless, garden camellia with a small-flowered, scented, yellow species, if such exists. Seeds are obtained, they germinate, and, lo and behold, some of the seedlings are large-flowered, yellow and scented. And not only that, they are good garden plants, flower young and tolerate both frost and heat.

As it happens I have had nothing whatever to do with anything of this sort and I have not even followed the history of *Camellia chrysantha* since its introduction to cultivation a few years ago. However I would be most surprised if it were to prove that simple. So for those people who are trying to breed new types of camellia and who do not know all that much about genetics, I thought I would devote my time to looking at camellias from a genetical point of view, since plant breeding, of course, has its basis in genetics.

Amongst the most remarkable discoveries of the last 30 years or so have been those concerning deoxyribose nucleic acid, DNA. The realisation that this molecule consisted of four different kinds of smaller molecules, nucleotides, joined end to end to form long threads, and that the order in which the four nucleotides were arranged represented a genetic code, brought the study of genetics down to a biochemical level.

Now I am not going to go into too much detail about the structure of DNA, you will no doubt be relieved to hear, but I must point out that what the code on a section of a DNA molecule codes for is a protein. Proteins are another kind of large molecule made up of smaller molecules, amino acids, arranged end to end. There are twenty kinds of amino acids and all the proteins in existence are made of combinations of these joined end to end. Each amino acid is coded for by a sequence of three nucleotides on the DNA molecule and the sequence of amino acids in the protein is determined by the order of a series of groups of three nucleotides along the DNA molecule.

So what it amounts to is that the appearance, scent and behaviour of our hypothetical camellia results from the interplay of proteins all of which are coded for on its DNA molecules. Some of these proteins are structural, forming part of each cell, others are enzymes which control metabolism, things like photosynthesis and respiration, or the production of the non-protein parts of the plant - the cellulose which makes up the cell walls, for instance, the pigments which give the petals their colour, and the compounds responsible for the scent.

Particular sequences of nucleotides in DNA specify each of the plants' proteins and these DNA sequences are what we call *genes*.

Now the plant cell is very complicated so let us start off by looking at something simpler - a bacterium. Each bacterium has a single DNA molecule with its end joined together to form a ring. On this molecule, in the order of the nucleotides which make it up, is encoded the complete genetic information of the bacterium. Each time the bacterium divides in two, exact copies of the DNA molecule are made so that the daughter cells each get an exact code of the genetic code. And if somewhere in this code there is a sequence for yellow colour, then the bacterium is likely to be yellow. All quite simple.

In larger organisms like plants and ourselves things are not nearly so simple. For a start there is usually more than one long DNA molecule per cell and, not only this, but each DNA molecule is associated with proteins in a special structure called a chromosome. Each plant or animal has a characteristic number of these in each cell. We for instance have 46 - two sets of 23, one set from each parent. If one photographs them we can cut them out and arrange them in pairs called homologues. Genes governing the same characteristics are found at corresponding places on the corresponding DNA molecules of the homologues. These genes are known as alleles.

So unlike the bacterium, plant and animal cells have two genes for every characteristic as it were. Hence we need to know whether each allele of any particular gene produces separately a recognisable product or recognisable effect. In many cases the effect of one allele may exclude or predominate over the effect of the other. This is the phenomenon of dominance. Thus if red is dominant and you cross a red and white camellia you get only red seedlings. On the other hand red may only be partially dominant and the seedlings are pink. In practice of course it is not as simple as this as several genes may be involved.

Then if we think simultaneously of inherited characters due to separate genes, let us say flower colour and scent, we shall need to know whether the DNA segment for the enzyme affecting flower pigmentation is part of the same chromosome as the DNA segment for the enzyme making the scent. If the two genes are close in the same chromosome they will be inherited together. They are then said to be linked. If they are in different chromosome pairs, the genes will be inherited quite independently, but of course still in predictable patterns.

So when you start your breeding programme you really don't know what you are up against. It may all be quite simple, as I mentioned earlier, or it may be much more complicated.

For a start the characters you are interested in may each depend on several genes. Then the less related the parents are the less DNA they have in common and the more likely it is that they will be able to produce vigorous offspring. As a general rule, within a group of organisms such as the genus *Camellia*, crosses are more likely to be successful between members of the same section than between sections, then within a subgenus rather than between subgenera. On top of this a cross is usually more likely to work if the parents have the same chromosome number. Even then there may be physical or biochemical barriers preventing fertilisation.

Nevertheless it is worth trying anything as it may work. After all the views about relationships within a genus are human views and may not be correct. And it is unlikely that anyone has actually counted the chromosomes of the individuals you are using.

They might not even have the numbers you think they have. Even so it should be remembered that even when you do get viable seeds from a wide cross, very often the offspring are unthrifty. And even when they grow quite well they may turn out to be sterile.

It should be remembered that your hybrid will have received a complete set of genes from each parent, genes relating not only to flower colour, scent and other obvious characters, but also concerned with response to climate, cold hardiness, time of flowering and everything else, when all you really wanted was probably a *Camellia japonica*, *C. sasanqua* or *C. reticulata* with just the DNA sequence or sequences for flower colour transferred from, say, *C. chrysantha*, and for scent transferred from some other species, such as *C. confusa*. Even if the crosses worked it might well involve generations of selfing or backcrossing to achieve the desired result.

In this era of tissue cultures, frozen embryos, and genetic engineering, you might perhaps think there is an easier way. Well there may eventually turn out to be a way but I am sure it will be enormously expensive and not at all easy. Anyway let us have a brief look at genetic engineering.

Genetic engineering is the name given to all sorts of things but basically it means the isolation of a small piece of DNA carrying the code for a particular character or characters from one organism and then implanting this piece of DNA in another organism, which then exhibits a character it did not have before. So wouldn't it be nice if we could just chop out the sequence or sequences for yellow from *C. chrysantha* and the sequence or sequences for scent from *C. confusa* and pop them into a nice white *C. japonica*. Now there may well be something of the order of 50,000 genes in *C. chrysantha* and finding the single gene or group of genes you want would be an appalling task. Nevertheless it would be possible to extract the DNA and cut it up into short lengths with enzymes and get going on such a project, even though at present it would be uneconomic. Then when you had done that you would have to get the appropriate piece into a camellia cell and to function.

So far the genetic engineers have achieved their greatest success with the bacteria, so let us look at them again. Some bacteria have, in addition to their principal DNA molecule, a much smaller one carrying only a few genes. Such small DNA molecules are called plasmids and plasmids seem to be able to enter plasmid-free cells quite easily and the genes they carry then confer new characteristics on the cells they enter. For instance plasmids often carry genes for antibiotic resistance, so cells which they enter become resistant to the antibiotic or antibiotics involved.

The genetic engineers have become very clever at attaching extra genes to plasmids and then using them to carry these genes into cells. For instance they have isolated from a human chromosome the DNA sequence which codes for insulin production. Then using enzymes the bacterial plasmid is cut open and the human DNA sequence inserted. Plasmid-free bacteria are then exposed to the new plasmid, it enters and transforms them. Then every time they divide an exact copy of the plasmid is made so the additional character is inherited. So you get a population of bacteria which will make human insulin. These can then be cultured and an inexhaustible supply of human insulin can easily be produced for the treatment of diabetes.

Another way you can get genes into such cells is to attach them to the nucleic acid portions of certain viruses. Then when the virus infects a cell it carries the gene in with it and, in certain cases, this plus the viral DNA become integrated into the host-cell DNA. All most ingenious.

However getting such DNA fragments into plant cells is likely to be much more difficult. It may be able to be done directly by growing camellia tissue in liquid culture, shaking it so that the cells separate as they divide and then dissolving their walls off with enzymes. The resulting cells which have no walls are called protoplasts. Then if these protoplasts are exposed to DNA fragments under special conditions it is probable that some of them would enter. But whether they would become integrated into a chromosome, let alone at the appropriate place is another matter. However, if it were possible, one could then regenerate whole plants from single transformed cells.

Alternatively viruses may be found which would do the trick, particularly if the DNA sequences of the viruses can be altered so they are relatively harmless. The retroviruses, of which the AIDS virus is an example, are thought to show some promise, as they get their genetic code incorporated into the DNA of the host cell chromosomes, rather in the way some of the bacterial viruses do. So you might be able to attach an extra bit, provided it was small, and let the virus incorporate it into the chromosome for you. But I imagine this is all a long way off.

Perhaps the greatest promise for transferring a piece of DNA from a chromosome of one plant to a chromosome of another comes from a study of the crown gall disease caused by the bacterium *Agrobacterium tumefaciens*. This bacterium causes tumours on plants and for a long time people thought it was just the bacterium which caused the plant cells to divide out of control. However, it was eventually shown to be a true cancerous transformation, since affected cells continue to divide and produce tumours in the absence of bacteria.

It is now known that the bacteria carry a plasmid which carries the genes for tumour formation and that this plasmid is transferred from the bacterial cell to the plant cell, which is then transformed genetically and divides out of control as it were. What happens is that a small segment of DNA, the tumour inducing segment, becomes incorporated into the plant's own DNA. So if you could insert foreign DNA into the tumour producing segment of the plasmid you would have a good method of transferring genes from one plant to another. Again it would be done with single cells growing in culture and then whole plants would be regenerated from the transformed cells. And, finally, it would be most useful if the foreign DNA were transmitted normally by the sexual process through the flowers of the plant to subsequent generations.

So far several bacterial, animal and unrelated plant genes have been transferred in this way, although not all of them have ended up being expressed.

As you might imagine, one of the problems associated with this method of inserting genes into plant cells is that they become tumorous. Hence it is necessary to disarm, as it were, the tumour-inducing segment of the plasmid DNA by inactivating or deleting one or more of the tumour-inducing genes. This has now been done, a gene has been transferred and healthy regenerated plants obtained, which were fertile and transmitted the new gene to their progeny. However in such progeny the expression of the gene was not detected.

There is obviously much work to be done still, but this method offers most exciting possibilities, perhaps first for our agricultural crops and then eventually for our ornamentals, perhaps even camellias.

No doubt all of this has been a bit of a mouthful but I thought that those of you who are not familiar with the directions in which modern genetics is taking us might like to hear a

little about them. In the meantime it seems likely that the camellia breeders will have to tick with the conventional methods and I await with interest the results of *C. chrysantha* crosses which have been reported in various parts of the world.

Strategies for Breeding Large Flowered Yellow Camellias.

NANCY VAN SCHAİK

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Stratégies d'obtention de camélias jaunes à grandes fleurs

Estrategias para el cultivo de las camelias amarillas con flores grandes

Strategie per coltivare Camellie Gialle a grande fioritura

Strategien für die Zucht großblütiger gelber Kamelien

The possibility of the introduction of a beautiful clear bright yellow colour into one of the large flowered types of *Camellia* has long been identified as one of the main goals in *Camellia* breeding both from an aesthetic and a business point of view (J. Nuccio in reference 6, p.362). The recent introduction of *Camellia chrysantha* from China has caused a flurry of hope, excitement and activity among *Camellia* lovers and the attainment of this goal seems to be within ultimate reach. If we could only get the colour of *chrysantha* into flowers like those of *japonica* or *reticulata*! The obvious way to do this would seem to be by crossing the species with the desired colour with one with the desired flower form. Making interspecific crosses is often difficult and we shall return to this problem a little later, but let us assume for the time being that it is possible to make such crosses. What is involved at the biochemical and genetic levels and what strategies should be adopted to give the best chance of success?

Successful plant breeding has been carried out for thousands of years often by people who knew little or no basic biology. Trial and error combined with luck and keen observation have produced many marvellous results. However, if we want to achieve a particular result it makes good sense to try to achieve our goal in the easiest way possible and that entails a knowledge of a few simple biological facts.

Camellias like all other living things are made up of millions of small units called cells. The first person to see cells under the microscope used the word cell, in the same sense that we speak of a prison cell or a monk's cell, i.e. a small box-like room, because that is what he saw. He happened to be looking at cells in cork which are dead and all that remained was the rigid cell walls which look exactly like little boxes. The living cell is anything but an empty box. It is a marvellously complex bag filled with thousands of

different kinds of chemicals, some organised into recognisable structures and some making up a rich 'soup'. Every living cell is carrying out hundreds or even thousands of chemical reactions.

One of the miracles of life is the way in which cells become different from each other as a plant or animal grows. Cells of the same type are called tissues such as the epidermis (outer layer of the leaf) and several different kinds of tissues make up organs like the leaf. The different organs (roots, stems, leaves, flowers, fruit and seeds) make up the entire plant. From a single cell, the fertilised ovule, we eventually get a mature plant with millions of cells of many different types and each type is carrying out a different set of chemical reactions.

The plant is capable of taking in small, relatively simple molecules such as water, gases from the air and nutrients from the soil. From these simple building blocks in a series of complex chemical reactions it manufactures the complicated organic molecules of proteins, carbohydrates, oils, pigments, etc. that make up its structure. All of this chemistry is controlled by the genes in each cell. The genes function by controlling the manufacture of all proteins in the cell. Many of these proteins are of a class known as enzymes which work as catalysts. Normally the chemical reactions in living things take place in a series of simple steps in which groups of atoms are added to, subtracted from or rearranged in an existing molecule until the final product is produced. If we look, for example, at a reaction producing something like a red pigment, it might look like figure 1. We can see from this diagram that in order to get red pigment we must have the whole series of events (referred to as a biochemical pathway) happening and that means that three different kinds of enzymes must be present and able to work. The enzymes themselves are not used up in the reaction but only make the reaction possible by fitting the pieces together.

Where do the genes come into this story? The answer is that each gene is the blue print for one specific enzyme. We can see then that the genes indirectly control all the chemistry of the cell and therefore every aspect of the life of the plant. If we look again at the pathway with this in mind we see that the force behind each step is a gene and in this simple example, three different genes would be required to encode the enzymes responsible for the formation of red pigment. In parts of the plant that produce the red pigment, these genes would be 'switched on' and the enzymes necessary would be produced. In other parts of the plant, these particular genes would be 'switched off' and the enzymes would not be produced and therefore substance A would not be converted into pigment.

The genes themselves are chemicals. Each gene is a long chain made up of four different kinds of building blocks. The order of these building blocks constitute the so-called genetic code which in turn determines how protein molecules are put together. Proteins are made up of 20 different kinds of building blocks (amino acids) and one protein may be anything from a few dozen to thousands of amino acids in length. One protein differs from another in the nature and order of its building blocks and remember that that in turn, is determined by the order of the building blocks of the gene. The material of the genes (deoxyribonucleic acid) or DNA is strung together in very long molecules coated with proteins of various types and wound up into structures known as chromosomes which lie in the control centre of the cell, the nucleus.

Growth of an organism can take place by each cell enlarging and by single cells dividing into two. One can see that when a cell divides it is very important that the vital

genetic code packed into the chromosomes must be passed on unchanged to each of the two daughter cells and all of the complex events that take place during cell division provide for that. Each chromosome carrying hundreds or thousands of genes is faithfully duplicated, so that each gene is copied and one copy reaches each of the new cells. Diploid species like mammals and *Camellia japonica* have in all their cells two sets of chromosomes which means that there are thus two genes of each type. All the genes of *Camellia japonica* are contained in 15 different packages (chromosomes) of slightly different sizes and shapes and each cell contains two of each of the 15 different chromosomes. This means that each different kind of gene should be present twice in each cell. Some cultivars have 3 sets (triploids) and different species may have up to 6 sets.

Although the process of the duplication of genes is remarkably precise, once in a while, an error occurs and one or more of the building blocks in the DNA is changed. This in turn may produce a change in one or more building blocks in the protein coded by that particular gene. Often such a change in an enzyme makes it inactive, incapable of carrying out its job of catalyzing a particular step in a particular pathway. This is what the geneticist recognises as a mutation (or sport). Such a new mistake or mutation would occur only in one gene while its duplicate on the homologous chromosome would remain unchanged. Such a cell would then have two different forms of the same gene, one producing the normal enzyme product and the other producing an inactive enzyme. Usually the pathway can work with the amount of enzyme produced by one dose of the normal gene and we would describe the mutant form as being 'recessive' and would not see its effect as long as the normal gene is present too. The recessive gene only shows its effects if it is present in a double dose (figure 2). If a mutation occurs in tissue that will give rise to sex cells, it can be transmitted through sexual reproduction. An individual inheriting the mutant form of a gene from both parents would have no normal gene to produce enzyme and therefore the pathway in which that enzyme works would not function. If the gene in question was 1 (R) which coded for the production of enzyme 1 in our pathway to red pigment and the mutant form (r) we can see that genetically we could have plants that had two normal genes RR (using the symbol R for the normal gene and r for the defective one), one of each, Rr and two mutant genes, rr. Both RR and Rr would have normal red pigment but rr would not form pigment and would have white flowers. Another point to remember is that a white flowered plant may be white for a number of reasons. Gene 1 may be defective on one plant, while Gene 2 may be defective in another and 3 in another still, or the whole pathway might be missing. Sometimes a mutation such as red flowers to white flowers may be dominant. In this case an enzyme is usually changed in such a way that it combines avidly with the substance on which it usually works but cannot let go, thus outcompeting normal enzymes present.

With this background in mind, let us return to our problem of producing a yellow flowered interspecific hybrid by crossing the yellow flowered *C. chrysantha* with *C. japonica* or *reticulata*.

To have yellow flowers, a plant must obviously be able to produce yellow pigment in its petals and not produce any other flower pigment that will mask the yellow colour.

Flower pigments fall roughly into two major groups, water insoluble pigments which are located in membrane covered sacs called plastids and water soluble ones that are dissolved in the cell sap. The colours that we see in the petals of Camellias are probably the result of the presence of several different pigments most of which belong to the water

soluble group and fall into a chemical group called the flavonoids. Over 500 different types of flavonoids are known in plants^{5, 7}. The red and pink pigments found in the large flowered species belong to a sub-group known as anthocyanins and the major yellow pigment of *C. chrysantha* has recently been identified as belonging to a related group of pigments, the flavonols. The pigments are all complex molecules consisting of a basic structure of three joined rings made up of 15 carbon atoms and one oxygen atom (figure 3). The different pigments have different numbers of oxygen and hydrogen atoms attached to various carbon atoms of the core structure. Some types of pigments have methyl groups (CH₃) attached and most have one or more simple sugars such as glucose attached to the ring. One pigment varies from another in the number and positions of the attached oxygens, methyl groups and sugars. For ease of identification the different attachment sites on the rings are given numbers. The diagram (figure 3) shows the structure of the basic ring, one typical anthocyanin and the particular anthoxanthin that has been identified in *C. chrysantha*⁸. Both of these types of pigments are thought to be synthesized in a common pathway⁷ which is illustrated in figure 4. Steps 1 and 2 form the basic core ring structure and the additional steps add oxygens at various positions and then finally sugars. Remember that each step requires an enzyme which in turn is specified by a gene. In the pathway illustrated, (which is still a simplification) in a plant able to make both a red and a yellow pigment, there would be nine different enzymes, coded for by nine different genes located at nine different places in each set of chromosomes.

In a plant such as *C. japonica* which does not normally make yellow pigment in the flowers, the pathway from B to yellow pigment might be entirely missing because there are no genes to produce the enzymes needed for steps 7 to 9. In a plant such as *C. chrysantha* making only yellow pigment, the genes responsible for steps 3 to 6 might be missing. If we cross the two, the hybrid should have all the enzymes necessary to carry out all these steps and thus produce both pigments. What this will look like depends on various factors. It might be red if the red masks the yellow, or orange if the two blend. We can see from the diagram that there would be competition between the enzyme for step 7 and the one for step 3 since both work on substance B. Depending on which enzyme is most active, the system might produce only one pigment or different amounts of the two.

It would seem to make good sense if we want yellow flowers from such a cross to eliminate the problem of the red pigment by using a white flowered plant as the one parent. Going back to the diagram, we see that there are various ways in which a white flowered plant could be produced in a species usually making red or pink pigment. A species deficient for any one of the enzymes 1 to 6 would result in white (no red). If enzyme 1 was missing no A would be formed and therefore no B, C, etc. If enzyme 6 was missing, the synthesis would proceed normally up to substance E but then fail in the conversion of E to pigment. Genetically then, there can be many different causes for white flowers and there is evidence that this is in fact the case for white *japonicas* (Parks, page 378 of reference 6). The results of crossing these different types of whites and with a plant having the complete pathway to yellow would be quite different. If the white lacked an enzyme in the common part of the pathway (steps 1 and 2), the yellow parent would furnish this enzyme since it must be able to carry out steps 1, 2, 7, 8 and 9 and the resultant hybrid of the cross white × yellow would produce both red and yellow pigment. If however the white flower was blocked in a step between 3 and 5, this

deficiency would not be made up by the yellow parent and the resulting hybrid should have yellow flowers.

Since we do not know the nature of the different available white *japonicas*, it would seem to be a good strategy to try as many different white parents as possible. Since white *reticulatas* are rare, it would seem sensible to use coloured *reticulatas* that have been known to give white progeny. Since white is usually recessive, any coloured plant giving white offspring can be assumed to carry the recessive gene for white together with its normal form allowing pigment production (Rr in figure 2). David Feathers has been successful in producing a number of white *japonica* × *reticulata* hybrids using Crimson Robe¹³. Crimson Robe can therefore be assumed to be a carrier of a recessive white gene.

Another possible difficulty at the biochemical level is that the pigment giving the yellow flowers of *C. chrysantha* (quercetin-7-glucoside) is rather unusual in that it has a sugar attached to the 7 position of the ring (see figure 3), rather than the more common position 3. This pigment which incidently is also found in sunflowers *Helianthus annuus* and the skin of Grimes Golden apples, might have difficulty forming if the enzyme which attaches glucose to the 3 position were present.

To get a yellow flowered plant, it is not only necessary to have a plant that is biochemically able to produce the correct pigment but it must also be able to produce that pigment in the correct place, i.e. the petals. Many Camellias produce some yellow pigment in leaves and in stamens but not in the petals. *Camellia japonica* usually does not produce large amounts of flavonols in the petals although some are produced in large amounts in the leaves^{11, 12}. Not much is known about the genetic control of pigment distribution which is independent of the control of synthesis. What strategy could be used to overcome this problem?

There are a number of *japonicas* which are described as being yellow. Although none of these have the rich bright sunflower yellow of *chrysantha*, they must be producing at least limited amounts of some type of yellow pigment in their petals. Chemical identification of the particular pigments present in such varieties as Brushfield's Yellow, Golden Anniversary, Gus Menard, Honeyglow, Lemon Drop, Lemon Honey, Selina Louise and Witman Yellow would be very helpful in planning strategy. Without this knowledge being available at present, any of these or other creams or yellows that are fertile would be good candidates for parents of interspecific crosses with *chrysantha*.

So far we have dealt with the problem of the choice of potential *japonica* or *reticulata* parents from a biochemical point of view as if that were the only problem in a cross with *chrysantha*. It is now becoming evident that the cross of *chrysantha* with other species is very difficult^{3, 9}. This would not surprise a geneticist since the cross involved is between two different species, and in this case species which are not very closely related⁴. What exactly does this mean? To a geneticist, different species are groups of organisms that have different collections of genes. A group of plants classified by botanists as a distinct species is designated a species precisely because it usually does not (and often cannot) interbreed with other species. This simple fact is usually appreciated more by the layman in the case of animal species than for plant species. It makes the newspapers when a successful cross is made between a lion, *Felis leo* and a tiger, *Felis tigris*. Even when such crosses can be made between different but closely related species such as the horse and the ass, the offspring are often sterile like the mule. One point of confusion that often arises is the use of the term 'hybrid'. Many laymen seem to use this term only

to refer to the progeny of interspecific crosses whereas geneticists use the term to denote the offspring of any cross between two parents carrying different genes. Thus the Williamsii 'hybrids' are really interspecific hybrids, but to a geneticist, a cross between a red flowered *C. japonica* and a white flowered plant of the same species would also be called a hybrid. This confusion has led to some incorrect ideas about the properties of hybrids such as the idea that 'hybrid vigour' should be expected regularly from interspecific crosses. The outstanding examples of 'hybrid vigour' in agriculture such as hybrid maize are normally crosses of different types within one species rather than between different species. Most interspecific hybrids are weak rather than vigorous and this has been clearly pointed out for Camellias by Ackerman^{1,2}. The reason for the frequent inability of different species to cross successfully is that different species have different collections of genes (and therefore different chemistry). Even if most of their genes are similar, they may be packaged differently into different numbers of chromosomes and all of this may produce imbalance in the chemistry of the hybrid and in the mechanics of the cell divisions preceding ovule and pollen formation.

If the introduction of yellow into one of the large flowered species turns out to be impossible by hybridisation with *chrysantha* are there any other possibilities?

Somatic hybridisation

In normal sexual reproduction a new individual is formed by the fusion of two specialized sex cells (gametes), one from the female parent and one from the male parent. These cells normally have only half the number of chromosomes that the parent plant has in its somatic cells (i.e. the cells of leaves, stems, petals, roots, etc.). So-called somatic hybridisation creates hybrids by substituting ordinary somatic cells derived from leaves, stems or other somatic tissue for gametes. Such cells grown on a chemical growth medium in cell culture, are induced to fuse by exposure to certain chemicals or treatments such as electrical fields which affect the nature of the cell membranes. Since plant cells have very thick cell walls outside the living cell membrane, it is usually necessary to remove the cell walls first to expose the membranes. After cell fusion, the nuclei of the cells carrying the chromosomes usually fuse producing a truly hybrid cell. This type of hybrid differs from a sexual hybrid in that it contains all of the chromosomes (and therefore genes) of both parents. Such a somatic hybrid of two diploid species such as *C. japonica* would be a tetraploid and contain 60 chromosomes instead of the normal 30 (and four copies of each kind of gene). These hybrid cells must then be grown into complete plants in the laboratory in tissue culture. Although hybrids can be formed between many different kinds of cells, many of the hybrids fail to grow, or grow but will not regenerate entire plants. However better techniques may improve the prospects for this approach to breeding.

Transformation

The ideal of course, would be to be able to use one parent with desirable flower characteristics and add only the genes necessary to produce yellow pigment in the petals. With bacterial cells it is possible to get the direct uptake of DNA, the chemical material of genes. This process is known as transformation. DNA molecules of special types such as circular chromosomes known as 'plasmids', the genes of viruses or a special class of genes known as transposable elements or 'jumping genes' may also be used as carriers of the genes to be transferred. Such manipulations known as genetic

engineering are routine today in bacteria and can also be carried out on plant and animal cells growing in cell or tissue culture. A number of techniques are used to induce plant cells to take in DNA molecules directly. The technique known as electroporation in which electric shocks are used to produce transient pores in cell membranes seems very promising at present.

The liposome technique makes use of little bags of artificial membrane containing genetic material which can be induced by techniques similar to those used in somatic cell fusion to fuse with intact cells stripped of their thick cell walls. In animal cells of various kinds, even direct micro-injection of DNA has been used successfully.

All of these techniques by which new genes have already been introduced into some plants, depend on being able to grow plant cells in the laboratory in tissue culture and then to be able to get an entire plant to grow from the manipulated cells. If these types of approaches are to become available for Camellias, techniques of growing them in tissue culture is an urgent priority.

A further interesting possibility has been raised by a paper recently published by the Japanese worker Ohta¹⁰ in which he describes a simple technique in which DNA extracted from one maize plant is mixed in a sugar solution with pollen from another plant. The resulting pollen-DNA paste is painted on the stigmas. He concludes that the DNA is carried into the ovule and can show its genetic effects directly in the maize seed and in the next generation.

Gene amplification

The so-called black *Camellia* is darkly pigmented because it carries an extra long chromosome which presumably carried extra doses of some of the genes involved in red pigment synthesis. Treatment with some drugs has produced similar amplifications of genes in mammalian cells. Techniques may someday be available to produce the same kind of amplification of any gene. In this case extra doses of genes for yellow pigment produced in low amounts in some pale yellow or ivory flowers might result in a richer yellow.

Gene manipulations

Gene 'libraries' can now be established for any species. The genetic material from all of the chromosomes is cut up into small pieces each containing several genes and these pieces are spliced into little extra chromosomes of bacterial cells which are then introduced into bacteria. The libraries are collections of colonies of bacteria each carrying a different piece of genetic material from the animal or plant of interest. Under proper circumstances these genes can be recognised and manipulated and sometimes made to produce their products. This would allow the selection of the particular genes necessary to produce the pigments wanted, in the correct plant part and even the changing of genes which might interfere with the correct working of the desired genes. Such engineered genes could then be reintroduced into *Camellia* cells.

Plans for the future

The most straight forward strategy of those discussed is of course hybridisation. Since it takes a relatively long time to produce hybrids and bring them to flower so that the results of the cross can be evaluated, it will probably be wiser in the long run for *Camellia* lovers to work together through their various societies to fund some research on the basic biochemistry of the *Camellia* flower pigments to assure that time and energy

is not wasted on crosses which have no chance of success. Dr. C. F. Parks is a known authority in this field and should be in a good position to offer advice. Obvious problems which need investigations are the nature of different white cultivars within *C. japonica*. Many breeders all over the world must have notes on the results of crosses between two white flowered types. The collection of this data should make it relatively easy for anyone trained in genetics to start to put together information about the number of steps in the synthesis of pigment.

Another obvious problem for attention is the characterisation of the yellow pigments found in various yellow or cream coloured cultivars of *C. japonica*. Perhaps our Japanese members can prevail upon Dr. Miyajima and his co-workers to follow their work on *chrysantha* with these determinations.

Probably the most urgent need is for research into conditions which will allow tissue culture, cell culture, protoplasting and plant regeneration in Camellias. I hope that Dr. Jean Creze and Mrs. Betty Hotchkiss and any others working on this will soon have success.

Many of the possible strategies discussed may sound like science fiction but the field of plant molecular biology is flourishing. A field that hardly existed ten years ago attracted some 2,000 scientists from all over the world to the First International Congress of Plant Molecular Biology held in Savannah, Georgia in the U.S.A. in 1985. Things have been accomplished already that many of us thought would take twenty years or more. The older generation of scientists such as Ackerman, Parks and a few others who have worked with Camellias have done a tremendous amount of pioneering work. We can only hope that in the new generation of plant molecular biologists there will be a few who can be infected with the love of Camellias that we all share.

Figure 1

SCHEMATIC BIOCHEMICAL PATHWAY

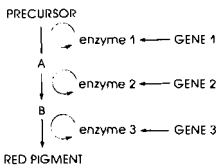


Figure 2

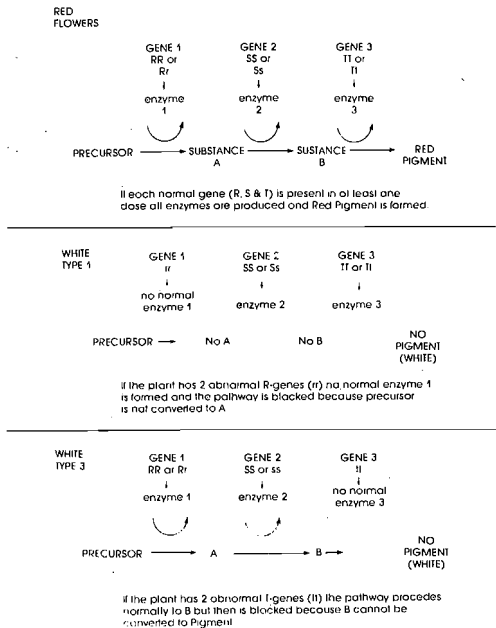


Figure 3

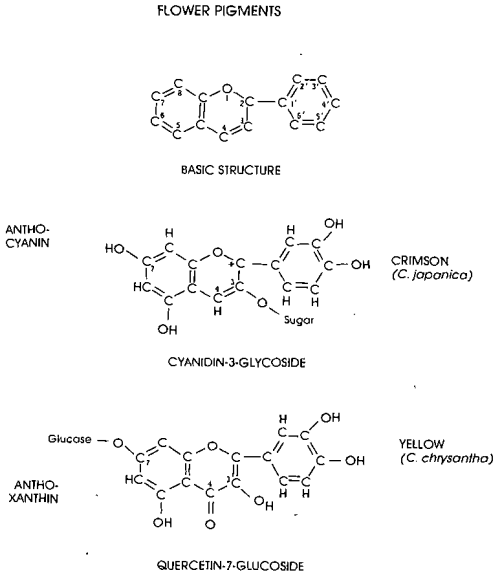
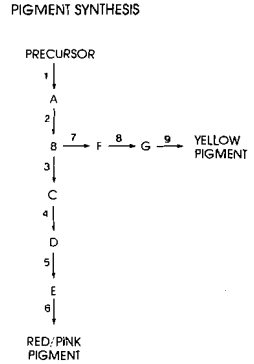


Figure 4



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Colonel T. Durrant, CBE, DSO, AHRIH

Il Colonnello T. Durant, CBE, DSO, AHRIH

Oberst T. Durrant, CBE, DSO, AHRIH

Col. Tom Durrant and his wife have collected, studied and grown camellias for over 30 years in their two gardens at Tirau and Rotorua in New Zealand.

Tom Durrant is a well known author of many works on camellias and a recognised authority worldwide on this subject. He has received international honours for his services to horticulture and the genus camellia. In 1978 he was honoured by H.M. The Queen by appointment as a Commander of the Most Excellent Order of the British Empire (C.B.E.) for services to education, horticulture and the environment. The Royal Horticultural Society awarded him the Veitch Memorial Medal in gold. He has an honorary life membership of the New Zealand, South Californian and Italian Camellia Societies, is also an Associate of Honour of the Royal New Zealand Institute of Horticulture and has a Fellowship of the Australian Camellia Research Society.

Additionally, Col. Durrant was a founder member of the New Zealand Camellia Society from 1957/64; Patron to the Camellia Bulletin having served as their Editor for many years. He was also the New Zealand director of the International Camellia Society from its foundation in 1962 and Registrar for the genus camellia in New Zealand from 1960 to 1980.

Camellia Cultivar Names in Latin

T. J. SAVIGE

International Registrar for the genus *Camellia*

Les noms latins des variétés de camélias

Nombres de los cultivares de camelias en latín

Nomenclatura latina delle diverse varietà i *Camelia*

Lateinische Bezeichnungen von Kameliensorten

The International Code of Nomenclature of Cultivated Plants has barred the use of plant cultivar names in Latin form for any introductions after the 1st January 1959, the date of implementation of the code. The original clause in the code states:

“A cultivar name published on or after 1st January 1959 must be a fancy name, that is, one markedly different from a botanical name in Latin form.”

Names in Latin form given previously to the above date are let stand as valid, except that the orthography of the Latin words should be in accordance with the rules and recommendations of the Botanical Code. If they were not in such accordance when originally published, they should be corrected before republishing them.

When *Camellias* were first introduced into Europe, early last Century, a considerable proportion of them were given names in Latin form, often orthographically incorrect and these incorrectly spelt forms persist to this day. There are uniform and reasonably simple rules for correctly spelling these early names, which have been set out in the Botanical Code and, to some extent, in the Horticultural Code.

For example, Cultivar names in the genitive singular, derived from personal names, should end in *-ii* for males and in *-iae* for females, unless the personal name ends in *-y* or *-er*, in which case the derived name should end in *-i* or *-ae* respectively. Thus “Jones” becomes “Jonesii” if masculine and ‘Jonesiae’ if feminine, while “Cooper” becomes ‘Cooperi’ masculine and ‘Cooperae’ feminine; “Mally” becomes ‘Mallyi’ masculine and ‘Mallyae’ feminine. Personal names that end in the vowels *e*, *i*, *o* and *u* are formed by adding the genitive inflection appropriate to the gender, without removing the vowel; thus “Beale” becomes ‘Bealei’ masculine or ‘Bealeae’ for feminine. However names ending with the vowel *-a-* just have *-e-* added; “Abdulla” would become ‘Abdullae’ not “Abdullai”.

Where names are derived from generic names ending in a vowel, ie. *Magnolia*, *Paeonia*, *Anemone*, *Althaea*, etc., the rule is to delete the ending vowel before a following consonant and substitute the joining vowel *-i-* if in Latin (or *-o-* if in Greek), thus:

Magnolia-i-flora - Magnoliiflora
Paeonia-i-flora - Paeoniiflora
Anemone-i-flora - Anemoniflora
Althaea-i-flora - Althaeiflora.

These names are almost always mis-spelt and Editors of Camellia Society publications should ensure, for uniformity and correctness, that correct orthography is used in these magazines.

Two other infringements which regularly occur include the use of the latin form "Variegata" for Variegated in names given after the date of implementation of the code, and the other is the use of abbreviation, "Var." for Variegated. It is pointed out that the code restricts the use of the abbreviation "var." for the botanical term "varietas" and that it is erroneous to use it for Variegated.

The Charm of Edo Camellias

GORO IIMURE

Le charme des camélias Ido

El encanto de las camelias de Edo

Il fascino delle Camelie Edo

Der Reiz der Edo-Kamelien

Although its origin can be traced back to the 7th century in Japanese literature, it was only 400 or more years ago when camellias were planted as one of the Japanese garden trees in Kyoto district. In the period of Nobunaga and Hideyoshi starting around 1570, camellias were closely associated with the ancient form of Japanese Tea Ceremony as a way of relaxing with a quiet mind. To symbolise the so-called 'austere elegance' in the Japanese Tea Ceremony, single form camellia flowers of light colour were much appreciated, and such simple flowers are now called Kyou Tsubaki (camellias in Kyoto district).

On the other hand, in the Edo era (17th century), the Shougun 'Hidetada' collected many beautiful and rare camellias throughout Japan, and planted them in his 'Edo Castle'. Edo is the old name of Tokyo.

Following this, the 'Daimyo', Samurai leaders and wealthy merchants started planting such camellias in their own gardens. They competed with each other to breed different types, colours and forms, which are now called 'Edo Tsubaki (camellias in Edo district). Therefore Edo Tsubaki will impress upon us some special features, such as variety, popularity, colourfulness, gorgeousness and sometimes as being ostentatious.

There might have been over 500 different varieties of Edo Tsubaki according to reliable literatures, one of which is called 'Chi-kin-shou' edited by Ito Ihei and his son who had produced many varieties of Edo Tsubaki.

In 1879 (Meiji era) a catalogue 'Chin-ka-shu' was issued and it covered about 200 varieties of camellias. This catalogue plays an important role to give us valuable information on Edo Tsubaki.

As you can imagine, Edo Tsubaki were selected through not only all over Japan but over 300 years. In this sense, they are the essence of classical horticulture of Japan.

Chin-ka-shu

The collected camellias (catalogue)

A catalogue of camellias 'Chin-ka-shu' was issued in the 12th year of the Meiji period (1879) written by a group of Tokyo gardeners. It covers 199 varieties of camellia. Since the famous gardening books called 'Chi-kin-sho' (1695-1733) with a listing of 500 Edo varieties, the number of varieties is far fewer at the present time.

Now at Angyou in Saitama prefecture gardeners have succeeded in growing traditional varieties.

Shuchuu-ka

Flower in 'Sake'

In the beginning this camellia was a clear white flower. But over a period of time, and by chance, it might have drunk a little red Sake (wine), and the colouring from this association so coloured the petals that it was named 'Shuchuu-ka' with the attractive name meaning Flowers in Sake.

A 'Haiku (5-7-5 syllables) was written about it which reads as follows, in Japanese Rooma-ji -

'Shuchuu-ka wa, shou-chuu no Tsubaki, hiso to mezu.'

This Haiku (poem) says, we have a feeling of secret love for this camellia of purity. And the holder of Shuchuu-ka loves the flower like a jewel in the hand.

This camellia belongs to a red edged petal group like Betty Sheffield Supreme and Margaret Davis, but Shuchuu-ka is secretly loved by all camellia lovers.

Ezo-nishiki

Japanese 'Ezo' brocade

Camellia 'Ezo-nishiki' was at first introduced as a double form type in the Camellia catalogue 'Chin-ka-shu', and is a new group of Edo camellias. This pretty red and white splashed flower is some kind of camellia cultivar from Kyu-shuu.

Also it was very popular in Europe about 200 years ago as a 'Tricolor' which was brought back by a Dutch doctor Philip Franz von Siebold of the East India Company from Nagasaki, Kyuu-shu.

New Zealand Visit

MAYDA REYNOLDS

Visite néo-zélandaise

Visita a Nueva Zelanda

Una visita in Nuova Zelanda

Besuch in Neuseeland

Our President John Tooby and his wife Nancy, Richard Hood and I spent two weeks in New Zealand en route to the Sydney Congress. This was my first visit to the Antipodes and I enjoyed every minute.

We had a warm welcome when we arrived at the Ahatt Hotel, Auckland and beautiful Camellias had been placed in our rooms by members of the Auckland Branch of the New Zealand Camellia Society.

Our first excursion was to the Eden Garden where we joined a party of the Queensland Camellia Society and American members of the ICS – all had travelled to New Zealand to attend the New Zealand Society's Hamilton Convention. We strolled through the garden along winding paths, past pools and waterfalls, admiring the Camellias and other ornamental shrubs, conifers and Tree Ferns. After our tour we all enjoyed refreshments provided by the Eden Garden Society and we were able to hear at first hand the history of the Garden.

It is amazing to think that this was a derelict area little more than twenty years ago. One can just imagine the tremendous work from Jack Clark, the Eden Garden Society's Director, and his team of volunteers to transform the disused quarry into the beautiful garden of to-day. It is still maintained by voluntary workers.

We walked next door – to the Government House Garden. We saw the Governor sitting patiently whilst being sculpted, but we discreetly averted our eyes and followed our guide round the garden with its spreading lawns bordered by mature trees and shrubs.

We then travelled by coach to Hamilton which is in the centre of the rich Waikato dairying area. We registered at the Ambassador Motor Inn and were delighted to find friends from France, Switzerland, America, Australia and New Zealand also there.

Saturday, 30th August, 1986

The Spring Festival and 1986 National Camellia Show was held at the Claudelands Showground, Hamilton and we arrived in the morning whilst judging was in progress. We were able to view the proceedings from the balcony and this gave a good opportunity to study the whole area before taking a look at the individual blooms on show. There were several floral arrangements – baskets and pedestals of Camellias and an enormous collage of a Camellia.

As soon as the judging had finished we went down to see as much as possible before the crowds arrived. The winning entries were superb, in particular, the Champion Bloom of the Show – Mr. & Mrs. Harry Cave's 'Pavlova' and the other award winners included 'Desire', 'Phyl Doak', 'Jubilation', 'Mini Pink', 'Wildfire' and 'Elegans Champagne'.

The Convention was opened officially in the afternoon by the Mayor, and it was a truly happy occasion. We were promised a surprise and we were all delighted when a birthday cake was presented to Col. Tom Durrant, Patron of the New Zealand Camellia Society and founder member of the International Camellia Society. Overseas visitors were given a special welcome and we were made to feel very much at home. Everyone was so kind and thoughtful and we were able to talk to many people. The only difficulty I experienced was in trying to pronounce and remember some of the New Zealand place names.

The Convention Dinner was held in the evening in the Waldorf Ballroom at the Claudelands Showground.

Sunday 31st August

We had a choice of three tours and I chose the Hamilton which included a most enjoyable river cruise followed by a coach drive to Southwell School where we were served lunch. It was a fine day and we sat outside basking in the sunshine before visiting several interesting gardens in the Hamilton area. All the gardens displayed really beautiful Camellias, in fact, every garden we passed seemed to have Camellias.

In the evening, we returned to Claudelands for another feast followed by the Annual General Meeting and presentation of Trophies. The retiring President, Pat Nelson was appointed an honorary life member and Jim Hansen was elected the new President.

Monday 1st September

A morning tour took us through the city, past Lake Rotorua to Hamilton Gardens and the University of Waikato Campus. The people of Hamilton are justifiably proud of these Gardens, a fine example of co-operative work between the Council and community groups. The gardens are well laid out and there are various sections including the Camellia Garden, Herb Garden and Kitchen Garden. Many visitors tour the gardens each year and residents can take advantage of the practical demonstrations on many aspects of good gardening. We returned to the Showgrounds and enjoyed our Farewell Lunch at the Waldorf and after many goodbyes to all our friends, we set off to visit the Magnolia Nursery run by Harry and Vonnie Cave's son, Peter. I was fascinated to see Magnolia 'Caerhayes Belle'. I had admired this at a London Show two years ago, now I found this was the very nursery which supplies the Burncoose Nursery in Cornwall.

We visited more gardens and lastly, the home of Jim and Heather Rolfe where there was quite a gathering of visitors enjoying a welcome cup of tea and other warming refreshments! Jim was the Co-ordinating Chairman of the Convention and thanks to him and his team we had enjoyed a very pleasantly well-organised weekend.

The following day, John, Nancy and I left Hamilton and drove to Tauranga. This was a most enjoyable journey through rich agricultural land, passing many deer farms. We called at a Kiwi fruit farm and sampled Kiwifruit wine which we found very agreeable.

We stayed at the Willow Park Hotel and so did the Australian party from



*President & Mrs John Tooby; Col. & Mrs Tom Durrant; Mrs Mayda Reynolds.
Rotorua, New Zealand.*

Queensland. Members of the local Camellia Society arrived with delectable food and we had a convivial evening.

We left Tauranga the following morning to travel to Rotorua to visit Col. and Mrs. Tom Durrant, but en route we called to see Ray and Suzanne Bambery, award winners at the Hamilton Show. We spent some time admiring their garden which was full of interesting plants including of course, beautiful Camellias, Magnolias and Azaleas. We were invited into the house for coffee and noted the lovely floral arrangements and the basket of Magnolia 'Iolanthe' from Pat Nelson's garden. We continued our journey and called on Mr. & Mrs. T. Lennard at Te Puke. Here we saw magnificent Reticulatas and grafted hybrids, 'Jean Pursel', 'Modern Art', 'Waltz Time', 'Jim Rivett', 'Samantha', 'Dona Herzilia de Freitas Magalhaes', to name a few. We were fascinated by the size of the blooms; some measured 18-20 cms and were so beautiful in form. There were also hanging baskets of C. 'Fragrant Pink' and 'Tiny Princess'.

We eventually arrived at Rotorua and we received a warm welcome from Colonel and Mrs. Durrant at their lovely home by the lake. The garden slopes from the house to the lake and is full of interest. There were so many superb Camellias some of them are featured in Colonel Durrant's book "The Camellia Story", for instance, 'Nicky Crisp', 'Bettie Durrant', 'Dr Brian Doak', 'Grace Caple', 'Overture', 'Prudence Shot Silk', 'Crimson Robe' and 'Valentine Day' and glorious specimens of 'Zhangjia Cha' ('Chang's Temple') and 'Juban' ('Chrysanthemum Petal') which had been imported from China by Colonel Durrant in 1964. The garden is richly planted with associate plants and effective ground cover. There was an impressive *Michelia doltsopa*, Magnolia Leonard Messel, Olearias, Daphne, Boronia, Hebes, Primroses, Muscari, Cyclamen, Hellebores in variety. Many plants were from China and are well established. We enjoyed our visit so much and will long remember the charm and kindness of our hosts.

John and Nancy left the following morning to continue their tour and I remained in Rotorua to stay with friends I had not seen for twenty years. I also visited our ICS Director Richard Clere and his wife Jean at Taupo, and again this was an interesting experience to see their Camellias and their Conservation project.

It is said that New Zealand, especially North Island, has one of the finest climates in the world for Camellias. Certainly, all the Camellias we saw were healthy and prolific in bloom.

Most of the people I have mentioned are members of the International Camellia Society, well known to those who attend the Congresses. We thank them for their hospitality and look forward to seeing our New Zealand friends in Naples, 1988.

The Camellias at Tregrehan in Cornwall

CHRISTIAN LAMB

(Reprinted by courtesy of the Editor of 'The Cornish Garden')

Les camélias de Tregrehan (Cornouailles)

Las camelias de Tregrehan en Cornualles

Le Camelie a Tregrehan in Cornovaglia

Die Kamelien in Tregrehan in Cornwall

The most detailed records of the plantings at Tregrehan are in the 1890s. G.R.G. Carlyon, known as Jovey, listed his trees and shrubs alphabetically and meticulously, and gives the date and place of planting. He mentions the Pheasantry, the Pinery, the Shrubbery and the American Garden, not known in the present geography of the garden, but identifiable by what he planted there. He refers to the nurseries or gardens where he bought or was given seed and plants and the price paid. James Veitch of Chelsea, Robert Veitch of Exeter, feature frequently, as do Dunns and Henry Hodge of St. Austell, T. Smith of Newry, Ireland, and others in Derbyshire, York and Edinburgh. He also refers to articles describing his purchases in the RHS Garden Magazine and Gardeners Chronicle by date and page which all make good reading.

In 1893 he bought from James Veitch for 3/6d *Camellia reticulata* 'Flore Pleno', now known as 'Robert Fortune' or 'Pagoda' and *C. reticulata* 'Captain Rawes', and planted them in the NW corner of the walled garden. He also records planting *C. sasanqua oleifera* on October 7th 1893. From Dicksons Nurseries, Chester, he bought Clarke's seedling, a single red camellia, 3' for 10/6, *C. Donckelarii* for 3/6 and *C. thea* and *C. thea viridis*; he notes there was an old camellia tree, over 60 years old. In 1894 from B.S. Williams of Victoria, London, he bought 12 *japonicas* for 60/-. These he says were introduced from Japan through Gerald Waller and he quotes p.119 of The RHS Garden of 10th February 1894. Of the 12 he bought, 'Lady McKinnon', 'Lady McCullogh',

'Nagasaki', 'The Mikado' and 'Taka-yama' are still in evidence today but of 'Gerald Waller', 'Hotoki', 'Lady Ardiaun', 'Mrs J Buchanan', 'Mrs Lade', 'Niphon' and 'The Daimio', there is no trace. Some of these very old plants which grow against walls at Tregrehan, have had to be cut hard back to prevent them pulling down the walls; one of these, C. 'Brownii Vera' died and this presented an opportunity to send a 'steak' of it to the Royal Botanic Gardens, Kew to determine its age. Dr David Hunt gave his opinion that it was at least 120 years old, and very likely older. This fits in with the construction of the walls which were finished in 1844. The girth of this camellia is 4'9"', another measured recently is 7'1"'. The oldest and biggest camellia of all is freestanding; it is C. 'Blackburniana' or 'Althaeiflora'; probably the one referred to by Jovey.

In William Carlyon's time about 1830, when Camellias were beginning to be known in England, Mr Chandler of Vauxhall, London offered 16 imported varieties of camellia and 19 of his own raised from seed. Edward Carlyon who inherited Tregrehan from his brother in 1841 would have had a choice of over 1000 cultivars offered by European nurserymen by 1861.

It was in 1960 that Gillian Carlyon, the late owner of Tregrehan, decided to experiment with camellia hybridisation. There were all the books of the last two centuries there in the library at Tregrehan to give her all the information she could absorb. The first step was to take cuttings of camellias likely to set seed. 'J C Williams', 'Juno', C. *saluenensis*, 'Alba Simplex' and 'Barbara Hillier' were chosen and as soon as the cuttings rooted they were potted up and grown on in conditions conducive to seed setting. From the start the greenhouse which housed the heated propagating bed was tightly sealed to exclude all insects, which might interfere with the pollination; the temperature was controlled at about 75°F, with the plants in full sunlight. They were liberally watered and to keep up the humidity the slate floor was hosed three times a day.

As soon as there were three or four buds on the seed parent plant, each one sufficiently developed was forcibly opened and emasculated to prevent self pollination; this was done with a sharp thumb nail before the stamens were mature enough to produce pollen. The stigma was then fertilised with the selected pollen, twice a day until the stigma began to wither; this was to ensure that the vital moment was not missed. It was noted that the longer a flower lasted the better the chance of a seed. The pollen plant was kept in the same greenhouse, and at the same temperature to ensure compatibility of ripeness of pollen. Each plant was labelled with all details.

During this period the pollinated flowers were enclosed in large polythene bags, into the neck of which was tied a lamp socket, fitted with a 60 watt bulb.

The seeds thus produced, were ready to plant when they became pale brown, and it was a matter of inspired guesswork when to open the pod. The seeds germinated much more readily if they were sown immediately; seed that has been left to spill out naturally takes much longer as they have a very hard coat.

The seeds were sown in vermiculite to facilitate removal for examination. Every week the seeds were dug up and those with a tap root longer than three inches had this cut to 2½" with a razor blade to encourage lateral roots and were then returned to individual 3" pots of pine mould and coarse sand. These pots were put into containers and plunged in the greenhouse propagating bed, which was kept at a constant 70°F. The whole was covered with wire netting to discourage mice, which are much addicted to Camellia seeds.

As soon as the tiny top shoots appeared, 100 watt bulbs were suspended 3' above in a standard reflector. The whole bed was enclosed in polythene to keep the temperature up to a constant 65° by thermostat and to extend daylight; this also ensured a high humidity. Some of the seedlings grew 4'' in a month. Once a week they were given a feed of 1/4 teaspoonful of Wellgro and 1/4 teaspoonful of Urea to a gallon of water, which was sprayed on to the leaves. They were watered very thoroughly once a week to remove excess salts.

As the plants grew their tops were pinched out to make them bushy, as buds would be more likely on lateral branches; wounding artificially low down on the main stem was another trick for the same purpose.

During the years between 1960 and 1970 hundreds of seeds were produced in this way. The earliest flower appeared in three or four years and by 1972 Gillian Carlyon considered 10 worth naming and registering. There are now 19 in the current catalogue.

Two white camellias surprised their raiser: 'China Clay' (*saluenensis* × 'Marjorie Magnificent'), an exceptionally fine semi-double flower said to be more resistant to wind and weather than some other white camellias. 'E T R Carlyon' ('J C Williams' × 'Adolphe Audusson') called after G C's father, a wonderful begonia like semi-double, which blooms very late in the season. William Carlyon ('Juno' × 'Donation'), named after the ancestor who planted the garden in the first quarter of the 19th Century, is a large hot pink single flower, a winner with many of the attributes of its parent 'Donation'. 'Gwavas' ('J C Williams' × 'The Mikado'), another late flowerer, a vivid pink formal double, was called after Lady Meinertzhagen, Jovey Carlyon's sister, who looked after Tregrehan after he died and until E T R Carlyon took up his inheritance in 1935. 'Edward Carlyon' (*saluenensis* × 'Adolphe Audusson') has been described as a kind of weeping 'Donation', but it is a deeper pink. 'Tregrehan' (*saluenensis* × 'Marjorie Magnificent') is a rather cup shaped flower of apricot pink. These are a few of the Carlyon hybrids.

Tracing the origins of some of the old camellias at Tregrehan, G C received letters from a great many interesting people. Among these was Professor E G Waterhouse of Sydney University in Australia, President of the International Camellia Society, one of whose special interests was the old varieties of camellia and he was delighted to hear of the many growing and being propagated at Tregrehan. 'Aspasia' for instance was described in R Mercatelli's list from Florence in 1881 as 'vivid carmine rose, centre lined white, imbricated'. This tallied with the Tregrehan 'Aspasia' and G C sent him some cuttings. He replied by telling her of Sir William MacArthur of Australia who had raised seedlings, sometime before 1850 and called one of them 'Aspasia' not knowing of the European one; his is now known as 'Aspasia MacArthur', and is described as 'white to cream white with a few rose lines and dashes'.

Spring and the Camellias in Bloom at Lake Maggiore and Lake Ortensee 28th March to 5th April, 1987

FR. A. VOGEL

Printemps et camélias en fleurs au lac Majeur et au lac d'Ortense (du 28 mars au 5 avril 1987)

Primavera y las camelias en flor en los lagos Maggiore y Ortense, 28 de marzo-5 de abril de 1987

Primavera e Camelia in fiore sul Lago Maggiore e sul Lago di Orta - dal 28 marzo al 5 aprile 1987

Frühling und die Kamelien blühen am Lago Maggiore und am Ortasse 28. März bis 5. April 1987

28th March:

We arrived at the hotel on Lake Ortensee after a pleasant, sunny trip via Basle, St Gothard, Bellinzona, Locarno and Brissago. When we had gone through the St Gothard tunnel, and saw all the snow, we couldn't really see the camellias blooming as expected. However, shortly before reaching Locarno we could see, with great pleasure, the first camellias in bloom. Apart from camellias, we also saw primroses, begonias and mimosa in bloom. We saw beautiful parks and gardens and got a taste of that which awaited us. The hotel was very well situated on the Ortensee.

29th March:

We visited the "half-island of Orta" in beautiful sunshine and then travelled to the monastery at Mesna. There we saw the monastery gardens which are over 100 years old, and which were full of white camellias in bloom. We spent the afternoon walking round the romantic and scenic Orta. We then travelled by boat to the Island of St Giulo. The sight of this island in the evening light was like a theatre scene.

30th March:

Visit to the Parco Cummunale Burcina in Pollone, previously under private ownership, now open to the public and still in its natural state. The park was founded in the middle of the last century by Giovanni Piacenza, and lies 600-833 metres above sea-level and, with an area of 50 hectares, is the largest park to be found south of the Alp region. It is laid out in the English style, i.e. in a natural way, so it fits into the environment very well. It contains numerous shrubs, (azaleas, rhododendrons and hydrangeas), many types of trees and also several camellias. The size of the park was also very impressive, especially in connection with the beautiful surrounding countryside. Roughly 1000 examples of different types of rhododendron in about 140 shapes and sizes were planted in one area. Apart from the shrubs already mentioned, the park contains exotic trees which have grown very tall, and with the wild areas it has a very special appeal. One

could visit this park time and time again without ever being bored. Finally we visited the “mini-tree” school called Piacenza and situated in the park, it is led by Dott: Guido Piacenzo and has many special plants including the ‘honey palm’, which is very rare in Europe.

31st March:

We then visited the Villa Taranto Park in Pallanza – also in beautiful sunshine. This day was also a high-point. The park was laid out in 1931, a first class gardening treat for the eyes. It contains over 1000 different plants with a special collection of rare trees, some of which are unique specimens of their type in Europe. The park has been adapted with great artistic understanding and appreciation of the surrounding landscape. You could spend many happy hours here as well. The Spring had not quite emerged here because of the long, hard winter. After this, we visited the Hillebrand nursery, a family business in Pallanza on the picturesque slopes of the Bay at Barenno. The nursery has many “parent-plants” here, already in full bloom. Especially worthy of mention are the *C. reticulata* ‘Valentine Day’, whose blossoms measured 15-20 cms across. Other *C. reticulata* and *C. japonica* were also in full bloom. Different types of ‘Higo’ were rich in both number, form and colour. There was an excellent specimen of white shrub, which was over 100 years old and as high as a house. The ‘camellia fever’ was rising high! It is not very easy to care for the land because of the slopes. In addition to that, the land is shaded from April, otherwise it would lie directly in the sun. The fact that the area is right by the sea has a marvellous effect. Finally we travelled on to Giardino Alpinia (700 metres above sea level) and over Stusa, which unfortunately we couldn’t see because it was still covered with snow. From here we had a unique, panoramic view over Lake Maggiore to the foothills of the Alps, and could see right to the Po plateau.

1st April:

A further high point for the ‘camellia friends’ was the visit to the Floricoltura Lago Maggiore in Cerro di Laveno – a private garden with an area of 6-7 hectares devoted to camellias. The plants are particularly large and well cared for, and the hearts of the ‘camellia friends’ were beating especially fast here. Next to the camellias there was a rich assortment of azaleas and rhododendrons, and the whole concern is very well looked after. Especially worth noting is the large number of plants with very beautiful blooms - in particular *C. japonica*, *C. reticulata* and hybrids, and a very beautiful assortment of *C. sasanqua* and Higo.

The assortment is organised to current requirements – large blossoms of white, pink and dark red. A further assortment consisted of ‘test plants’ from the U.S.A. and England for propagation (breeding) (delicate colours and small buds) which are being tested at present. No organisation could have been more tastefully laid out. The camellias are at home here with the beautiful views of the mountains and the sea. Many young plants were also in full bloom in the green houses. We were all very pleased with the presents we received as we left – a camellia plant and a catalogue. None of us will be able to forget this beautiful park very easily. The trip went on – next stop Varese to look at two typically Italian parks with precisely-trimmed hedges and solitary examples of different types of trees and shrubs. It would be going too far for each of us to describe each visit to each park. We were continually impressed by the size and number of large

trees and shrubs, for example *Magnolia grandiflora*, different types of cedar, and giant Redwoods, (an example of the Atlas cedar with a circumference of over 10 metres).

2nd April:

Departure from the hotel on the Ortensee and the trip along the pretty Panoramastreet in the Lake Maggiore area. Dr Sevesi, Vice-President of the Italian section of the ICS, and an ICS member, Mr Fritschi from Zurich were waiting for us there. We visited the private camellia garden of Lady Annaly. It was very interesting to see the numerous, very beautiful and well cared for collection of camellias, some of which, again, were over 100 years old. Before leaving we drank an excellent Italian wine together in her house, and at this point I would like to thank Lady Annaly very much for her friendly reception and hospitality. We then went on to Brissagio, and from there, travelled by boat to the as yet unopened botanical gardens of Isola Brissagio. Here we could marvel at the richness of the shrubs and trees from different corners and climatic zones of the world, all under the supervision of Prof. Franscella, Dr Edwin Frey and the gardener, Mr Albrecht. Even here, the plants had been partly damaged by frost over the last three years. Of the rare varieties, we should mention the *Franklina alatamaha* which died out in 1790 in Georgia (USA). It blooms from July until August and the petals fall off and turn white. From 100 seeds, only 10% germinate; the plant is closely related to the Theaceae family.

3rd April:

In the morning we visited the Eisenhut garden in S. Nazzaro/Tessin. Here we could buy as much as we wanted to, which is in fact what happened. The trip went on to Vico Morcote to see the collection of botanical rarities, especially the flowering camellias and magnolias of Sir Peter Smithers. Here, too, we were amazed by the richness and the good condition of the plants. The way in which the plants were laid out along the slope of the hill, so as to form terraces, is well known. In spite of the rain, the day was enjoyable.

4th April:

The crowning close to this wonderful trip was the Camellia Exhibition at the Hotel Esplanade in Locarno, with hundreds of flowering blooms. We would especially like to thank Mr Fritschi for his efforts and organisation, which enabled the show to take place. After a lovely lunch, we started to head for home, all of us full of comments on how friendly our reception had been. I should stress that the visits to private gardens were only possible due to the hard work and contacts of Mr Reif.

I would also like to thank him for the preparation, searching and photo-copying of specialist literature for each member of the group; as well as the introductions to the botanical, historical and cultural aspects of the places we visited. He also showed us where to find the early spring flowers of the Southern Alps: *Erythronium denscansis*, *Leucojum vernum*, *Primula acaulis*, *Crocus vernus*, *Viola odorata* and *Scilla biflora* (narcissus, primroses, spring crocuses, violets and 'blue stars').

Conclusion

The trip consisted solely of high points, especially as the group got on so well together. I am already looking forward to a repetition of this excursion, perhaps in the next few years.

Packing Blooms for a Show

ANNABEL FETTERMAN

L'emballage des fleurs pour une exposition

Embalando flores para una exposición

Come impaccare i fiori per una mostra

Verpacken von Blüten für eine Ausstellung

Each person interested in the camellia hobby wants to have the loveliest blooms to show or share with a friend. You know that those blooms are often damaged so badly before they get to their destination that they could not possibly win a prize. What a pity. If you are like me you've dropped one occasionally and it fell flat on its face. Oh how bad I felt. If crying would have helped, I'd have done it. There are lots of ways to damage blooms and we want to help you get your flowers to a show in the best possible condition.

First, you must care for your plants all year with adequate water - do not let them dry out but they do not like to be water-logged so care must be taken to keep them about right. You will fertilise with cottonseed meal or your favourite slow release fertiliser applied as soon as the blooming season is over. A little liquid fertiliser is good occasionally also. We add some super phosphate and seaweed meal once during the summer. A good pruning is in order, too. We prune all year as we cut blooms and are disbudding, we cut out any inside branches to let light get to the centre - this means less places for insects and scale to hide. As soon as buds are large enough to distinguish between flower and growth buds, usually early June in our area, we begin disbudding so that the remaining buds have plenty of room to develop and bloom. Disbudding continues until blooms open because buds keep appearing. Too many buds left on a plant results in smaller blooms which is O.K. for miniature varieties but not if you want the best blooms on large to very large varieties. Remember to check the leaves and branches of your plants occasionally for insects. We spray only if and when needed. Some folks like to use preventive sprays and if you have found that this works better for you, don't change. In fact, in caring for your plants, do what gives you good results. Not many people care for their plants exactly like someone else.

One more thing, do you use Gibberellic Acid for better, bigger, earlier blooms? We could not have fall shows without Gib. We find it gives us more blooms for our early shows. We have our best blooms in the fall. We will attend about 5 shows in the fall and about 6 in the spring. We start about 6 weeks before the first fall show which is about October 25 - so Gibbing would begin about Labor Day (early September). We Gib one or two buds on the plants with the plumpest best developed flower buds. A week or 10 days later we go over our plants again treating one or two plump buds on selected plants. Some are on the same plants as before and some on completely different plants. We do the *same* again for the third time. Twist out the growth bud next to the flower bud and

this will leave a tiny cup on the flower stem. Place a drop of Gib solution in the little cup. Three days later you will notice that the flower bud has elongated or begun to swell. From then on let nature take its course. The bud may continue to develop and open within a month or it may sit there for a couple of months before deciding to bloom. That's what is so interesting about this hobby. The uncertainty, the surprises, the excitement of seeing a lovely bloom unfold - it usually takes several days for a Gibbed bloom to open fully. Now you are ready to have some great blooms for the show you are planning to attend.

This is it. Cutting the blooms you've been grooming on the plants the past four to six months. You go out to the greenhouse or the garden early in the morning or late in the evening - both times are excellent. I think I prefer early morning because in the early morning light blooms have a special sheen not seen at other times. Preparing blooms for a show is one of the most interesting phases of our camellia hobby.

Now to cut the bloom at the right moment - not too soon, not too late. I like to cut the bloom just before the flower reaches its peak. This is sometimes difficult to decide - I like to cut them just before the pollen sac has burst. How can you tell that the pollen sac has burst? If in doubt, touch it lightly with a q-tip. If you have pollen on the q-tip, it has burst. I sometimes waiver - shall I cut it now or cut it tonight. A really good flower with lots of substance, good form and colour will hold up better than a more fragile looking bloom with slender delicate petals. The latter may not last till show time no matter when you cut it. Usually you get your best blooms on a healthy looking vigorously growing plant.

Early in the week before a show I carry two or three containers with me to the greenhouse. We use sweater boxes which are clear and measure about 12" × 15" × 6½". Two of these slide on to one shelf of our camellia refrigerator. Altogether it will hold six. The flowers rest on about 2 inches of Easter grass or poly fiber in the bottom. I place 2 or 3 blooms in a box depending on the size of the blooms so I have placed 2 or 3 jelly cups in each box. These little cups are filled with a wad of cotton saturated with a floralife solution (using 1 teaspoon floralife to 1 quart of distilled water) as I very carefully cut the bloom, I place it in the cup in the box immediately.

Those with a rosebud centre, like Helen Bower or Rosea Superba are placed in the box above the little cup, but the stem does not touch the water or cotton in the cup. This seems to prevent the rosebud from opening further. When we get to the show, we trim the bottom of the stem a tiny bit before placing it in the cup so it can take up water. The bloom may look a little less than crisp, but the water will freshen it. We have also used rather warm water in the display cup to freshen a bloom that looks a little tired.

I know that to touch a petal, bump the bloom or drop it - is really the kiss of death for that bloom. I have a little kit that I use and then take it along to the show. It contains q-tips, finger nail scissors, clippers, cotton wads, pencil, extra entry cards - all the things I use to groom a bloom. Q-tip to remove a speck of pollen or a drop of water, clippers to trim the stems. Before putting the boxes in the refrigerator, an entry card is completed for each one and placed inside the box. I handle each bloom as little as possible and as carefully as I can. I make sure they do not touch the container or each other in any way. Sometimes I put little pieces of cotton or poly fiber among the petals of an extra large bloom. This helps keep the petals upright in the refrigerator and during the long ride to a show.

To keep the flowers fresh, we have tried NAA, potato whitener, a grape on each

stem, 7-up and some other solutions, but find floralife works well for us and is easy. I mix a quart at a time and keep it in the refrigerator filling the little jelly cups as I need them. Lew has the local restaurant save these little cups for him. He's really great at finding me the things I decide I need for our flowers.

Two of our really good blooms will go in one of these boxes. Occasionally a box will hold only one very large bloom. Sometimes a box holds three blooms. Perfect, no flaws, each one beautiful, but not large enough to win a show. No matter, a flawless bloom is what really matters.

When blooms are placed in the box in the greenhouse, they are not removed from the box until we get to the show. The boxes are carried to the work room where we have excellent lighting and they are inspected for imperfections, pollen, dust specks. Then an entry card is completed for each bloom and put inside the box. The lid is taped shut with 1½ or 2 inch masking tape so the refrigerator will not draw the moisture from the blooms. These are not opened until we get to the show. These boxes fit nicely in the refrigerator to wait for loading in the car. Six boxes fit in our refrigerator reserved for camellias, three more boxes will go in a smaller refrigerator we have in the work room. We add a box or two a day sometimes - depending on how fast blooms are opening.

A really good flower with good substance, size, formation, color - we count on holding up well for 3 or 4 days. Not longer than a week - that's iffy. Sometimes yes, most times no. Our winners are usually cut the morning of the show or the day before.

The morning of the show, Lew and I get up at 6 o'clock or 5 or 4 or 3 in the morning depending on how far it is to the show. For a few, like Masee Lane, Georgia (9 hours) and Jacksonville, Florida (7 hours) we leave on Friday afternoon to drive to the destination; stay overnight, get up refreshed - ready for the show.

Lew puts a 2' foam rubber mat in the trunk of the car and covers it with blankets. He takes the boxes carefully from the refrigerator and places them neatly in the car. In and around the boxes, he adds containers of ice to help keep the temperature constant. Then blankets are placed on top and wrapped around to keep the boxes from shifting and to prevent a sudden change in temperature. We've removed the ice when we stop overnight if the temperature seems cool enough. Blooms will freeze in the car at night when there is a rather sudden temperature change.

Then we're off to the show to see old friends and make new ones. Entering blooms in shows is a joint effort. Lew is the best "toter" you ever saw. When we get to the show, he carries all the boxes of blooms in to the staging area and my job is to get them entered in the show without a blemish. When placing one on a tray, I carefully pick a bloom up by a leaf sticking out from under the flower petals. Set in a cup and groom it if it needs it. As the blooms are put out, Lew removes the empty boxes and loads them back in the car. When all the blooms have been entered, we visit with friends until the show opens or help judge if we have been requested to.

O what a sight to see all the blooms on display at a show. I never fail to be amazed at all that loveliness. So pleased that our blooms help add a little to that breathtaking sight!

Camellia Show - Locarno

WERNER FRITSCHI

Exposition de Locarno

La Exposición de Camelias en Locarno

La Mostra della Camelia - Locarno

Kamelien-Ausstellung in Locarno

About two years ago I had considered organising an exhibition of camellias in the South of Switzerland (Ticino) in the Italian speaking part of our country. North of the Alps, in the German speaking part of Switzerland, camellias do not flourish outside and are not known very well. Therefore, in the Southern part camellia lovers are working together with the Italian group (Dr. Sevesi). I personally have had several meetings with Dr. Sevesi regarding an exhibition, as he has been organising a number of camellia shows in Italy for many years.

This Spring (February) my gardener in Ticino informed me that the Hotel Esplanade in Locarno would be agreeable to hold a camellia exhibition. It is an excellent hotel with beautiful parklands. I then informed Antonio Sevesi and we had a meeting in the Esplanade Hotel together with two well known gardeners, Tomi Gnehm of Munisio and Otto Eisenhut of San Nazaro. We decided to organise and hold the first camellia show in Locarno at the Esplanade Hotel over two consecutive weekends – 28/29th March and 4/5th April; we were able to do this with the kind help of the Italian gardener Carmine from Cannero and several people with private gardens, and eventually the show took place.

We exhibited 80 plants, and about 300 different flowers were on display; in addition we organised an exhibition of original water-colours by the Swiss painter Remy Durrer, also artistic prints and old lithographs by L. Strobant (1857) and 1848. The visitors were also able to watch a video programme which I had prepared for this event. As we had no promotional budget, and Locarno is a small city, we only had about 1,000 visitors a weekend but they all seemed to enjoy it and we were satisfied that the exhibition was a success.

Now we are planning for next year, together with several groups in Ticino who seem to be interested. What I personally have in mind is to organise a similar camellia show in a bigger city in the North of Switzerland or in Germany, perhaps in 1989 or 1990.

Some Camellia Fallacies!

TOM DURRANT

Quelques erreurs sur les camélias!

Algunos conceptos erróneos sobre las camelias

Alcune false nozioni sulle Camelie

Fehlannahmen über Kamelien

There is probably no other subject on which more is written and published, than on gardening and horticulture in general. The never ending stream of books shows no signs of diminishing and, since one rarely hears of publishers going broke, presumably they are all sold. A recent catalogue, issued by the R.H.S. Bookshop at Wisley, lists over 2,000 titles currently available. While it includes some serious historical, scientific, and technical works, many are better described as popular; to be read as entertainment, rather than as sources of reliable information. In researching literature on almost any subject, it quickly becomes apparent that errors and misquotations are repeated by subsequent authors until, eventually, they are accepted as established fact, and become increasingly difficult to refute. In this way something which may have been mere speculation on the part of the original writer, acquires the status of revealed truth! Unfortunately, popular camellia literature has plenty of examples of this.

In China and Japan camellias have been written about for centuries, and a great canon of specialist literature has emerged in the Western World; starting, it would seem, with 'A Monograph of the Genus Camellia', written by Samuel Curtis, and published in London in 1819. In almost all European, 19th century writing, cultural directions are concerned solely with greenhouse cultivation since, with the exception of the Atlantic coasts of Spain & Portugal, parts of Italy, and a few favoured areas such as Devon & Cornwall, conditions for camellia survival in Europe were considered marginal. The 20th century revival of interest has inspired an enormous quantity of specialist literature. The late Ralph S. Peer once wrote to me; 'Next to growing them, camellia lovers like reading about them'; - he was certainly right. In 1946, Dr. H. Harold Hume published his 'Camellias in America', which achieved a second edition in 1955 and, together with his shorter 'Camellias' (1951), has long been regarded as a standard, scholarly work on the subject.

Since 1946 there has been a continuous stream of camellia writing: the American Camellia Society has contributed no less than 41 volumes; other specialist societies have produced yearbooks, journals, and periodicals to an immense total, and many camellia books have appeared in Japan, China, U.S.A., Britain, Australia, New Zealand and more recently in France. As in the 19th century, much of the writing has been done by authors whose experience is confined to areas where conditions are marginal, and a great deal of attention is given to container cultivation. This is more or less essential in areas with alkaline soil and water supplies; where temperature ranges are extreme; and

where periods of very low humidity occur. It is well to understand that cultural directions given under these conditions, do not necessarily have universal application; and qualities attributed to various species and cultivars, may be no more than the plants' reaction to the marginal conditions, in which they may be struggling to survive.

Throughout popular literature, certainly since 1959, one finds the constantly repeated statement that camellias are surface rooting plants, and all the cultural directions given are based on this quite incorrect assumption. Here are some of the things which are said:

'The roots of the camellia are fine, fibrous, and densely crowded; they are neither adapted to, nor is there any need for them to grow far from the plant and deep into the subsoil. For like rhododendrons ... camellias are among those plants which form a rootball, a dense and stable mass of top soil, held together by the system of fibrous roots; this makes it easy to transplant them at any age ...'

'Camellia roots probe for yards just below the soil surface, seeking out food, and because the roots are close to the surface, they are vulnerable to all sorts of abuse from spades, forks, hoes, fertiliser, and weedkiller. Spare a thought for your camellia roots.'

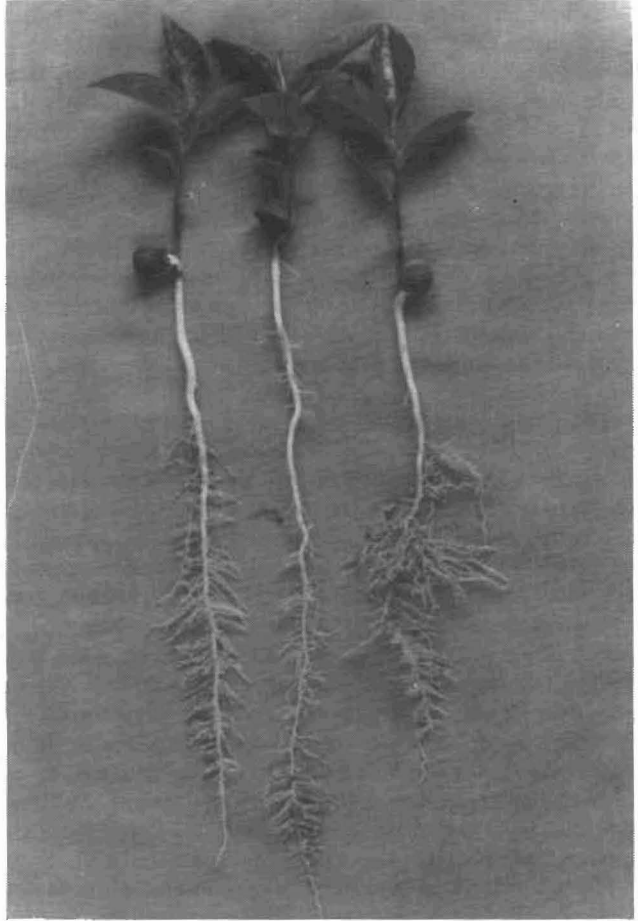
'Deeper tree roots are rarely a problem, for camellias are essentially surface rooters. They do, however, resent undue competition from heavy plantings of ground cover.'

'... they have developed a wide network of fibrous, surface roots, which gather moisture and nourishment almost entirely from the airy layers of forest mold which blanket them. That is why camellias are easily killed by deep planting ... Exposed roots can always be covered with a natural mulch of leaves, but deeply buried roots must always be lifted and reset, before they suffocate.'

The late Dr. B. W. Doak, a soil scientist of international reputation, and one of New Zealand's earlier, successful camellia hybridists, wrote the following in the *New Zealand Camellia Bulletin* Vol. I., No. 6., dated July 1960:

A fallacy that has gained considerable credence in recent years, is that camellias are by nature surface rooters. Some writers have even gone so far as to say that camellias do not form taproots, even when grown from seed. This is quite untrue. Even with cutting grown plants, heavy secondary taproots are formed, provided that drainage is good, and the subsoil is not virtually impenetrable by roots. Even in quite heavy, clay subsoils, camellia roots will go down to a considerable depth, when drainage conditions permit.

An unqualified statement that 'camellias are surface rooters' is simply not true, and there is no resemblance whatever between camellia and rhododendron root systems, as anyone who has grown seedlings of both genera will be aware. Camellia seedlings, of all species, put down long taproots, as shown in illustration on page 63. Eric Bodley grew these *reticulata* seedlings for us in sand, so that the roots could be extracted without damage. They were photographed 4 months after germination, when the height of the top growth averaged 8 cms., and the taproots (left to right) were 30, 34 & 28 cms. respectively. Seedlings of all species have similar root systems. When germinating camellia seeds, it is customary to pinch off the tip of the radicle, or taproot to encourage



Camellia taproots

Photo: T. E. Bodley

a branched root system, and this is usually successful, if only to a limited degree. In our experience, however, once the seedlings are in the open ground, they quickly develop strong, secondary taproots which may penetrate to a considerable distance. Cutting grown plants do the same, as Dr. Doak claimed.

Some general comment on root systems is, perhaps, advisable. They must be able to provide adequate moisture and nutrients, to enable the leaves to carry out their vital function of photosynthesis; they must provide a firm anchorage in the ground, against very considerable wind pressures; and their growth must keep pace with the developing size of the plants they support. Some genera may have highly specialised root systems, such as do the epiphytes which occur in rainforests, but those with a wide range of geographic distribution, need to be able to adapt to the almost infinite variety of soil and subsoil conditions in which they may find themselves. Unlike deciduous trees, which have long dormant periods, the roots of evergreen plants have to provide moisture for leaf transpiration throughout the year, and this imposes severe restrictions on what can be done when moving them.

Some trees and shrubs can adapt themselves so quickly to exploit a casual advantage which offers itself, that one could be forgiven for thinking that they are capable of making informed decisions! In 1965 we repotted some dozen or so camellias into 1 gallon cans, and placed them in a shadehouse which had concrete base walls, and some 10-12 cm of fine gravel on the floor. Two months later, when attempting to move them, they were found firmly fixed to the floor. Camellias in containers which are left standing on the ground, frequently send tap roots down into the soil below, and we assumed that this had happened, even though it was surprising that it had occurred so quickly. Investigation showed that the reverse was the case, and the containers had been invaded from below. About 15 metres away, there was an *Acer saccharinum*: roots from it had penetrated beneath the concrete footings of the shadehouse walls, and homed into the drainage holes of the containers, coming up through the gravel layer on the way. This happened during a prolonged dry spell, when the overhead sprinklers in the shadehouse had provided an area which had ample moisture.

There is some scientific evidence which demonstrates that camellia seedlings are genetically programmed to penetrate deeply into the earth, since they are positively geotropic. (The Shorter Oxford Dictionary describes positive geotropism, as the tendency of some roots to grow towards the centre of the earth.) On germination, the emerging radicle, or taproot, travels vertically downwards (see photo, page 63), and we have had a quite remarkable example of the extraordinary strength of this tendency. A number of reticulata seeds had been layered in wet sphagnum moss in a large glass jar, which was then placed in the family hot water cupboard, and left to germinate. After a period of several weeks, the jar was found to have fallen on its side. The seeds had germinated, the radicles had grown vertically downwards, and travelled some 8-10 cm before the jar fell over. At this point, all the growing tips turned sharply through 90°, and continued their journey towards the centre of the earth! Somewhat startled by this phenomenon, we restored the jar to its upright position, and within a few days, the growing tips again turned through 90°, to resume their original direction. We have repeated this experimentally on a number of occasions, and with different camellia species - the result is always the same.

Plants which are deeply rooted have a considerable advantage over those with shallow roots. The latter can suffer rapid changes of temperature: in extreme cold conditions, roots can be frozen with fatal effects, and in dry periods, they are the first to suffer from drought.

It is interesting to note that many writers comment on the fact that camellias appear to be drought resistant - the reason is obvious - they have deep roots which are capable of fetching up the necessary moisture from below. Our experience shows that, during prolonged dry periods, when rhododendrons, and other shrubs, obviously need watering, our established camellias continue to make secondary new growth, which they certainly could not do, if they were short of moisture.

And how deeply can camellia roots penetrate into the ground? The answer is, of course, that this depends entirely on the situation. Camellia roots are highly adaptable: in containers, they quickly fill the available space with a dense mass of roots; and in situations where the water table is high, or where the soil overlays rock or other impenetrable material, roots may travel horizontally for considerable distances. Roots can only take up nutrients in solution, and it follows that free drainage must result in a constant, downward leaching of plant food. The extent to which this occurs, depends on

the depth and porosity of the soil, and the amount and distribution of the rainfall. In many parts of New Zealand, the soil is of volcanic origin; much of it pumice, which provides sharp drainage down for many metres. Our experience in these conditions, is that all camellias, which have been in the open ground for 4 or more years, will have formed heavy, secondary taproots, and will have no feeding roots anywhere near the surface. Recently, our local District Council, in its wisdom, decided to run a main sewage feeder line across our garden. The trench was 2.2 metres deep, and passed within a metre of the trunk of a large camellia, which had been in position for 17 years. Camellia roots were clearly visible at that depth.

Whether or not camellias are basically surface or deep rooting, is not merely of academic interest, since, in much popular literature, cultural directions are based on the former assumption, and may be quite incorrect in many situations. So far from being 'easy to move at any age', attempts to move established plants may result in the loss of most, if not all, feeding roots. It is then absolutely essential that the plant be pruned back to compensate for the missing roots. In extreme cases, this may involve cutting back almost to ground level. Fortunately, camellias are blessed with an extraordinary will to live, and survive even such severe treatment.

Popular writers warn us against surface cultivation, ground cover plants, and surface rooting trees, such as silver birches, maples, and magnolias. In areas where soil and subsoil conditions compel camellias to keep their roots close to the surface, these warnings may have some validity - otherwise they do not. We grow established camellias very successfully, in close association with all three of the trees mentioned, and ground cover is used as a matter of course. In many recent books one finds the statement, usually attributed to an anonymous expert, that more camellias die from deep planting, than from any other cause. The reason given is that the roots will suffocate, but nowhere is one told how deep is deep, or in what soil type this comment is valid. It seems logical that, when transplanting, original soil levels should be maintained, and we always do this, but the camellia roots at the bottom of our 2.2 metre trench showed no signs of suffocation, and were supporting a fine, prosperous camellia! The recent English edition of 'The Yunnan Camellias of China' goes into considerable detail about cultivation, and not only do the Chinese omit any reference to camellias being 'surface rooters', they recommend that planting holes should be prepared to a depth of 1 metre.

Another camellia fallacy which, undoubtedly, owes its origin to the behaviour of plants struggling to exist, is the often repeated warning about the risks of pruning *Camellia reticulata*. One is told that reticulatas will not grow away again if they are pruned back beyond a developed growth bud; some writers even assert that the plant will die if heavily pruned. This is entirely contrary to our experience in an area where reticulatas thrive. When plants outgrow their allotted space, or begin to deprive others of light, we customarily cut them back to a bare framework: leaving no leaves, and no growth buds. This is done before new growth begins to appear in the early Spring, and it may be necessary to do it while the plant is still in flower. Adventitious buds appear within a few weeks, and growth from them, throughout the season, is usually extremely vigorous. We have recorded single shoots which have grown over 120 cms in a single season, and developed growth buds in every leaf axil.

The following season, again just before growth commences, surplus shoots are removed, to avoid overcrowding, and the very long ones shortened back to a developed growth bud, pointing in the right direction. Some flower buds occur on the first season's

new growth, and normal flowering is resumed in the following year. We have done this successfully, not only on reticulatas like 'Purple Gown', 'Crimson Robe', 'Chrysanthemum Petal', and 'Chang's Temple', but also on japonicas, sasanquas, and many species and hybrids.

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Cold-Resistant (C-R) Camellias An Expedition Through the Literature

DR. LESLIE STANKLER

Camélias résistant au froid (C-R): exploration documentaire

Camelias resistentes al frío (C-R): una averiguación en la documentación

Camelie resistenti al freddo (C-R): una spedizione nella pertinente letteratura

Kältewiderstandsfähige Kamelien (C-R): Eine Reise durch die Literatur

Unlike the expeditions of the great explorers, Robert Fortune and George Forrest, which took them on dangerous missions through China, my expedition took me into the literature whilst sitting in an armchair by the fire.

Having little practical knowledge of Camellias, my journey was taken in order to obtain information on the choice and management of these plants for Aberdeen, a cold city in the North East of Scotland (winter temperatures commonly drop to -12°C).

The following books and journals were used:

1. International Camellia Journals, 1984, 1985 and 1986.
2. American Camellia Journal, 1949.
3. "You can grow Camellias", Mary Noble and Blanch Graham, Dover Publications, NY, 1976.
4. "How to grow and use Camellias", D. E. Clark, Oak Tree Press, London and Melbourne, 1966.
5. "Camellias", Wisley Handbook, 37, R.H.S., D. Trehane, Cassell Ltd., 1985.
6. "Camellias", Aura Garden Handbooks, Ed. Maggie Daykin, 1985.
7. "Camellias", E. B. Anderson, Blandford Press, London, 1961.

I have graded the Camellias according to the number of times they are recommended in the literature (Table 1), according to species (Table 2), colour (Table 3), time of blooming (Table 4) and flower type (Table 5).

Table 1

C-R CAMELLIAS : GRADED ACCORDING TO FREQUENCY OF TIMES
RECOMMENDED IN LITERATURE (NUMBER IN BRACKETS)

1. Donation (9)	11. Anticipation	21. Christine Lee (3)
2. Donckelarii (9)	12. Berenice Body	22. Citation (3)
3. Tricolor (8)	13. Blood of China (4)	23. Finlandia (3)
4. Elegans (7)	14. Cornish Snow (4)	24. George Blandford (3)
5. Inspiration (7)	15. Freedom Bell (4)	25. Gloire de Nantes (3)
6. Adolphe Audusson (6)	16. Jupiter (4)	26. Latifolia (3)
7. J. C. Williams (6)	17. Kumasaka (4)	27. Mary Christian (3)
8. Lady Clare (5)	18. Bow Bells (4)	28. Mercury (3)
9. Leonard Messel (5)	19. Bowen Bryant (3)	
10. St. Ewe (5)	20. Brigadoon (3)	

Table 2

SPECIES OF C-R CAMELLIAS

<i>Williamsii Hybrids</i>	<i>Japonica</i>
Donation (9)	Donckelarii (9)
Inspiration (7)	Tricolor (8)
J. C. Williams (6)	Elegans (7)
Leonard Messel (5)	Adolphe Audusson (6)
St. Ewe (5)	Lady Clare (5)
Anticipation (4)	Berenice Body (4)
Cornish Snow (4)	Blood of China (4)
Freedom Bell (4)	Jupiter (4)
Bow Bells (3)	Kumasaka (4)
Bowen Bryant (3)	Christine Lee (3)
Brigadoon (3)	Finlandia (3)
Citation (3)	Gloire de Nantes (3)
George Blandford (3)	Latifolia (3)
Mary Christian (3)	Mercury (3)

Table 3

COLOUR OF C-R CAMELLIAS

<i>White</i>	<i>Pink</i>	<i>Red</i>
Cornish Snow (4)	Donation (9)	Donckelarii (9)
Finlandia (3)	Elegans (7)	Tricolor (8)
	Inspiration (7)	Adolphe Audusson (6)
	J. C. Williams (6)	Anticipation (4)
	Lady Clare (5)	Freedom Bell (4)
	Leonard Messel (5)	Jupiter (4)
	St. Ewe (5)	Gloire de Nantes (3)
	Berenice Body (4)	Mercury (3)
	Blood of China (4)	
	Kumasaka (4)	
	Bow Bells (3)	
	Bowen Bryant (3)	
	Brigadoon (3)	
	Christine Lee (3)	
	Citation (3)	
	George Blandford (3)	
	Latifolia (3)	
	Mary Christian (3)	

Table 4

TIME OF BLOOMING OF C-R CAMELLIAS		
<i>Early</i>	<i>Mid</i>	<i>Late</i>
Donckelarii (9)	Donation (9)	Blood of China (4)
J. C. Williams (6)	Tricolor (8)	
St. Ewe (5)	Elegans (7)	
Berenice Body (4)	Inspiration (7)	
Cornish Snow (4)	Adolphe Audusson (6)	
Bow Bells (3)	Lady Clare (5)	
George Blandford (3)	Leonard Messel (5)	
Gloire de Nantes (3)	Anticipation (4)	
Mary Christian (3)	Freedom Bell (4)	
	Jupiter (4)	
	Kumasaka (4)	
	Bowen Bryant (3)	
	Brigadoon (3)	
	Christine Lee (3)	
	Citation (3)	
	Finlandia (3)	
	Latifolia (3)	
	Mercury (3)	

Table 5

FLOWER TYPES OF C-R CAMELLIAS				
<i>Single</i>	<i>Semi-Double</i>	<i>Paeony</i>	<i>Anemone</i>	<i>Variable</i>
J. C. Williams (5)	Donation (9)	Anticipation (4)	Elegans (7)	Blood of China (4)
St. Ewe (5)	Donckelarii (9)	George		Jupiter (4)
Cornish Snow (4)	Tricolor (8)	Blandford (3)		Kumasaka (4)
Bow Bells (3)	Inspiration (7)			Citation (3)
Mary Christian (3)	Adolphe			
	Audusson (6)			
	Lady Clare (6)			
	Leonard Messel (5)			
	Berenice Body (4)			
	Freedom Bell (4)			
	Bowen Bryant (3)			
	Brigadoon (3)			
	Christine Lee (3)			
	Finlandia (3)			
	Gloire de			
	Nantes (3)			
	Latifolia (3)			
	Mercury (3)			

The findings from the preceding Tables show:

1. Japonica (50%) and Williamsii hybrids (50%) are equally cold-resistant.
2. Light-coloured flowers (white 7%, pink 64%) constitute the majority of cold-resistant camellias (red 29%).
3. 32% of the cold-resistant camellias flower early, 64% flower mid season and only 4% flower late.
4. 18% of the cold-resistant camellias were single, 57% were semi-double, 7% paeony form, 4% anemone and 14% were variable.

Flower Pigmentation in *Camellia chrysantha*

SHUNPEI UEMOTO and IKUO MIYAJIMA

Camellia chrysantha: pigmentation de la fleur

Pigmentación de las flores de la *Camellia chrysantha*

Pigmentazione dei fiori nelle *Camellia chrysantha*

Blütenpigmentation bei der *Camellia chrysantha*

Since a group of yellow flowered *Camellia* was found out in Kwangsi Province in the south western part of China, the typical species, *Camellia chrysantha*, has been used as a parental stock to breed up hybrid plants, which would be expressed varied flower colour from yellow through scarlet. Most of the cross breedings were practiced between *C. chrysantha* and other *Camellia* species, such as *C. reticulata*, *C. japonica*, *C. chekiang-oleosa* and so on by many *Camellia* breeders. As a result of those endeavours, many F₁ plants of inter-species already appeared in some nursery or laboratories in the world. As most of them have not yet been reached to their flowering stage, the flower colour of F₁ hybrid *Camellia* plants were uncertain. But, it has been never reported that the inter-specific hybrid plants between *C. japonica* and *C. chrysantha* did show any yellow shade of flower colour in Kunming Plant Institute in China.

Flower colour is manifested by three basic pigments, such as flavanoids, carotenoids and chlorophylls. Yellow colour of flower petal is expressed strongly by the presence of some carotenoids, which can be easily introduced to F₁ hybrid plants from the parental ones. Aurone and some flavonol pigments in flavonoids also contributed to the expression of yellow flower colour. Among the flavonol pigments, the presence of quercetin derivatives as gossypetin and quercetagenin are important for a yellow colour pigmentation.

1. The distribution of floral pigmentations in fresh petals of *C. chrysantha*

By the microscopic observation with thin cross sections of fresh petals, it became distinctively clear that the most intense yellow coloured portions of epidermal and sub-epidermal tissues was filled with cell sap soluble pigments, and a trace amount of carotenoids was present in the tissues of mesophyll in petal (see Fig. 1 - A, B and C).

It is evident that the total amount of carotenoids in the petal of *C. chrysantha* flower was about 1/25 of normal yellow rose flower 'Golden Emblem' with the comparison of the dry materials (see Table 1).

Fig. 1 Photomicrograph of cross sections of fresh petal in *C. chrysantha*

A: Apical portion of petal
 B: Median portion of petal
 C: Carotenoid in the parenchyma cells of petal

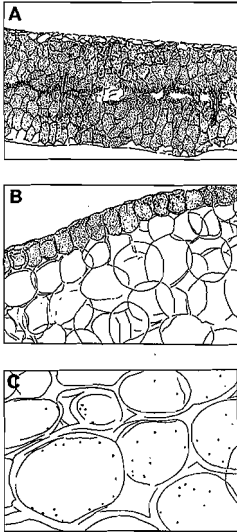


Fig. 2 Schematic representation of *C. chrysantha* flower pigments appearing on a two-dimensional thin-layer chromatogram

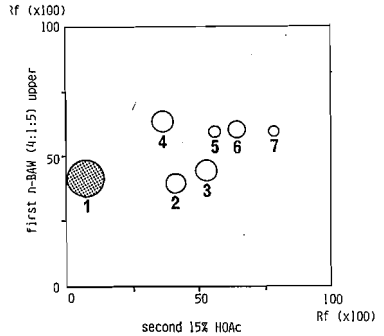


Table 1 Comparisons of total amount of carotenoids between *C. chrysantha* and yellow flowered garden rose

Cultivar or species	O.D. at 450nm*	Relative total carotenoid concentration
<i>C. chrysantha</i>	0.02	44
Peace (Rose cv.)	0.045	100
Golden Emblem (Rose cv.)	0.45	1000

*O.D. = optical density

2. Chromatographic identification of cell sap soluble yellow pigment (flavonoids)

The results of flower pigment analysis by two dimensional thin layer chromatography showed the existence of seven pigments of flavonoids. The major pigment of visible yellow colour was spot 1 as shown in Fig. 2, and the other six spots were invisible and in trace of minor amount. Some chemical properties of these spot pigments are shown in Table 2.

Moreover, it became clear that this spot 1 pigment was a flavonol, quercetin derivative and its glycoside was quercetin-7-glucoside, quercimeritrin. The analysis of these aglycone and glycoside components were done by the high performance liquid chromatographic separations, and the results are shown in Figs. 3 and 4. The aglycone yielded by acid hydrolysis was identified as quercetin (Fig. 3). And also, the data of spot 1 by HPLC completely coincided with quercetin-7-glucoside (Fig. 4).

Fig. 3 High performance liquid chromatographic separations of authentic flavonol aglycones (A) and the aglycone of *C. chrysantha* spot 1 (B) Arrow indicate the same peak

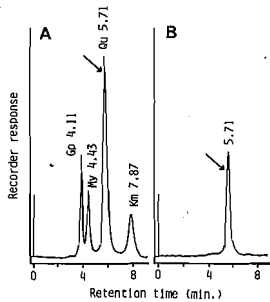


Fig. 4 High performance liquid chromatographic separations of *C. chrysantha* spot 1 and authentic flavonol glycosides

Qu7G: quercetin 7-monoglucoside
 Qu3GR: quercetin 3-monorutinoside
 Qu4G: quercetin 4-monoglucoside
 Arrow indicate the same peak

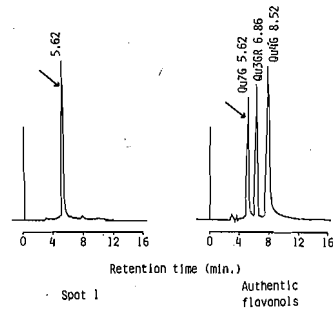


Table 2 Properties of *C. chrysantha* flower pigments appearing on a two-dimensional thin-layer chromatogram

Spot number*	R _f (×100) in		Colour in	
	n-BAW**		Visible	UV
1	41		yellow	bright yellow
2	41		-	dull brown
3	45		-	dull brown
4	67		-	dull brown
5	62		-	dull brown
6	62		-	dull brown
7	59		-	dull brown

* Numbers correspond to the spot numbers represented in Fig. 2

** n-BuOH-HOAc-H₂ (4:1:5 v/v/v, upper phase)

3. The introduction of yellow pigments into the other *Camellia* species

From these results of this investigation, it may be concluded that the yellow colour of the flowers of *C. chrysantha* is attributable to the presence of a flavonol derivative, quercetin-7-glucoside. On the other hand, a small amount of carotenoid may also contribute to only a minor expressions of yellow flower.

Quercetin-7-monoglucoside pigment is distributed scarcely in plant kingdom, so we suppose that the pigments will be difficult to be introduced into F₁ hybrid plant with the red flowered *Camellia* species.

Carotenoid pigments should be easily introduced genetically as expressed in garden rose (*Rosa hybrida*) and hibiscus trees (*Hibiscus rosa-sinensis*). According to Dr. Yokoi's observations, it may be able to select out comparative carotenoids rich plants in *C. chrysantha* (personal communication). Certainly, we can find out a deep yellow flowered plants in *C. chrysantha*.

The Western Pacific

A strengthening bridge of camellia friendship

ERIC CRAIG
Vice President ICS

Pacifique occidental: des liens d'amitiés qui se renforcent autour du camélia

El Pacífico Occidental: un estrecho vínculo de amistad entre los amantes de la camelia

Il Pacifico occidentale: un ponte dell'amicizia sempre più saldo

Der westliche Pazifik: Eine Kamelien-Freundschaftsbrücke von zunehmender Festigkeit

This year's March-April visit of 20 Australian members of the ICS to Japan has greatly strengthened the links of camellia friendships across the Western Pacific.

The visit confirmed a pleasing similarity of many interests, which are separated only by the normal differences in hemispherical seasonalities.

Our group of 20 Australians was welcomed in Tokyo on the evening of March 30 by members of the Japan Camellia Society and Japanese members of the ICS.

The 18-days "Adventure Japan" itinerary had been organised by Mr. Goro Iimure, former Japanese membership representative; Mr. Tsuneo Nakamura, the new ICS membership representative; and Dr. Kaoru Hagiya, former ICS director and now president of the Japan Camellia Society.

The hospitality extended by camellia groups throughout Japan proved to be far beyond any expectations of our Australian members. Wherever we had expected to be greeted to the locality by an ICS member, a smiling group awaited us with near-overwhelming concern for our comfort and enjoyment.

We first flew from Tokyo to Kyushu, in order to start our surface itinerary from Japan's south-western region just as the cherry blossoms were nearing their peak. Our plan to then travel in a north-easterly direction, coinciding all the way with the cherry blossoming, worked out just perfectly.

Memories of old friends took us firstly to the Higo nursery of Tsugo Ohta, near Kumamoto. Then north to Kurume, which was a first-time visit for us all. Members of the Kurume Camellia Society, led by Shunsuke Hisatome, hosted a superbly presented luncheon.

Our eyes could not stop dancing . . . from the large Australian flag on the wall at the top end of the banqueting room . . . to the smiling greetings of new friends . . . to the camellia-covered table . . . and glorious flowering azaleas around the room.

Here at Kurume we experienced the first of many welcoming addresses by our hosts. Most fortunately, Australian members John Paton and Eric Craig had acquired sufficient Japanese speech to facilitate replies of appreciation. Invariably, their efforts



Australian group leader Eric Craig at Kamo City reception by Mayor, with Snow Camellia Festival Princesses

were warmly appreciated, and a number of Japanese members were kind enough to assure our speech-makers that they had been fully understood.

At Fukuoka City, a Japanese style dinner proved the merriest of occasions, not only for 20 Australians unused to sitting on the floor to dine, but for the 20 Kurume and Fukuoka members who intermingled. The cheerful local songster Mikio Akashi was answered by Australia's Lindsay Bond, who led the assembled diners in rousing choruses of "Waltzing Matilda". Our gracious hostess was Mrs. Chitose Uemoto.

Kyoto would not be Kyoto without Dr. and Mrs. Haruya Shimada, and true to their long association with Australian ICS members, they awaited us at the Kyoto Hotel, and fêted us throughout our visit.

The next morning, Sunday, the local newspaper declared that this would be the best of all days for the Botanic Gardens' cherries. And so it was. Our experience of mingling with hundreds of family groups, picnicing beneath acres and acres of spreading blossom trees, will never be forgotten.

The one and only rainy day of our tour could not dampen the warmest of welcomes from Dr. and Mrs. Toshiro Ueda at their Koda-cho home. It was a rare and deeply-appreciated experience for the Australian visitors.

At Toyohashi, ICS life-member Mrs. Sachiko Otome had arranged a charming Tea Ceremony, followed by a visit to the superb regional camellia show at the Seibu department store - an exhibition not even excelled by the following day's Tokyo exhibition in the Norin Chukin Bank's chambers at Otemachi.

Here we had the joy of renewing many friendships, some of them made over a number

of years, and some as recently as last September's ICS Congress in Australia, Dr. Kaoru Hagiya, now president of the Japan Camellia Society; Mr. Saburo Yokoyama, past president of the JCS, and Mrs. Yokoyama; Mr. Goro Iimure, former ICS membership representative for Japan, and Mrs. Iimure; Mr. Tsuneo Nakamura, new ICS membership representative, and Mrs. Nakamura; Mr. Shigeru Matsui and Mr. Masahiko Yoshitoshi.

Opportunity was taken to discover and note many beautiful camellia cultivars unknown to most of our Australian members, although the usual temptation to enquire the availability of scions had to be tempered by the discovery that petal-blight is well and truly alive in Japan.

Nevertheless, our visit to Niigata, on the northern side of Honshu, was a great joy. Here, in the home territory of Dr. and Mrs. Hagiya, we renewed friendships with Seiji Kigeuchi and Kuaihiko Kawamura, and made a delightful excursion in their company to Kamo City, home of the snow camellia.

A civic welcome by the Mayor of Kamo City, escorted by two beautiful Snow Camellia Festival princesses, was notable for the presentation of a Snow Camellia Festival coat to the Australian group leader.

One of the final days in the Australian itinerary was one of the happiest: Thirty members of the Japan Camellia Society and Japanese region of ICS joined our coach in travelling to Yokohama. Here we were hosted at luncheon, alongside one of the country's largest and finest private camellia collections - the garden of Mr. and Mrs. Saburo Yokoyama - and then had time to explore its loveliness with old and newfound friends.

At a farewell party in Tokyo, hosted by Directors of the Seibu Group at their Ikebukuro department store, Seibu executive director Takeo Hosaka said in part: "We hope to expand the international exchange of culture by means of the camellia. We welcome this opportunity to widen the pathway of camellias between Australia and Japan".

Australian members were genuinely overcome by the enthusiasm and sincerity of their Japanese hosts and hostesses. With the Japan Camellia Society now led by former ICS director Dr. Hagiya, strongly supported by Goro Iimure, the development of camellia knowledge, understanding and friendship across the Western Pacific is entering a new era of great promise.

The National Collection of Camellias at Mount Edgcumbe, Cornwall

L. WOODWARD

La collection nationale de camélias de Mount Edgcumbe (Cornouailles)

La Colección Nacional de Camelias en Mount Edgcumbe, Cornualles

La Collezione Nazionale delle Camelie a Moun Edgcumbe, Cornovaglia

Die Nationale Kameliensammlung in Mount Edgcumbe, Cornwall

The United Kingdom National Reference Collection of Camellias is located within Mount Edgcumbe Country Park in Cornwall. Mount Edgcumbe, described as the most beautiful Country Park in England, stands in an Area of Outstanding Natural Beauty and includes 9 miles of Heritage Coastline.

The Park, situated in East Cornwall overlooking the River Tamar and Plymouth Sound, was purchased in 1971 from the Estate of the 6th Earl of Mount Edgcumbe, by Cornwall County Council and Plymouth City Council and is managed by a Joint Committee of the two Councils.

Covering an area of 350 ha (864 acres), it consists of the 18th century landscaped Park centred around the House, the Formal Gardens comprising an Italian Garden and Orangery, a French Garden, and an English Garden, are enclosed by very old 30ft high hedges.

It is one of the few Grade I Historic Gardens in the whole of the Southwest.

There are also extensive woodland areas with many unusual trees and shrubs to be seen, and magnificent views over Cornwall, Plymouth and Dartmoor. The Camellia Collection was started in 1976 with a gift of 70 Camellias from the International Camellia Society; these were planted in the Formal Gardens under the direction of David Trehane, by members of the Society from various parts of the world, during their visit to Cornwall that year.

In the following two years a hundred mature Camellias were dug up and carefully transported 50 miles from David Trehane's garden nr. Truro and re-planted in the Higher Amphitheatre, where the majority of the collection is to be housed. The Amphitheatre is a large wooded valley of some 148 ha (60 acres) planted during the 18th century where there are also a good selection of Rhododendrons, and interesting trees and shrubs, underplanted with bluebells (*Scilla non-scripta*) and a water feature and pond.

Since then cuttings of a great many varieties and species have been obtained, and we have to thank the Royal Horticultural Society's Garden at Wisley, the Crown Estates Windsor Great Park, The National Trust, private collectors and various nurseries for being so generous. These have been propagated and we now have some 450 varieties and species in the collection. Then in 1984 we received a most generous gift of Carlyon

camellia hybrids raised in Cornwall, by the late Miss G. Carlyon of Tregrehan. During the first 5 years of the collection we experienced a number of problems. Mount Edgumbe had been in a state of neglect for nearly 30 years prior to its purchase in 1971, everywhere resembling jungle conditions; clearing the sites in the Amphitheatre of bramble, bracken – some 8ft high *Rhododendron ponticum*, dead and dying trees, proved to be quite a task.

Our first camellia plantings were attacked by sheep, fallow deer and even field mice. The sheep and deer are now kept out of the area by an 8ft high mile long fence. Field mice ring barked several plants under cover of snow during a cold spell, but fortunately these have now recovered.

Over the years too a number of plants have been stolen, and although we have tried to overcome this problem by growing on the plants in our nursery and planting them out in their permanent sites as larger bushes, with 200,000 visitors a year to the Park, it is not an easy problem to solve.

Earlier this year, 1987, a small group was formed of David Trehane, Kenwyn Clapp, Dr J. Smart, Mrs B. Kitson, Don. Waterhouse, Mrs M. Campbell- Culver (Park Manager) and myself to oversee and advise on the collection.

The majority of the Camellias are planted in the Higher Amphitheatre, and grouped by Countries of Origin, Singles, Formal Doubles, Reticulatas, and Species.

The following is a list of the varieties as they are grouped:

English section

Alba Simplex	Nagasaki	Beatrice Michael
Altheaflora	Candidissima	Exaltation A.M. 74
Alba Plena	Candidissima Pink	November Pink
Anemonaeflora	Lady Vansittart	Inspiration
Chandleri	Lady Vansittart Pink	Leonard Messel
Adelina Patti	Lady Vansittart Lanarth	Coppelia
Mrs. William Thompson	Countess of Orkney	Coppelia Alba
Lady-de-Saumarez	Eugenie - de - Masena	Mars
Preston Rose	The Mikado	Apollo
Jubilee	Mary Christian	Marguerite
Peach Blossom	Citation A.M. 60	Caerhays Best
Mercury	Hiraethlyn	Bartley Pink
Parkside	Twiss Cornwall	Salutation
Charles Michael	St. Michael	Caerhays
St. Ewe	Joy Saunders	Exbury
Hope	Kimberley	Imbricata
Cornish Snow Winton		

American section

Ada Pieper	Ann Smith	Alexis Smith
Aarons Ruby	Belle of the Ball	Alice Wood
Miss Universe	Extravaganza	Emmett Pffingstl
Tiki	Marie Bracey	Cheryl Lynn
Scentsation	Clarise Carleton	Berenice Perfection
Wildwood	Kick Off	Seventh Heaven
Clara Green	Ace of Hearts	Debutante

J. J. Whitfield	Cecile Brunazzi	Nuccio's Gem
Kramers Supreme	King's Ransom	Billie McCaskill
Spring Sonnet	Wonderland	Pearl Maxwell
Beau Harp	Premier	Blaze of Glory
Winter Morn	California	Disneyland
High Wide 'n' Handsome	Lady Campbell	Blood of China
Berenice Boddy	Grandeur	Julia France
Jingle Bells	Tinker Bell	Coral Queen
Moonlight Sonata	Matador	Mrs. D. W. Davis
Splendens	R. L. Wheeler	Dr. Tinsley
Midnight	Lucy Hester	Dear Jenny
Yours Truly	Guilio Nuccio	Drama Girl
Jessie Katz		
Purple Emperor	June McCaskill	Dian Hartman
Lady Mary Cromartie	Fire Falls	Emily Wilson
R. L. Wheeler	Victor Emanuel	Virgins Blush
Onetia Holland	Rainy Sun	Shiragiku (syn. Purity)
Laura Schafer	H.M. Queen Elizabeth II	Betty Sheffield Supreme
Emmett Barnes	Tomorrow	Princess Lavender
General George Patton	Coral Pink Lotus	Lieut. William Hearn
Finlandia	Mrs. Anne Marie Hovey	Reg Ragland
Forest Green	Brigadoon	Monte Carlo
Sunset Glory	Bleichroeder	Professor Charles Sargent
Nina Avery	Conspicua	Haku Rakuten
Coed	Mollie Moore Davis	
Mrs. Lyman Clarke	Paulette Goddard	Guest of Honor
Frosty Morn	Senator Duncan V. Fletcher	Little Bit
Firebird	Mary Wheeler	Mattie O'Reilly
Bobs Tinsie	Star Shadow	Mary Margaret
Morning Glow	Flamingo	Sierra Spring
Adolphe Audusson Special	Cardinal	Star Dust
Apple Blossom	Ballet Dancer	White Empress
Susan Carter	Hana Fuki	Jenny Lind
Mathotiana Supreme	Coronation	Waterloo
Edwin H. Folk	Rev. John Bennett	Alison Leigh Woodroof
Elizabeth Arden	Herme	Felice Harris
Ama-no-Kawa	Manana	Niagra
Purity	Whitefing	Snowflake
Auburn White		

Japanese section

Yuki Botan	Taro-an	Haku-tsuru
Gauntletti	Yukimi-guruma	Hassai
Trebah Gardens	Kishu-Tsukasa	Kumasaka
Are-jishi	(Admiral Nimitz)	Satenella
	Eximea	
	Hito-suji (Aranin)	

New Zealand section

Dream Boat	Elsie Jury	Brian
Rose Bouquet	Debbies Carnation	Ellen Sampson
Water Lily	Harriet Durrant	Anticipation
Phyl Doak	Bright Buoy	Elegant Beauty

Australian section

Debbie	Clarrie Fawcett	Burwells Primas
Shocking Pink	Edith Linton	Princess Anne
Spencer's Pink	Thompsonii	Bowen Bryant
Mattie Cole	Ellamine	Arpasia Macarthur
Can Can	Otahuhu Beauty	Lady St. Clair
Beverley Caffin	Ruth Kemp	Polar Bear
Rosemary Elsom	Alexander Hunter	Nancy Bird
Odoratissima	Lillian Ricketts	Leila
Henry Price	Margaret Crozier	William Honey
Laurie Bray	Merrillees	Winter Cheer
Helenor	Chandlers Victory	Centenary
Cathy Becher	Harriet Beecher Sheather	Jean Lyne
Martha Brice	Sheatheri	William Bartlett
William Bull	Mrs. Bell	Prince Frederick Williams
Metallica	Azurea	Alexander Black
Ardoch	Barbara Mary	Australis
Anna M. Page	Daintrie Sievers	Simplicity
Elizabeth Cole	A. W. Jessep	Erica Sievers
Somersby	Red Moon	The Czar
Red Ensign	Waverley	Roberta
Mrs. Swan	Great Eastern	Constance
Dr. King	Andromeda	Betty Cuthbert

European section

French, Italian, Belgium, Portugal

Mathotiana Alba	Baronne Leguay	Triumphans
Frederici	Hectotiana	Nobilissima
Kelvingtoniana	Monsieur Paugam	Pink Audusson
Valtevareda	Angela Cocchi	Duchesse de Montpensier
Contessa Lavinia Maggi	Comte de Gomer	Triomphe di Loddii
Bella Romana	Bella Romana Pink	Alba Casoretti
Imperator	Duchesse de Berry	Magnoliaeflora
Italiana	Bronomiana	Paolina Maggi
Sacco Nova	Picturata	Eugene Lize
Lallarook	Rose Emery	Centifolia
Tricolor Siebold	Frau Minna Seidel	Donckelarii Improved
Elisabeth	Anna Bruneau	Margherita Coleoni

Formal Doubles section

Keepsake	Fanny Bolis	Monsieur Faucillon
Reine des Fleurs	Rubescens Major	Elisabeth White Form

Archiduchessa Augusta	Eleanor Hagood	Tricolor (Nova) Mathot
Sea Foam	Mrs. Tingley	Pink Dawn
La Pace Rubra	Prince Murat	Konron-Koku
Marianna Gaete	Mme Haas	La Pace
Sarah Frost	Campbelli	Mme de Strekaloff
Pope John XXIII	Ave Maria	Pink Perfection
Duc De Bretagne		

Singles and Semi-Doubles section

C. F. Coates	Sylvia	Trewithen Red
Rosie Anderson	White Coppelia	Sheridan
Candy Stripe	Besant's White Czar	Clarissa
Devonia	Teringa	Myorenji
Akebono	Trumpeter	Momijigari
Mattie Cole	Charlotte Rothschild	White Lily
Hassaku	White Tulip	Tahiti
Jennifer Turnbull	Henry Turnbull	Julia Hamiter
Maud Messel	Trewithen White	
Fragrans Comber	Judith Anderson	Golden Spangles
Mrs. T. Brockhouse	Francis Hanger	Daitairin
Swan	Jitsu-Getsu-Sei	

Reticulata section

Captain Rawes	Professor Tsai	Noble Pearl
Shot Silk	Mary Williams	Butterfly Wings
Robert Fortune	Confucius	Mouchang

Carlyon section

Marjorie Waldegrave	Rosemary Sawle	E. T. R. Carlyon
Jenefer Carlyon	Yesterday	Tristrem Carlyon
Tregrehan	William Carlyon	China Clay
Duchess of Cornwall	Edward Carlyon	Belinda Carlyon

Elegans section (Formal Gardens)

Elegans	Elegans Supreme	C. M. Wilson
Elegans Splendor	Shiro Chan	

Presentation section (Formal Gardens)

E. G. Waterhouse	Gloire de Nantes	Brigadoon
Inspiration	Wilbur Foss	Bells
Grand Jury	Rosemary Williams	Farfalla
Pink Wave	Sayonara	Plymouth Beauty
Elizabeth Rothschild	Citation	Cornish Snow
Anticipation	Beatrice Michael	J. C. Williams
Lady's Maid	Bowen Bryant	Mary Jobson
John Pickthorn	St. Ewe	Little Lavender
Elsie Jury	Donation	

Species section

Rusticana

Kumo no Yeal

Kirin no Hon

Nome no Yeal

Saluenensis

Twiss Cornwall

Saluenensis

Sasanqua

Cleopatra

Rosy Mist

Super Rosea

Crimson Bride

Shirshigeshira

Plantation Pink

Narumi-gata

Sparkling Burgundy

Crimson King

Cuspidata

Granthamiana

Taliensis

Oleifera

Tsaii

Wabisuke

Drupifera

Vernalis Hiryu

Heterophylla Barbara Hillier

The Quest for The Yellow Camellia

WILLIAM W. DONNAN

(Reprinted by courtesy of the Editor of 'The Plantsman')

La quête du camélia jaune

La búsqueda de la camelia amarilla

Alla ricerca della Camelia Gialla

Die Suche nach der gelben Kamelie

In the galaxy of ornamental plants, the genus *Camellia* stands out as one of the most desirable shrubs in the western world. With its dark green leaves and its many flower forms it has become a favourite of gardeners and landscape developers everywhere. Two drawbacks have served to diminish its otherwise universal acceptance among flower lovers. They are: (1) the various species of camellia, almost without exception, lack fragrance; (2) the colours of the blooms are either red, white, pink, or shades and combinations of these colours.

For at least the last 200 years plant breeders and horticulturists have been hunting for a yellow camellia. The theory was that if a yellow species could be found, plant breeders and hybridisers could make interspecific crosses to produce yellow, orange, apricot, or

peach coloured blooms. Hints that there, indeed, might be yellow flowered camellias first evolved from Japanese and Chinese paintings dating back to the sixteenth century. Robert Fortune, in *A Journey to the Tea Countries of China*, published in 1852, tells of his quest for a yellow camellia. This account and a black and white picture of 'Fortune's Yellow' can be found in the article "A Yellow Camellia" by G. E. Loxton in the *RHS Rhododendron and Camellia Yearbook 1956*, pages 80-83. 'Fortune's Yellow' or 'Jaune', as named by Verschaffelt, was later classified by J. Robert Sealy as being *C. oleifera*, having white petals and yellow petaloids. Be that as it may Sealy, in his *A Revision of the Genus Camellia* (RHS 1958) lists two species of camellia as having yellow flowers. They are *C. flava* and *C. euphlebia*. However, neither of these species had been propagated in the western world. Sealy had made his listing from dried plant specimens.

Plant breeders and horticulturists who visited China in the early 1900s were constantly on the lookout for the elusive yellow camellia species. Then, as the camellia hobby began to flourish in the United States of America and in Australia and New Zealand, the hunt for the yellow flowered camellia became an all consuming quest. Plant hybridisers, both professional and amateur, were making interspecific crosses of species and were even making crosses of camellia species with near relatives, including *Tucheria*, *Gordonia*, *Stuartia*, and *Franklinia*, all to no avail.

For example, in 1948, a seed of *Tucheria spectabilis* was planted in the Descanso Gardens in California. When the plant bloomed in 1955 it produced pale yellow flowers. Pollen taken from these blooms was eagerly crossed with *C. japonica* species. All of the subsequent seedlings died, but the *Tucheria spectabilis* plant had to be protected with a chain-link fence to prevent camellia hobbyists from pruning it for scions! At the same time, plant breeders were busy on various fronts in an attempt to alter the genes of camellia seeds. Both plants and seeds were bombarded with X-rays, ultra-violet rays, alpha, beta, and gamma radiation and neutrons in an attempt to alter the genes and create mutations. Colchicine was also used by injecting seeds and by immersing seedlings in an attempt to alter the gene configuration chemically. So far, none of these attempts has produced yellow flowers.

At the same time, some 'yellow tinted' camellia cultivars did turn up as chance seedlings in some of the camellia hobbyists' flower gardens: In 1962 Mr. M. J. Whitman, of Macon, Georgia managed to propagate a pale yellow flowered *C. japonica* chance seedling but it did not reproduce well from cuttings. In 1965 Dr. B. R. Morey of Caringford, Australia developed a *C. japonica* seedling which he named 'Gwenneth Morey'. This was followed by the development of 'Brushfield's Yellow' in 1968 by Keith Brushfield of Sidney, Australia. Both of these cultivars have white coloured petals and pale yellow petaloids. Then, in 1975, Nuccio's Nurseries in Altadena, California released 'Elegans Champagne', a sport of the cultivar 'Elegans Splendor'. This sport also has white petals and pale yellow petaloids. The late L. E. Jury of New Plymouth, New Zealand developed a hybrid cross of *C. saluenensis* and *C. japonica* in 1975 which he named 'Jury's Yellow'. It too is white with cream coloured petaloids. Finally, in 1984, Nuccio's Nurseries discovered a chance *C. japonica* seedling which produces pale yellow blooms. It was named 'Nuccio's Golden Anniversary'. Alas! this cultivar has no stamens and cannot be used in a hybridising programme.

Meanwhile, the hunt for yellow flowered species of camellia had continued in China and this hunt proved to be successful beyond all expectations. In 1960 a new species named *C. chrysantha* was found in the Kwangsi Province of southwest China close to the

Vietnam border. The location where wild plants were first discovered was also the location of border wars between China and Vietnam. Thus it was several years before wild plant specimens could be secured and propagated at the Yunnan Botanical Institute at Kunming, China. In April 1965, Dr. Hu Hsen-hsu of the Chinese Institute of Botany, published information on 14 new camellia species in *Acta Phytotaxonomica Sinica* (Volume X, Number 2). One of the new species was classified as *Theopsis chrysantha* and it was described as having fragrant yellow flowers.

In the 20 year period between 1960 and 1980 a great many other camellia species were discovered in China and adjacent east Asian countries. Thus, in 1981, Professor Chang Hung Ta, Head of the Department of Biology and Professor of Botany at Sunyatsen University, in Canton, China, published a new monograph of the genus camellia. Chang Hung Ta's publication drastically changed the taxonomy of the genus. In it he lists four sub-genus classifications; 20 different sections of camellia; and 196 species, 91 of which are new. One of the 20 sections which Chang delineates, namely Section XIV, is called Chrysantha. Into this section he allocates ten different camellia species, all of which have yellow blooms. They are as follows: *C. flava*, *C. aurea*, *C. chrysantha*, *C. flavida*, *C. impressinervis*, *C. euphlebia*, *C. chrysanthoides*, *C. tunghinensis*, *C. pingguoensis*, and *C. pubipetala*. In addition, in section Luteoflora, Chang describes another yellow flowered species which he named *C. luteoflora*. Thus it is seen that there are, at least 11 species of camellia which have yellow flowers and which might be expected to produce interspecific crosses with various shades of yellow in the blooms.

One can well imagine the excitement generated in the western world by the publication of the information on *C. chrysantha* in 1965 by Professor Hu Hsen-hsu. However, it was not until 1979 that outsiders, namely Professor Tuyama and his colleagues from Japan, came to the Yunnan Botanical Institute at Kunming, China. There they saw the *C. chrysantha* species which Professor Hu had described and they were fortunate enough to obtain both seeds and scions of this new species. Subsequently, scions, seeds and possibly pollen of the *C. chrysantha* was generously given by the Chinese and by the Japanese to plant breeders and camellia hobbyists in the United States of America, New Zealand, Australia, and possibly to England. Thus the stage was set for the race to bring the new species *C. chrysantha* into bloom in the western world.

The Chinese botanists at Kunming had been propagating and flowering the new yellow species of camellia since about 1968 and they began hybridising in 1972. In the middle and late 1970s, some 10,000 hand pollinated crosses were made with *C. chrysantha* as one of the parent plants. The results were very disappointing. They were using mostly *C. reticulata* cultivars as the female parent and the seed production was very low. The 1984 *American Camellia Society's Yearbook* contains an article (pages 42-47) 'Seedling-breeding of *Camellia chrysantha*' by Xia Li-Fang of the Yunnan Botanical Institute. In it she lists the results for the year 1976-77. There were 674 pollinations that year which produced 77 seed capsules. In the 77 capsules were 456 seeds of which 332 germinated but only 228 seedlings survived. Most of these seedlings have bloomed but the flowers are reported to have been various shades of pink. Subsequent crosses have produced red or pink blooms. To the best of our knowledge no yellow hybrid cultivars have, as yet, been produced in China

The Japanese were the first people outside China to obtain seeds, scions and pollen of *C. chrysantha* from the Yunnan Botanical Institute. They were also the first to flower

the yellow camellia outside China. Since about 1981 they have been making interspecific crosses in attempts to develop hybrid cultivars in various shades of yellow. Indications are that many of the Japanese plant breeders have been using *C. japonica* as the mother plant. The viability of seed set and germination have been disappointing and the colours of the F₁ crosses have all been pink or red.

Australia received seeds from the Kunming Botanical Institute early in 1980. For an interesting article on how this came about one should read: 'How the Yellow Camellia Came to the Western World' by H. A. Fraser, published by the Australian Camellia Research Society in its *Camellia News* (Volume 83, December 1982). The Australian camellia hobbyists have been propagating *C. chrysantha* since 1980 and the first blooms came forth on 16 August, 1984. Since then interspecific crosses have been made with other camellia species but the results are not yet available. New Zealand nurseries and hobbyists have been propagating *C. chrysantha* from seeds and scions and have also bloomed the species. So far, there is no specific information about their hybridising progress.

In the United States of America there has been a tremendous effort on the part of nurseries, botanical gardens and hobbyists working with the yellow flowered species found in China. Seeds of *C. chrysantha* and, possibly *C. flava* and *C. euphlebica* were sent to various gardens and to individuals in the spring of 1980. These seeds were germinated and soon there was a race to be the first to bloom the seedlings. The first blooming of *C. chrysantha* in America occurred on 1 February, 1984. It was in the collection of Meyer Piet, an avid camellia hybridiser living in Arcadia, California. This seedling was named 'Olympic Gold'. Mr. Piet wrote an interesting account of the blooming in the article 'Yellow is Busting Out All Over' published in the March, 1984 issue of *Camellia Review*, the magazine of the Southern California Camellia Society.

Pollen from the 12 blooms on this plant was used in a breeding programme on a variety of camellia species. In as much as Mr. Piet had been making interspecific crosses of other camellia species for a period of 12 years he had many 'bridge' plants to work with. Using *C. chrysantha* pollen on hybrid cultivars would appear to influence the viability of seed capsules and the germination of seeds. For example, in one of Mr. Piet's initial hybridising programmes using *C. chrysantha* pollen he crossed almost an equal number of *C. japonica* and hybrid 'mother' plants. From these crosses he obtained 33 *C. japonica* × *C. chrysantha* seeds, of which only 11 were viable (33%). However, in the hybrid × *C. chrysantha* pollinations he obtained 158 seeds, of which 140 were viable (80%). From these seeds he obtained 93 seedlings and the grafts of these seedlings have now produced 75 plants, most of which are several feet high. The 1985 crop of blooms has produced a good supply of pollen and one of the first instances of seed set on the original *C. chrysantha* plants. The seed pod is olive-black and about the size of a large acorn.

Many other hobbyists in America have bloomed the *C. chrysantha* species. Dr. Clifford Parks at the University of North Carolina, at Chapel Hill, North Carolina has also been quite successful in crossing *C. chrysantha* into other camellia species. He now has some 30 or 40 seedlings which he is propagating.

Nuccio's Nurseries, in Altadena, California, has a wide variety of *C. chrysantha* seedlings under propagation. They have from 50 to 150 cultivars of each of the following six varieties of seedling under observation.

No. 1 - A seedling from Terada in Japan.

No. 2 - A seedling from the University of California.

No. 3 - Cutting wood from Dr. Bartholomew, Berkeley, California.

No. 4 - Scions from the Inazawa Nursery, Japan.

No. 5 - Seedling propagated by Meyer Piet - 'Olympic Gold'.

No. 6 - Seedling from Kunming Botanical Institute (Hu-Tuyama).

In addition they have about 50 grafts of *C. euphlebia*. The *C. chrysantha* seedlings and grafts are kept separate on the premise that each of these cultivars may have come from different seeds and thus could vary. Nuccio's Nurseries are at an elevation of 450m (1500ft). The climate is characterised as Mediterranean with cool wet winters and dry hot summers. The mean average winter temperature is 13°C and the mean average summer temperature is about 21°C. There have only been two or three frosts during the last four years but the summer mid-day temperatures have reached as high as 43°C for three or four day periods during this period.

Each of these seedlings has certain characteristics which are apparent to the casual observer. For example, on some of the varieties the leaves are long and narrow while on others the leaves may be oval shaped. They all retain the deep veining. New leaf growth ranges from black-red to brown and to light green. The only variety which has bloomed so far, has been the seedling 'Olympic Gold' which first flowered in late February 1984 and again in February 1985.

In propagating the *C. chrysantha* seedlings here in the United States it has been found that this species can be grafted successfully onto *C. japonica*, *C. sasanqua*, *C. reticulata*, and *C. granthamiana* understock. At the same time, trials with cuttings of *C. chrysantha* scions have shown that they are easily rooted. Bud formation here in the United States of America occurs in the early fall of the year (late August to early October). This circumstance has, invariably, been followed by a period of bud drop which may eliminate all of the buds and some of the top foliage. Flowering occurs in early February. *Camellia chrysantha* plants growing in southern California have withstood cool temperatures in the -1°C range and summer hot temperatures of 43°C. During the hot summer the growth is stunted but as soon as the cool nights of fall prevail there will be successive flushes of growth.

While the quest for yellow flowered hybrid cultivars is moving forward at a fast pace using *C. chrysantha* in the cross, indications are that the 'yellow genes' in that species may be recessive. There is little doubt that the quest will shift upon the availability of pollen from some of the other yellow flowered species. Perhaps *C. euphlebia* or even *C. luteoflora* might be the 'key' to opening the door toward new yellow cultivars. It will be a red letter day in the camellia world when some good yellow hybrid blooms have been developed.

Siebold and his *Camellia* introductions

JOHN TOOBY

Siebold et ses introductions aux camélias

Siebold y sus Introducciones a la *Camelia*

Siebold e le sue introduzioni alla *Camelia*

Siebold und seine Kamelien-Neueinführungen

Maclean¹ has used the Records of the Dutch Department of Colonies in the Record Office (Rijksarchief) at The Hague (S'Gravenhage) to give a very full account of Siebold's career in Japan and his plant introductions to the Netherlands. Philipp Franz Balthazar von Siebold was born at Würzburg in 1796; he became a medical student there in 1815, qualified in 1820 and specialised in ophthalmic surgery. He joined the forces of the Netherlands East Indies as a Surgeon Major in Batavia (Djarkata) in February 1823 and was almost immediately posted to Deshima where he arrived six months later.

Deshima was an artificial island off Nagasaki which had been leased to the Dutch when the Shogun clamped down on christianity and closed the country to Europeans in the middle of the seventeenth century; having been allies for about 100 years the Dutch were granted sole trading rights with the west, but they had to make an annual journey to Yedo (Tokyo) to pay homage to the Shogun and negotiate any outstanding problems. It seems that the Japanese suffered a lot from eye-troubles at this time so Siebold enjoyed great prestige amongst them.

He quickly learned the language and became the centre of a circle of young people interested in western affairs. He was permitted to live on a small estate, Narutaki, outside Deshima where he practised medicine, bought plants from the Japanese and received plants and ethnographical curiosities in exchange for medical treatment. Shortly after his arrival he began to describe Japan. In a letter to the Government of Java dated 26 November 1824 he asked permission to be allowed to stay on in Yedo when the Head of the Factory at Deshima next visited the Japanese Court.

He was directed to obtain information on all aspects of Japanese life and send it to the Government. He made the journey to Yedo with the Head of the Factory and his ultimate successor Heinrich Burger in 1826. His fame had preceded him and his journey was something of a triumphal progress. He continued to enlarge his scientific collection but the Shogun only permitted him to remain in Yedo for about five weeks. Healey² states that he went to Yedo in 1828 and stayed on when the main party returned to Deshima. On this occasion he collected not only plants but maps. This was treasonable but all would have been well if his ship had not been blown on to the rocks in a storm. The Japanese authorities discovered that Siebold had maps on board and he hastily copied as many as he could before handing them over. Some of his Japanese friends were tortured and others committed hara kiri. The Dutch were greatly embarrassed and replaced Siebold who was imprisoned for a year and then sent home.

The Dutch archives state merely that duplicate maps were sent to him when he was back at Deshima; this was betrayed by spies so he was put on trial 10th November 1828. He was interned on Deshima from 18th December 1828 to 28th December 1829, left for Java on 2nd January 1830 and arrived in the Netherlands in July 1830. In 1823 Siebold laid out a botanic garden on Deshima. The same year he sent two students to collect plants and specimens and he purchased plants at Oosaka (?Osaka) and other towns.

He sent seeds of the tea plant to Batavia in 1826.

In 1828 the Rotterdam carried Japanese seeds, plants and flowers from Deshima to Batavia but most of the cargo was lost due to an accident off the Chinese coast. However the warship *De Kortenaar* arrived at Texel on 1st July 1828 with 4 cases of living Japanese plants; a passenger, Corporal P. F. de Locht tended them on the journey and 80 out of 137 survived. The plants which Siebold had collected on his journey to Yedo in 1826 and plants cultivated on Deshima 1826-1828 were sent to the Netherlands via Batavia in 1829 but only a few survived; these were sent to Leyden and to the Duke of Ursal at Brussels. Siebold himself returned with a large collection of specimens and plants in July 1830, but only about 260 plants and bulbs were alive when he delivered them to the Ghent Botanic Garden. On account of the outbreak of the Belgian rebellion, Siebold as an adoptive Dutchman had to leave hurriedly. For this reason the more beautiful and rare plants came into the possession of diverse persons 1830-1839. That Ghent was called 'la capitale de la Flora' was partly due to Siebold's collection. According to Healey the local horticulturists had his plants confiscated; they appear to have been distributed between the Botanic Garden, the Belgian Royal Horticultural Society and the Ghent nurserymen, for after Belgian independence the University of Ghent gave back to Siebold in 1840 one plant of each of those left behind at Ghent in 1830 provided the specimen was present, and the same was done by private persons who possessed them and by the Société Royale d'Horticulture at Brussels. Nevertheless he had to buy back 80 species which had gone elsewhere.

From 1830 to 1834 his successor Burger sent him further shipments of Japanese plants. It may have been from one of these consignments perhaps with Siebold himself that the British merchant and gardener Beale who lived at Macao for many years, exchanged Chinese for Japanese plants when the Dutch ship Rotterdam called at Macao. Beale received a camellia which he brought to England in 1831 and called it 'Bealer'. Siebold's name for the same plant 'Leeana Superba' appeared later.

Beaton³ states that Dr Siebold brought the first 'Doncklaeri' from Japan along with the beautiful lilies and many other fine things, that were lost after being safely landed in Antwerp. It so happened that Dr Siebold's cases arrived when the French were besieging the citadel of Antwerp, I believe in 1831; and the place where the cases were put was soon filled with cavalry horses, which knocked everything about in such a way that it was a wonder that a single leaf was saved; and our original camellia, 'Doncklaeri', was in this *melée*. Mr. Doncklaer, after whom it was called, told me this story; he was then gardener at Louvain. Siebold set up his nursery and specialised in importing plants from Japan, unhappily with very mixed results. The 1844 shipment was a disaster and confused litigation followed which left him so heavily in debt that he returned to Germany for a period as the cost of living was lower. He was more successful in 1851 and 1852 but many plants were lost again in 1855 and 1856. Probably his happiest years were from 1859 to 1862 when he returned to Japan and was greeted as a long-lost friend. He died in Munich in 1866.

With his repeated shipments of plants from Japan it is clear that Siebold was responsible for the introduction of very great numbers of Japanese plants to the west. A few years ago the author received a list of his introductions from Roger and Ghislaine de Bisschop. This list⁴ is without either date or author but the title page states that it is taken from the weekly paper of the Royal Netherlands Society for Horticulture and Botany. Camellias seem to have been of very minor interest to Siebold and are included among the two long lists of plants which covered not only trees and shrubs but also lilies, tree peonies, conifers, ferns, palms and cycads, and herbaceous plants. The inclusion of *Camellia sasanqua* is of particular interest.

First List

Camellia japonica Sieb. - *Thea japonica* Nois, C.j. Sieb. var., *C. sasanqua* Thunb. - *Thea sasanqua* Nois, ---

Second List

Camellia japonica Thunb. flor simpl. - *Thea japonica* Nois. flor. simpl., *C. j.* flor. simpl. varieg. - *Thea j.* Flor. simpl. varieg., *C.j.* Donkelari - *Thea j.* Donkelari, *C. j.* ochroleuca - *Thea j.* ochroleuca, *C.j.* Ida Sieb. - *Thea j.* Ida. *C.j.* tricolor - *Thea j.* tricolor, ---

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2. Healey, B. J. 1975 *The Plant Hunters* (New York).
3. Beaton, D. 1849 *The Cottage Gardener May 1849*.
4. Lijst met benamingen der door Von Siebold uit Japan ingevoerde gewassen. Overgenomen uit het Weekblad voor de Koninklijke Nederlandsche Maatschappij voor Tuinbouw en Plantkunde.

Siebold: Postscript

JOHN TOOBY

Beryl Leslie-Urquhart in her "The Camellia" (1956) translates from "Belgique Horticole, Notice Biographique sur A. Donkelaar" Vol viii p275 1858: "during the year 1829 there arrived in Holland from Japan some scions of camellias grafted on large stocks. Either these plants had suffered on the voyage or the recipient did not understand their culture; they appeared sick and threatened to die. Donkelaar asked for them and obtained them. He saved them from certain death and propagated them so well that some years later they flowered, one after the other. The first which opened was named 'C. Donkelaarii', the second 'C. ochroleuca' the third 'C. candidissima' and the fourth 'C. tricolor'." Although written 9 years later this must cast doubt on the story of the French cavalry horses.

Von Siebold: some comments

DR L. A. TJON SIE FAT
of Leiden University

Von Siebold - quelques observations

Von Siebold - algunos comentarios

Von Siebold - Alcuni commenti

Von Siebold - einige Anmerkungen

The background to the arrest of Von Siebold runs more or less as follows: when Siebold arrived in Japan, there were two opposing factions, 1) the conservatives, centred on the court of the Shogun and wishing no changes in Japanese society and 2) the progressives, centred on young intellectuals wanting more contact with the rest of the world and a more open and flexible society in Japan. Siebold's friends and pupils in Nagasaki belonged for the greater part to the second faction. Also the southern daimyo's (in Kyushu and Shikoku) wished more independence from the court at Edo.

The map business

During his short stay at the court of the Shogun in Edo in 1826, Siebold made the acquaintance of the court astronomer, Takahashi. The two scholars gave each other presents and after Siebold left for Deshima, regularly exchanged letters. Siebold was given maps by Takahashi, who had them copied by a draughtsman in his service. This gentleman and others in Edo gave away the details of the connection between Siebold and Takahashi. Everyone concerned, including Takahashi and the draughtsman, were arrested. The court astronomer died in prison some years later. The hari-kiri sounds romantic, but remains to be proved. It was strictly forbidden for Japanese subjects to correspond with foreigners or to receive gifts from them. It was also strictly forbidden for foreigners to possess maps of Japan, Korea or surrounding regions. Japan was all too aware of an expanding Russian empire at her northern borders. At his trial Siebold was said to be a Russian spy. Siebold had several maps in his possession before this incident. He had some copied, which he hid, having been warned beforehand by friends in Edo.

The ships waiting for Siebold had already been loaded with plants, animals and ethnographical objects and were ready to sail when a typhoon struck Nagasaki. Some of the ships were thrown on the beach. Only after all had returned to normal in the harbour did the "Siebold-incident" occur. Siebold saw to it that the ships sailed immediately to Batavia.

Back in the Netherlands

All the living plants had been sent to the *Botanic Garden of Leiden*. In 1830 Siebold returned himself and took the living plants of *that* trip to the *Botanic Garden of Ghent*. He brought them there himself, so that the confusion in the harbour of Antwerp seems

to be apocryphal. It is possible that some of the plants were put in what is now the Arboretum Kalmthout by Antwerpen, then a tree nursery, but this remains to be cleared up. After the secession of Belgium the living plants had to be left in Ghent. The pressed specimens had been put in the Rijksherbarium, then situated in Brussels. Thanks to Siebold's hectic activities the Rijksherbarium was transferred willy-nilly to the University of Leiden. The dried specimens still reside in perfect condition here in Leiden (also the many *Camellia* species and cultivars). From then on until 1844 all the living plants sent to Von Siebold from Japan by Bürger, Pierot, Textor, Teijsmann and others were planted in the *Botanic Garden of Leiden*. There still are nearly 20 authentic plants growing there. After 1844, the living plants from Japan were planted in Siebold's own nursery "Von Siebold & Co" just outside the walls of the old city of Leiden. In the grounds of the nursery he built a villa called "Nippon". From this famous nursery the plants were distributed (sold, of course) to growers. The nurserymen of Boskoop in the Netherlands still grow many plants introduced by Von Siebold. After Siebold's death the nursery passed into the hands of the head gardener Jacob Mater, whose grandson J. Mater was assistant head gardener in the Botanic Garden of Leiden. After some years Mater's nursery faded away. A great many Japanese and Chinese plants from the nursery again came to the Leiden Botanic Garden.

The list of plant introductions

This list dates from around 1932, from the Von Siebold exposition of that year. The list is extremely unreliable, as there are a great many synonyms posing as just as many species. The authors simply copied the index of the *Flora Japonica* and a few catalogs of the nursery. There are also some South American conifers included in the list.

Literature

There are only two really excellent biographies of Ph. von Siebold. *Shure Kuzo*, written in Japanese in ca. 1896 is very comprehensive on Japanese affairs. The biography of Körner (1967), is a part of a very complete biography of the Würzburg branch of the Von Siebold family. This book is strong on family details and personal correspondence, as Körner was allowed to use the family archives.

Absolutely essential is Von Siebold's own article of 1844, written in Dutch in the Yearbook of the Royal Hort. Soc. of the Netherlands of those days. There is a very complete list of every aspect of plant Siebold imported and where it went to. Included are all the *Camellias* up till 1844.

CAMELLIA

<i>japonica</i> flor. simpl.	1829	<i>Bot. Gard. Leiden</i>
<i>id.</i> flor. simpl. fol. varieg.	1830	<i>Bot. Gard. Ghent</i>
<i>Donkelarii</i>	1829	<i>Bot. Gard. Leiden</i>
<i>id.</i> ochroleuca	1829	<i>Bot. Gard. Leiden</i>
<i>id.</i> <i>Ida</i>	1844	<i>Nursery Sieb. & Co.</i>
<i>id.</i> <i>tricolor</i>	1830	<i>Bot. Gard. Ghent</i>
<i>sasanqua</i> var. <i>japonica</i>	1844	<i>Nursery Sieb. & Co.</i>

The Channel Islands Group's Visit to Brittany

MARION SMITH

Le groupe des îles anglo-normandes visite la Bretagne

Visita del Grupo de las Islas Anglonormandas a Bretaña

La visita in Bretagna del Gruppo delle Isole Normanne

Besuch der Gruppe von den Kanalinseln in der Bretagne

On Friday 8th May 1987, 15 members of the I.C.S. flew to Lannion in Brittany, France, for a weekend which was to prove to be unforgettable.

We were met at the Airport by Mons. Jean Laborey, 'Ingénieur Horticole'; the English equivalent would be Horticultural Adviser. Before his retirement, M. Laborey used to work as an adviser to the French Ministry of Agriculture with special reference to the Brittany area. He certainly has great knowledge of the plant world which was very evident to us throughout our visits to gardens and we were most grateful to him for having accompanied us.

After checking in at our hotel at Perros Guirec and eating a delicious lunch, which was the first of the memorable meals we were to sample, we set off for Ploumanach where Mr Laborey has a house where he comes with his family for holidays.

Whilst travelling in the bus, he explained to us how Brittany used to be a very poor farming region but how the farmers have diversified their crops and, with hybridization and improved production techniques, have become very prosperous. Some crops grown include Dutch Iris, tulips and narcissi in addition to food crops, eggs and poultry. For instance there are now 7,000 growers of Globe artichokes, these growers having improved their crop from the methods used in California while the growers of cauliflowers have studied methods used in Cornwall. They have also formed 'Co-operatives' so that even small holders with less than 3 hectares can benefit by sharing machinery. We were impressed by what seemed to us to be a uniformly high standard and quality of building of the houses we passed in our bus. I noticed that there was at least one well established Camellia in nearly every garden.

This part of the Brittany coast has a distinctive rock formation of pink granite and is known as the 'Parc National des Rochers'. (M. Effel owned 27 houses here and had a keen interest in plants and in meteorology.) Many of the rocks have strange shapes, so much so that some of them have been given names such as a huge high one called 'Napoleon's Hat' which we could see as we skirted the little bay at Ploumanach leading to M. Laborey's house. As it was Liberation Day, the French were on holiday commemorating the end of the Second World War, and many people were on the beach and in the streets, shops and *câfés* of the little town which is a popular summer holiday resort.

We were extremely lucky to have very fine weather throughout our visit to Brittany so that the pink granite rocks were seen to their best advantage against a bright clear blue sky.

M. Laborey's garden is approximately 50 metres from the edge of the sea. Consequently he is mainly interested in growing plants which will grow in sandy soil and withstand sea salt and the wind and gales to which they are exposed. This part of the coast also suffered what they call locally the '3 Black Tides' when oil poured from the wreck of the Amoco Cadiz and two other tankers and covered the coastline.

The garden was really started in 1925 and immediately on entering we found it very interesting to note how he is coping with the disadvantage of the very sandy soil and the fact that in 1927 his grandfather made a large planting of Monterey pines, (*Pinus radiata*), under which it is very difficult to grow anything, particularly as they have now reached a great size and cast deep shade. He has attempted to deal with the poor soil under the pines by laying thick black polythene over which good top soil is spread. Irrigation pipes are also laid over the polythene. In some parts of the garden, under the big trees, there are plants in large plastic containers (approx. 1 metre in diameter) sunk into the ground. M. Laborey has a wonderful collection of plants. Of course he grows Camellias though it was a bit late for us to see them in flower, but they had all survived the very severe winter weather and low temperatures experienced in Europe in early 1987. For example he has 13 species of Acacia, Dicksonia from New Zealand, *Pinus thunbergii* from Japan and many other plants too numerous to list.

On the salt-laden windy seaward side of the garden, going directly on to the shore M. Laborey has heaths – prostrate *Genista scoparia* and others. *Olearias* including *wygalensis* and *mollis* – *Elaeagnus* including *macrophylla* and *ebbingei* – *Alnus cordifolia* which he finds makes a good wind break – *Grisselinia littoralis*, 15 different *Escallonias* and everywhere blue *Lithospermum* growing through *Erica carnea* making a carpet of blue and pink together with the gold of the gorses and dwarf brooms among the pink of the granite rocks on the sea shore. There are also 200 species of lichen.

The garden is a treasure trove of rare things from all over the world.

One thing which I found of particular interest was an enterprising system of labelling which we saw in some of the other gardens over the weekend. The names of the plants are 'scratched' on to home-made tin labels made from old tins turned inside out, cheap and durable.

By this time we had been joined by a further 7 members of the I.C.S. who had travelled by ferry and car in order to join us.

On Saturday 9th May we took the little ferry which goes across to Ile de Bréhat on the Pointe de L'Arcouest not far from Paimpol on the river Trieux. This is an enchanting little island about 3 km. long where there are no cars or roads only tracks. It is peaceful, and development is being carefully controlled, the only things which would run you down would be a tractor or a bicycle. Here we visited a new garden being made by Madame Santuc, who was not able to be at home that weekend, but we thank her for letting us visit her lovely garden. The house dates from 1777 and has some old trees established on the land around. Near to the house are a series of south-facing sheltered terraces with a really beautiful view to seaward and the edges of the island curving around the sides of the little bay.

Madame Santuc has a wonderful talent for arranging plants and we found many intriguing things including a small shrub which we thought was *Ulmus parvifolia* 'Frosty'

until we found a label on it which said 'Jacqueline Hillier'. A few minutes later we were again consulting Hillier's Manual to look up another and unusual rare shrub which proved to be *Neolitsea sericea*. This garden was in a glorious setting and has been superbly replanned and newly planted so that it promised to be perfect and, in a few years time, I should love to return to see how it has matured.

After lunching on the Ile de Bréhat, we returned to the mainland and visited the Château gardens of the Marquis de Kerouartz at Kestellic situated high on the side of the river Jaudy near Tréguier. The drive up to the Château has some huge trees including the biggest Cork Oak in Brittany, *Quercus suber*, specimens of *Ginkgo biloba* and *Davidia involucrata*, among many others. The garden seemed to be sheltered by the forest around and did not appear to have suffered much damage from the severe winter, but unfortunately has some trouble caused by honey fungus in one area of the drive. On approaching the Château we were confronted by an enormous specimen of *Rosa banksia lutea* at the peak of its flowering, reaching up to a great height by the steps leading up to the front door. It was interesting to look down to the river below from the top of the steep slope as the garden winds along the river bank. We looked down through the blue of some fine *Ceanothus* before wandering along forest paths for some time and then returning in our bus to the main square in Tréguier for a tour of the Cathedral and shopping.

During the I.C.S. conference in Newquay in April we discovered that much of the *Ceanothus* had been killed last winter in Cornwall but in Brittany this was not the case though those we saw were growing in very sheltered spots.

On the Sunday morning we saw a very beautiful *Ceanothus* called 'Italian Skies' when we visited the nursery Pépinière Kervalo run by Tim Vaughan who was trained at Kew. We had a wonderful morning looking at the excellent plants grown and sold here. As we entered the premises there was a very flourishing *Eucalyptus pauciflora* with red-tipped new growth and a *Grevillea juniperina*, among many other lovely plants which obviously had not suffered from the cold winter. We were able to buy plants at the nursery but we felt we would be limited by the size of the aircraft which was perhaps just as well as there is no knowing how many plants we would have bought if we had not been restricted by lack of space! Lunch was at the restaurant on the quay at Tréguier, and on to the last garden on our list which must have been, for many of us, the highlight of the whole weekend – this was the garden at Kervalo of Prince Peter Wolkonsky. If I had known in advance that we were going to visit what I can only describe as a paradise, I, for one, would not have lingered so long over my lunch! Not only is it an enormous estate of 10-14 hectares (there are approximately 2½ acres to the hectare) but, as its owner is an artist and a very talented man, he has created the most wonderful arrangements of plants on a grand scale and the most amazing sweeps of colour it is possible to imagine.

We approached down a narrow drive with Camellias along both banks. When we arrived at the Château, the drive became a circle surrounded by fine large trees and one entered the garden through the gates. What lay ahead was breath-taking. The front of the Château was planted with many 'tender' plants and to the right all along the edge of the terrace was a magnificent white Wisteria. Beyond and behind the main house we came to the long ornamental water garden with Rhododendrons each side of the water reflected in it and leading the eye up to the little pergola at the end, which the Prince had designed and built himself. Throughout the garden there was this evidence of his work, both of design and execution with several small buildings, about 2 metres square inside,

which the Prince called his 'grottos'. The interior of these was decorated with murals made mostly with outlines done with shells of all sorts but there were also pieces of glass and porcelain incorporated, forming pictures of flowers, birds and animals. In one, for instance, there was a life size mermaid reminiscent, I thought, of a Botticelli lady rising from the sea. From the top water-garden, one descended through a series of further garden levels where all the colours were blended in an exceptionally skilful manner but on a very large scale. The water also was led down to form a series of lakes that provided crossing places where the lakes narrowed. One whole area was planted with blended amber, soft orange and yellow, white and cream in a huge collection of Rhododendrons with a few deeper coloured accents, *Accents*, *Liquidambers*, *Cornus* etc. with never a discordant tone to spoil one's enjoyment. Further down, a vast sweep of pink which the Prince explained to me started 'in the water' (i.e. the lake) with pink water lilies, progressed on to the bank with a planting of dwarf *yakushmanum* hybrids going on to a planting of tall azaleas and further up to larger Rhododendrons behind, all in blending pinks and whites. This was also planned to be looked at from a distance and, from across the lake, as a huge sweep of colour. All the time we were exclaiming at the plants at our feet, at our sides and in between the shrubs. The picture created in this wonderful garden culminated at the lowest level with a view of the Spire of the Cathedral of Tréguier, seen framed by trees across the river in the town on the other bank. Yet when we drove back later along the other bank of the river and I looked back towards where the garden was, all I could see was a forested bank of trees and no clue of the wonderland hidden among them.

As we thanked the Prince for the wonderful afternoon he had given us he said 'Au Revoir and come back' – perhaps one day some of us might have a chance to return to Kervalo.

Camellia Reticulata L. F. Simplex Sealy

One of the Ancestors of Yunnan Camellias

PROF. XIA LI-FANG

Camellia reticulata L. F. Simplex Sealy - l'un des ancêtres des camélias du Yunnan

Camellia reticulata L. F. Simplex Sealy: uno de los antepasados de las camelias de Yunnan

Camellia Reticulata L. F. Simplex Sealy - Una delle antenate delle Camelie Yunnan

Camellia Reticulata L. F. Simplex Sealy - Ein Glied aus der Ahnenreihe der Yunnan-Kamelien

Many camellias with brightly coloured blossoms can be found in every winter and spring in many mountains and valleys of Yunnan Province, China. There are mainly three species and one variety of camellia in Yunnan: *Camellia saluenensis*, *C. pitardii*, *C.*

pitardii var. *yunnanica*, and *C. reticulata*. In this article we are going to introduce *C. reticulata* L. F. *simplex* Sealy. This is an endemic species to high altitude areas in Yunnan, and is an oil bearing as well as an ornamental plant. It is one of the ancestors of Yunnan camellias which are famous in the world. It has many merits such as strong adaptability, longevity and high seed yield etc. Most of its flowers are simple petaled with a colour ranging from pink to dark red. It can set fruit when its pistils develop normally. Its oil-rich seeds can have an oil content of 44.59%. The high quality oil is very nutritious and hence can be used as cooking oil. It can also be used for industrial purposes. As far as the flower form is concerned, besides simple-petaled varieties, some semi-double and fully-doubled flowers can also be found in primitive forest. When carefully selected and cultivated, those camellias with semi-double and fully-doubled flowers become very sought after ornamental cultivars.

Distribution and History of Cultivation

Camellia reticulata is endemic to Yunnan Province. Wild plants of this species are widely distributed in central Yunnan Plateau and Northeastern part of the province. The primitive forest of *Camellia reticulata* is very rarely seen in central Yunnan Plateau due to human destruction. What is left in this area is mostly secondary forest. The best preserved area is located in Tengchong county in northwestern Yunnan. The natural forests of camellia in Tengchong county are mainly concentrated in Yunhua, Gudong, Zhonghe, Qushi areas, which are all around Dayunchan and Dalichong Mountains. The total area of camellia forests in the county is about 2,250 hectares, the biggest single area is slightly more than 123 ha which is in Yunhua. In these forests in Yunnan, camellia trees which are taller than 10 metres are very common. According to the local people, the camellia forest in Yunhua has a history of more than 400-500 years. The camellias are in full blossom at the end of winter and the beginning of spring. *Camellia reticulata* is vertically distributed from 1,700-3,000 metres above sea level. But the well-developed areas are below 2,600 and above 1,700 metres. Camellia forests can grow near villages. Some locals plant camellia in gardens or courtyard in private houses, or in buddhist temples.

The General Natural Conditions of Yunhua, Tengchong County

Tengchong County is located at 25°07' north latitude, with an altitude of 1,647.8 metres above sea level. The maximum temperature is in August, which is 20.2°C. The yearly average temperature is some 14.7°C. The coldest month is January with an average temperature of 7°C, and a minimum temperature of -6.7°C. The annual accumulated rainfall is 1,391 mm. The rainfall in spring is 128 mm. The relative humidity is 79%.

Yunhua is 18 kilometres north of the capital town of the county, Tengchong. The altitude of Yunhua is more than 1,900 metres above sea level. The southeastern part and southwestern part of Yunhua are relatively higher than the north. It is a forestry, pastoral and agricultural area, with more emphasis on the former two sectors. The soil is podzolized red earth with a deep and soft top soil layer with a pH value around 6. The main constituents of the forest above 1,900-2,300 metres are: *Camellia reticulata*, *Toona sinensis*, *Catalpa fargesii*, *Lindera communis*, *Pinus armandi*, *Juglans regia*, *Trachycarpus fortunei* and bamboo, etc., which are all economic plants. The natural division of Yunhua belongs to subtropical dry and wet successional broad-leaved forest and red soil zone. Yunhua is 300 metres higher than Tengchong, which means its

temperature is 2°C lower, while rainfall is 100mm more, and a longer period of frost than Tengchong's. There are light snow and hails from time to time during January and February.

The natural vegetation of Yunhua is mainly secondary forest. Primitive evergreen broad-leaved forest can no longer be found here. Most species found in the forest are evergreen ones: *Michelia floribunda* (Magnoliaceae), *Schima forrestii* (Theaceae), *Lindera communis* (Lauraceae), *Caryodophropsis glanduliferum* (Lauraceae), *Castanopsis wattii*, *Cyclobalanopsis augustinii*, *Castanopsis delavayi* (Fagaceae).

Types of *Reticulata* L. F. *Simplex* Sealy

In the wild, Yunnan camellias often have single-petaled flower with 5-7 petals. If developed normally, it can set fruits. Under the long term influences of nature and cross pollination, various forms of camellia flowers with different colours and types can be found within a forest. Three main groups are identified in field investigation. They are: single-petaled flower group, semi-double petaled flower group, and fully-double petaled flower group.

In the single-petaled flower group, there are: single-petaled with red edge, white with red on the margin, single-petaled magnolia type which has a flower form resembling magnolia flower, light pink, single-petaled pink, single-petaled scarlet, single-petaled plum-heart.

In the semi-double petaled flower group, there are: semi-double scarlet, semi-double silver-red, semi-double crimson, semi-double scarlet.

In the fully-double petaled flower group, there are: fully-double, crimson, fully-double silver-red, fully-double white with red on the margin, fully-double pink, fully-double pink with rolled petals, fully-double white.

A Brief Introduction to the Plants of Yunnan Province

Dr ZHANG AOLUO

Brève introduction aux plantes de la province du Yunnan

Una breve introducción a las plantas de la provincia de Yunnan

Breve introduzione alle piante della Provincia dello Yunnan

Kurze Einführung in die Pflanzenwelt der Provinz Yunnan

Yunnan Province is located at the southwestern frontier of the People's Republic of China. It has a complex topography, high altitudinal relief, a warm climate and abundant rainfall. All these result in a beautiful landscape and scenery. Yunnan Province has an area of about 380,000 square kilometres. In the PRC there are about 30,000 species of higher plants (including ferns), of which 15,000 are in Yunnan Province. Yunnan has therefore been called "The Kingdom of Plants", and "The Garden of the World". Yunnan attracts botanists, horticulturists and tourists from countries all over the world. I am fortunate to be able to visit your country, and, today, I am pleased to give a brief introduction to you about the natural conditions and vegetation composition of Yunnan. It is my sincere hope that my talk will benefit and promote the friendship and mutual understanding between the people's and botanists of our two countries.

General Aspects of Natural Environments in Yunnan

Yunnan Province is located between 21° and 29° north latitude, and between 97°30' and 106° east longitude. In the north Yunnan borders on Mt. Liangshan in SW Sichuan Province. To the NE Yunnan borders on the marginal mountainous areas of the Sichuan basin in the NE of that province, and it adjoins the SE part of the Qinghai-Tibet plateau and the western part of Sichuan. In the east Yunnan forms a transition towards the Guanxi Basin and the Guizhou Plateau through a vast area of limestone mountains. In the west, southwest, southeast, and south Yunnan borders on Burma, Laos and Vietnam. As regarding the terrain as a whole, it is high in the north and low in the south, the lowest site being Hekou in the southeastern part of Yunnan with an altitude of mere 76 metres. The highest place in Yunnan is the snow-capped mountains in the northwestern part of the province with an altitude of 6,740 metres. In addition the terrain is further complicated by a network of large and small rivers that dissect the whole province. There are many high mountains and deep valleys in the northwestern part of Yunnan, and in these areas the altitudinal relief is more than 3,000 metres. Most of the rivers flow from the north to the south. Northwestern Yunnan is the core-region, the centre of the world – in the famous Hengduan Mountains. In the north Yunnan borders with the southern margin of the Qinghai-Tibet Plateau with an average altitude of 3,000

metres. The central plateau forms the largest area of Yunnan and is composed of a series of large basins. This is the most economically, agriculturally active region in the whole province. The altitude ranges from 1,600 to 1,900 metres. In the mid-southern part of the province there exist many small basins with altitudes of 1,200 to 1,400 metres. In the very south part, there are mostly valley basins having altitude of 500-900 metres.

The climate of Yunnan is controlled mainly by the southwestern monsoon – the Indian Ocean warm current which comes from the equator, and by the west wind dry air current from the west tropical continent. Consequently, the dry season and the wet season in Yunnan can be distinguished from each other. Generally the rainy season is from May to October, while the dry season is from November to April. Owing to its complicated terrain and the topography and rapid changes in altitude, Yunnan has a very complicated climate. In general, regions with an altitude below 1,000 metres have a tropical climate, those between 1,100 and 2,800 metres are subtropical, and regions above 2,800 metres are temperate. Alpine regions occur above 4,500 metres and have permanent snow.

The climatic feature of several major regions in Yunnan Province are summarized as follows:

County	Altitude	Annual Temp. (°)	High Temp. (°C)	Low Temp. (°C)	High Temp. (°)	Low Temp. (°C)	Annual Rainfall (mm)	Average Annual Relative Humidity (%)
Deqin	3588	4.6	11.9	- 2.9	22.7	-13.1	676.2	71
Zhongdian	3276	5.3	13.3	- 3.8	24.8	-25.4	609.3	70
Lijiang	2393	12.7	18.1	6.0	30.6	- 7.1	952.9	63
Kunming	1891	14.8	19.9	7.8	31.5	- 5.4	991.7	72
Menla	639	20.9	24.4	15.2	38.1	3.2	1524.8	85
Hekou	136	22.6	27.5	15.3	40.9	2.2	1763.8	86

Owing also to the complicated climatic and vegetation zones, the soil types in Yunnan also vary from each other. Generally, the soils of the tropical and sub-tropical regions are mostly lateritic. In some mountainous regions the soils under coniferous woods are brown earth or dark-brown, and mostly are acidic.

Major Vegetation types in Yunnan Province

- 1 Tropical Rain Forests: which are distributed to the south of 23°30' north latitude and below the altitude of 900 metres. In western Yunnan tropical rain forests reach as far north as 25°. Rain forests in Yunnan may be further divided into two categories:
 - a Tropical Humid Rain Forests: these occur only in the southern valleys with an altitude under 500 metres. Forests in these areas appear to be depauperate and are mainly composed of *Dipterocarpus tonkinensis*, *Crypteronia paniculata* and *Hopea mollissima*.
 - b Tropical Seasonal Rain Forests: which have a wide distribution in Yunnan. They range from southeastern to western Yunnan within altitudes of 300-700 metres. Southern Xishuangbanna is the typical distribution area for the Tropical Seasonal Rainforest. The main tree species are *Antiaris toricaria*, *Pouteria anamensis*, *Terminalia myriocarpa* and *Pometia tomentosa*. *Parashorea chinensis* was discovered in the Xishuangbanna area about three years ago.

- 2 Tropical Monsoon Forests: which have been mostly destroyed. Only a few relic stands remain. These occur primarily around the river valleys in southern and southwestern Yunnan at an altitude under 1,000 metres. In the southwestern part of Yunnan the dominant tree species are *Ficus altissima* and *Chukrasia tabularis*. While in the southern areas the dominant trees are *Gossampinus malabarica*, *Erythrina* ssp. *Melia dubia* and *Albizzia chinensis*. Among the companion trees are: *Adina cordifolia*, *Sterculia pexa*, *Garuga yunnanensis*, *Erioleana malvacea*, *Erithropis fulgens*, *Bauhinia variegata* and *Mitragyna brunnonis*.
- 3 Sub-tropical Evergreen Broad-leaved Forest: which was formerly the most prevalent vegetation type in Yunnan Province. It mainly occurs in a region to the north of 23° north latitude (in the western part of the province to 25°), and at an altitude of 1,000-2,800 metres. As this region is the most economically and agriculturally active part of the province, most forests in the basin environments, and at the middle and lower parts of the mountainous regions have already been destroyed. Accordingly and regrettably, few areas of evergreen broadleaved forests remain intact. They have been mostly replaced by *Pinus* forests – in the southern regions by *Pinus kesiya* var. *langbianensis*, and in others by *Pinus yunnanensis* intermingled with *Quercus variabilis*. The sub-tropical Evergreen Broad-leaved Forest consists of three major vegetational formations:
 - a Semi-humid Evergreen Broad-leaved Forest: which occurs in the northern part of Yunnan Province in the sub-tropical region with the middle plateau (such as Kunming) as its centre. This forest formation occurs between 1500-2500 metres elevation and stretches out to the north as far as Huili, Xichang in Sichuan Province, to the northeast it reaches Yi Liang and Dagan, while to the west it extends only to the Nujiang (Salween) River Valley. The composition of this forest is rather simple: one of the principal trees is *Cyclobalanopsis glaucoides*. Sites with deep soils are occupied mostly by *Cyclobalanopsis orthacantha* forests. In warm and humid places the dominant species is *Castanopsis delavayi*; and in low altitude situations the dominant species is *Cyclobalanopsis delavayi*. This forest formation is often intermixed with sub-tropical coniferous forests, forming an unstable mixed forest of conifers and broad-leaved trees. In such cases the *Cyclobalanopsis* and *Castanopsis* may be mixed with conifers such as *Keteleeria evelyniana*, *Pinus yunnanensis* and *Cupressus duclouxiana*.

Above 2,000 metres the semi-humid Evergreen Broad-leaved Forest mixes with *Pinus armandii* forests. The common broad-leaved evergreen trees in this association are *Magnolia delavayi*, *Machilus yunnanensis* var. *duclouxii* and *Schima argentea*. The understory shrubs are primarily *Camellia pitardii* var. *yunnanica*, *C. saluenensis*, *Olea yunnanensis*, *Meliosma yunnanensis*, *Nothopanax delavayi*, etc.
 - b Monsoonal Evergreen Broad-leaved Forests: which are distributed in the broad low hilly areas to the south of the central plateau of Yunnan Province, with an altitude of 1,100 to 1,500 metres. The composition of this forest is much richer and more variable than that of the Semi-humid Evergreen Broad-leaved Forest. The dominant trees of the Monsoonal Evergreen Forest formation are members of the Fagaceae. In sites where the soil is moist Lauraceae are common, but Magnoliaceae are rarely seen. The dominant tree species are: *Castanopsis*

hystrix, *C. indica*, *Lithocarpus truncatus*, *L. microperma*, *Schima wallichii*, *S. villosa* and *Anneslea fragrans*.

- c Mountain Humid Evergreen Broad-leaved Forest: which occurs on all large mountain ranges where the cloud-fog line is located. Such mountains include: the Ailao Mts., Wuliang Mts., Zhenkang Snow Mts. and Gaolingong Mts. to the west and Wumeng Mts. in the northeastern region. This forest is an important element of the vertical zonation of the vegetation in Yunnan Province, and interestingly enough its altitudes vary from mountain to mountain. In the northern regions this forest occurs between 2,500-2,800 metres, in the central and western sections it occurs between 2,200-2,600 metres, while in the south it occurs between 1,800-2,600 metres. As would be expected the species composition varies with the geographical regions. In the north the dominant species is *Lithocarpus craibianus*. To the south and southwest of the central plateau *Lithocarpus echinophorus* and *L. echinotholus* are dominant. In southeastern Yunnan *Lithocarpus naiadarum* and *L. pachylepis* predominate; while in western Yunnan *Lithocarpus variolosus* is the commonest species, and in the northeastern section of the Province *Lithocarpus cleistocarpus* is the most evident tree. The second-story layer of this forest is occupied by many plant groups, such as: Magnoliaceae (*Manglietia*, *Alcimandra*, *Machilus*), Lauraceae (*Neolitsea*, *Alseadaphne*), Theaceae (*Schima*, *Adlimandra*, *Hartia*), Hamamelidaceae (*Symingtonia*, *Rhodoleia*, *Myrtularia*, *Altingia*), Styracaceae (*Styrax*, *Rehderodendron*), Elaeocarpaceae (*Elaeocarpus*, *Sloanea*), Araceae (*Diplopanax*), Aquifoliaceae (*Ilex*), and Oleaceae (*Linociera*). There are many shrub species, as well as bamboos. In the north most of the bamboo belongs to the genus *Sinarundinaria*, while the south *Chimonobambusa* and *Pleioblastus* are prevalent.

4 High Mountain Coniferous Forests

These occupy an important position in the alpine areas of high mountains in north and northwestern Yunnan. These forests consist mainly of *Tsuga*, *Picea* and *Abies*.

- a *Tsuga* Forests: *Tsuga dumosa* is the dominant species and is widely distributed in the middle-elevation mountainous regions, with an altitude of 2,300 (2,400)-3,000 metres. The southernmost margin of this forest extends to the mountains bordering the central plateau to the south. At the lower edges of its vertical distribution this forest is often intermixed with the evergreen broad-leaved forest. Pure stands of *Tsuga* forests of Umeng Mts. at the northern end of the central plateau – with elevations of 2,900 to 3,100 metres – deciduous trees such as *Acer*, *Betula* and *Corylus* occur mixed with the *Tsuga* forests.
- b *Picea* Forests: occur between 3,200-3,600 metres. Since *Picea* requires level ground and moist fertile soil, large areas of pure *Picea* forests are very rarely seen. The dominant species are *P. likiangensis* and *P. balfouriana*. The former is limited to northwestern Yunnan, east of the dividing ridge between the Nujiang and Lancang Jiang (Mekong) Rivers. Extending northward the *P. likiangensis* reach the western Sichuan Province Plateau. *Picea balfouriana* occurs to the west of the dividing ridge between the Nujiang and Lancang Jiang Rivers, and extends as far as southeastern Tibet.
- c *Abies* Forests: occur in the mountains between 3,200-4,100 metres. The dominant species are *Abies forestii*, *A. delavayi* and *A. georgei*. Often at higher

altitudes or in the mountains of northern Yunnan *A. georgei* is the dominant species. These *Abies* forests often occur as pure stands, and species of *Rhododendron* form the dominant shrub layer in the forest and along its margins. In May-June these *Rhododendron* species are in flower and produce a spectacular display combined with blue sky, white snow and green canopy of trees. The main species of *Rhododendron* are *R. beesianum*, *R. taliense*, *R. rubiginosum*, *R. arizelum*, *R. wardii*, *R. saluenense*, etc. It is no wonder that Yunnan has been called "the Garden of the World". Once the *Abies* forests are destroyed by man the area is occupied by the bamboo, *Sinarundinaria*. In the southeastern border regions of the Qinghai-Tibet Plateau, *Abies forrestii* and *A. georgei* are replaced by *A. squamata* and *A. ferreana*.

5 Alpine Thickets and Alpine Grassy Marshlands

These vegetation associations occur in the upper part of high mountains between 3,800-4,500 metres. Of course, above 4,500 metres many areas are covered with perpetual snow. The alpine scrub is composed mainly of several species of *Rhododendron* the largest of which are one metre tall, while the smallest are only 20-30 or even 10 cm tall. The species most frequently encountered at these altitudes are *Rhododendron rupicola*, *R. tapetiforme*, etc. – all belonging to the subsection Laponica. *Rhododendron* species belonging to other sections and subsections include *R. forrestii*, *R. cephalanthum*, *R. primulaeflorum*, *R. pronom*, *R. temenium* and *R. campylogynum*. In addition there are sparse and isolated scrub, composed mostly of alpine willows only 20 cm tall.

The vegetation of the grassy marshland consists mainly of *Festuca vierhapperi*, *F. ovina*, *Cobrasia tunicata* and *C. stiebritziana*. This comprises the basic summer pasture-land of the high mountains in northwestern Yunnan Province.

Chinese Visitors in the ICS Conference

SING WANG

Des visiteurs chinois au congrès ICS

Visitantes chinos a la Conferencia de la ICS

Visitatori cinesi alla Conferenza I.C.S.

Chinesische Gäste bei der ICS-Konferenz

Two prominent Chinese botanists, Dr Zhang Aoluo, Director, Kunming Branch, The Academy of Sciences of China; and his wife, Professor Xia Lifang, Kunming Institute of Botany, came to the 25th Annual Conference of the International Camellia Society by the kind invitation of the ICS. In Newquay, Cornwall, they were joined by yet another Chinese botanist, Professor Ming Tianlu, who happened to be visiting Kew at the time

under the Royal Society Exchange Scheme with China. Having envisaged the possibility of language difficulty, the thoughtful host of the conference, Mr J. Tooby, the President, Mrs Freeman and other members of the executive committee of the ICS very kindly invited me – a Chinese student of Forestry at Oxford University, to take part in the conference. Together, four of us had the most enjoyable time in Cornwall.

Dr Zhang and Prof. Xia were met by Mr & Mrs Bleaney and me at Gatwick. It was still rather cold back in April but the warmth of the reception given by Mr and Mrs Bleaney certainly did a lot to keep their excitement at its height after a long journey of 16 hours. As soon as we got out of the airport, we started to appreciate the freshness of English countryside. Time and again we were driven through little villages of black-and-white timber-framed houses with daffodils scattered in the front gardens, the beautifully kept gardens quietly speak out the fact that we are entering a garden country, we are now among a people who know how to make life beautifully, and take great pride of it.

In about 40 minutes time we arrived at an elegant country house in rural Surrey. Thanks to the hospitality of Mr and Mrs Bleaney, Dr Zhang and his wife were soon put into the oldest room of the house. Several camellias in the yard immediately attracted Prof. Xia's attention, while Mr Bleaney took Dr Zhang and me for a stroll in his garden. The bells of the church next door were ringing, birds were singing, standing in front of Mr Bleaney's newly built oriental pond, they talked about the tricks of breeding camellia. I am sure they enjoyed absolutely every minute of it!

After a delicious lunch, highly enthusiastic guests were quite ready to set off for the first expedition. Having made sure that Dr Zhang and his wife were not exhausted, Mr and Mrs Bleaney were more than happy to take us to a big country house near by. It was in the garden of the house, in front of a view of white lambs on the jade-green rolling fields, Dr Zhang showed his admiration of the greenness of the English countryside, which he kept praising throughout the tour. Many familiar plants were encountered in the garden, some were from China, some were descendants of them. Dr Zhang and his wife paid much attention to the forms of trees in the garden. Visitors were impressed by the skill and dedication of the gardener which can be seen from the beautifully pruned and shaped bushes.

Two days later, Dr Zhang and Prof. Xia were brought down to Newquay by Mr & Mrs Bleaney. Having had a nice start, and been looked after so well, they seemed completely recovered from their jet-lag. Dr Zhang and Prof Xia were so overwhelmed by the friendliness of the people there. Greetings came from every corner of the hotel. Friends, old or new, gathered together, and soon engaged in long conversation. If the hotel wasn't decorated with the beautiful bouquets of camellias to remind us a conference was in progress, one could easily take it as a happy family reunion.

It is said that once you see the unfolded buds of the camellia 'Anticipation', you will appreciate the anticipation of the flower. We think this can also be appropriately used in describing the conference in Cornwall: as soon as we saw the first garden in the unfolding programme, we realized what we can anticipate. It was a pure delight to see Lanhydrock House and its garden. Because the spring of this year was slightly late, magnolia and camellia overlapped a bit – so much to our advantage. It was amazing to see how well the magnolia from Yunnan grow in Cornwall. The carefully landscaped garden demonstrated the Cornish way of gardening: rich in colour, carefully planned and maintained pattern yet still looks natural, clever combination of plants to utilize the fertile ground to its best. Dr Zhang and Prof. Xia were very impressed by different

hybrids of plants. They also took great interest in the house, particularly the library. Look back at the house from the coach just before we depart, we suddenly thought: "The British love their traditional way of life, let's wish their good traditions stand staunchly for ever, just like the good solid stone house in front of us, which will always be loved and preserved."

The following two days were very interesting and enjoyable; particularly worth mentioning was Tremeer, for so long the garden of General Harrison, but very well maintained by the present owners the Haslam-Hopwood family. Mrs. Hopwood very kindly welcomed us and took us around. Everyone was impressed with the huge variety of Rhododendrons and Camellias in the garden. Dr Zhang said it further proved the high performance of the British in plant hybridization. Prof Ming Tianlu was busy examining flowers and leaves away as Rhododendron was his speciality.

The climax of the tour must be the visit to the Cornwall Horticultural Show. On entering, we were immediately impressed by the scale of the show: under several gigantic tents there were thousands of people. Many species of camellia and rhododendron were radiating as many colours. The enthusiasm and high degree of interest shown by the general public indicates that we were in "the Garden County" of "the Garden Country". It was also here, Dr Zhang and Prof Xia met Mr Trehane, the President of Cornwall Garden Society. Having visited their large scale camellia nursery before, Dr Zhang was keen on meeting Mr Trehane. They were impressed by the Trehane family's contribution to camellia cultivation. They were also impressed by the British gardeners' commercial achievements. We all congratulated Mr Trehane on his award from the Royal Horticultural Society. Clearly, British achievements in horticulture are inseparable from the enormous amount of work the RHS has devoted to it.

Sooner than we expected, the Conference was drawing to an end. Dr Zhang's speech expressed our gratitude toward the International Camellia Society, its President Mr Tooby, his wife, and the Conference organiser Mrs Freeman. Indeed, it was owing to perfect planning that our trip was possible and so very enjoyable.

International Camellia Society U.K. Spring Conference April 22nd - 26th 1987

JOHN R. ALLAN

Congrès de printemps (Royaume-Uni) de la Société Internationale du Camélia, du 22 au 26 avril 1987

Conferencia de Primavera de la Sociedad Internacional de la Camelia del Reino Unido, 22-26 de Abril de 1987

Conferenza di Primavera dell'Associazione Internazionale della Camelia nel Regno Unito, 22-26 aprile 1987

Frühjahrskonferenz der Internationalen Kameliengesellschaft in Großbritannien, 22.-26. April 1987

The joy and satisfaction of our Annual Conferences cannot be expressed in words. As much as we look forward to visiting the gardens and places scheduled in our programme, I believe uppermost we also look forward to renewing old friendships and making new ones amongst Camellia lovers.

As we congregated in the foyer of the Kilbirnie Hotel, Newquay, on the afternoon of Wednesday 22nd April the atmosphere told everything of the occasion. The efficient organisation of our dedicated Jo Freeman, the lovely Camellia floral arrangements by Mary Chapman, the smiles and greetings exchanged between members. Altogether 72 members and 4 Chinese visitors attended the Conference.

Our visit to Cornwall coincided with the Cornwall Garden Society's 75th County Spring Flower Show and throughout the whole period of our Conference we enjoyed the glorious Spring sunshine of this beautiful South Western part of England.

Our first visit on the 23rd was to the outstanding National Trust Gardens of Lanhydrock 2½ miles South East of Bodmin, which is approached by a magnificent avenue of beech trees, and where we were met by the Head Gardener Peter Borlase who gave us a great welcome and looked after us throughout our visit. He told our assembled group how the gardens on acid soil overlaying clay were laid out to a design by George Gilbert Scott in 1857 - prior to that it was a typical English landscape where the parkland came up to the house - when the battlement wall was built and the Yew trees planted followed by lots of formal planning until 1927 when it was decided to simplify the area by grassing over many of the large ornamental flower beds and today only 6 sets of rosebeds remain, but to a different design.

The owner Lord Clifden made over Lanhydrock House with its park and woods to the National Trust in 1953, but continued to live in the house until his death in 1966.

Our tour began with the informal area where we were delighted with the magnificent sight of a large collection of Magnolias, first planted in 1933 amongst which in flower were two *M. × veitchii* Isca a lovely clone of a hybrid *M. campbellii* × *M. denudata*, one *M. campbellii* and two *M. mollicomata* all towering some 60-70 feet high. As a matter of interest, the Head Gardener mentioned that these *campbellii* and *mollicomata*

Magnolias are said to have originated as seedlings raised from Himalayan seed at Gill's Nursery, Penryn, Cornwall, who sold them to Veitch's of Exeter from where Lord Clifden bought them. We were told that nothing more was done until 1949 when more *M. mollicomata* and a few *M. Soulangiana* were planted. When Peter Borlase was appointed Head Gardener in 1966 after the death of Lord Clifden, the Trust decided that as the area was an ideal setting and very favourable for Magnolias, 68 different cultivars were planted. Some of these such as *M. dawsoniana* (a rare and magnificent species from West China) planted in 1968 are now fantastic particularly this year, but as Peter explained it is necessary to make visits every 2-3 weeks to appreciate the full beauty of these magnificent flowering trees, and with lots of paths to walk right around them, it is most fortunate as they can be viewed from all angles. We also noticed a beautiful specimen of the pink flowered hybrid 'Leonard Messel' and some large trees of *M. sargentiana robusta* another large flowered early species, and also *M. hypoleuca* with its decorative leaves which flowers later and the tender *M. rostrata*, but most outstanding was *M. Albatross* (*cylindrica* × *Veitchii*) a promising new hybrid.

Peter's enthusiasm and dedication has convinced the Trust that Magnolias are to form a major part of a plan for the next 10 years, so another 40 selected cultivars are to be planted in this woodland area. These will mainly be the best clones of the Gresham Hybrids. Lanhydrock is therefore certain to retain its reputation as one of the most interesting Magnolia gardens not only in Cornwall, but in the British Isles and is blessed by its splendid setting.

Lanhydrock is also noted for its collection of Hardy Hybrid Rhododendrons, but since Magnolias have done so well they have taken preference. However the Rhododendrons have also a pride of place in the gardens and some of those in flower as R. 'Alison Johnstone', R. 'Queen Wilhelmina', R. 'Cornish Red' and a lovely group of the yellow coloured flowers of R. 'Jack Skelton', R. 'Sloccock's Unique' and R. 'Diane' were outstandingly beautiful and added such a lot of colour to the scenery.

So far as Camellias are concerned, we were told the strange story that for some unknown reason the old Lord Clifden in his day disliked Camellias so intensely, but yet his sister Violet loved them and she bought many giving them to the then Head Gardener - a Mr. George Potter - little knowing that he was under orders to plant the Camellias where they wouldn't grow! The fatal result of this was that when the present Head Gardener took over there were only 20 Camellias in the whole estate. However we were gratified when Peter Borlase told us that he was very fond of Camellias himself because of their attractive and varied colourful flowers, good all the year round foliage, and being so very accommodating and hardy. He has during his tenure of office increased the Camellia colony to some 260 cultivars and we found some striking examples of the use to which he has improved the landscape of the gardens by his efforts.

By this time (11.30 a.m.) many of us, conscious of the fact that we had been limited to only a morning visit and had instructions to be back in the coaches by noon, decided that Lanhydrock House itself was so marvellous and inviting that many of us (including the writer) decided to abandon the remainder of the garden tour and make a dash for the House. We were not disappointed and on another occasion - if ever the opportunity arises - the Society would be well advised to consider spending a whole day here - since there exists an excellent shop, restaurant and refreshment bar organised by the National Trust.

We left Lanhydrock after making a presentation to the Head Gardener Peter Borlase

of Camellia 'Tiffany' as a token of our appreciation for such an enjoyable morning.

Our lunch arrangements were at the St. Tudy village hall where the caterers laid on an excellent meal. St. Tudy is a pretty village and we enjoyed this break in its peaceful surroundings.

Our next engagement was to the gardens of Tremeer, once the home of General Harrison who started this 6-acre garden some 42 years ago. The soil is acid, and the average rainfall is 45ins.

General Harrison and his wife were great Camellia and Rhododendron enthusiasts and they have left behind them a garden of treasures, now so sympathetically cared for by the Haslam-Hopwood family - the present owners.

Mrs Hopwood senior, who met us on arrival was very kind and left us to wander at will. The williamsii hybrids of Camellia are kept separate from the japonicas on the right. From the terrace below the house one looks across the lawn to the Rhododendrons and these clearly show the great interest the founder had for the violet-blues raised from *R. impeditum* and *R. augustinii*. There were also many hybrids raised from *R. williamsianum*. The paths through the Rhododendrons lead down to a delightful pond at the lower part of the garden where Camellia 'Donation' was reflected whilst at the east end we noticed Camellias 'Elsie Jury', 'Anticipation' and 'Francie L'.

On returning to the house one could not help but see the somewhat unusual spectacle of *Euonymus fortunei* 'variegatum' which clothed the whole front of the beautiful large house.

As a mark of our appreciation Camellia 'Lulu Belle' was presented to Mrs Hopwood on our departure.

On Thursday evening after dinner we were given two interesting lectures on Camellias by the visiting experts from China. The first of these was Professor Xia Lifang who spoke of the white forms of *C. reticulata* and said that from the seeds of this species, oil is extracted for cooking. This species no longer exists in primitive forest, although it is widely distributed in the central Yunnan and readily regenerates from stumps, after felling for fuel, and it is widely cultivated for economic purposes. However in the N.W. part of the Yunnan province it exists in numerous coloured forms, both single, semi-double and double and are regarded as the origin of many cultivars. According to some villagers they have been in cultivation for 200-300 years in the same villages, growing on volcanic ash with a pH of 6.0 to 6.5. Some selected forms have a higher oil-yield and are, therefore more valuable.

A few arboreal Camellias are still being discovered, but as yet unnamed. These individual trees are over five hundred years old and peasants tie red ribbons on them for good-luck at New Year.

Yellow Camellias also exist in the Yunnan province but would regrettably be difficult to cultivate in the British Isles, although attention is being given to breeding types which might be more useful in the future, but that is probably optimistic. In nature, *C. chrysantha* grows in S.E. Yunnan in the area close to Vietnam on the banks of rivers, as the second layer of vegetation is evergreen forest.

The area is composed of limestone rocks and there are several other yellow-flowered species in the same region.

The second lecture by Dr Zhang Aoluo dealt with the geographical distribution of the Camellia and other vegetation and of particular interest was his statement that over 30,000 species of plants exist in China (in addition to ferns, mosses, fungi, etc.), and of

these, over half of them are to be found in Yunnan province. An indication of the very rich and varied flora of that region which has given us so many worthy garden plants.

Both of these speakers were ably assisted by their interpreter Mr Sing Wang.

On Friday morning we left for Dr J. A. Smart's garden at Marwood Hill, near Barnstaple in Devon. It was a long coach drive, but mid-morning we had a welcome break in Bude for coffee and biscuits. However it was a very pleasant journey through beautiful Cornwall and Devon countryside and the sun shone all the way.

Before lunch at the Barnstaple Motel, Dr Jimmy Smart had just time to pop in for a few minutes on his way to judge at the Cornwall Spring Flower Show at Treilissick. This gave Joyce Wyndham the opportunity to present Jimmy a plant of Camellia 'High Wide N' Handsome'. He welcomed us to Devon and to see his garden where he explained he had left his Head Gardener Malcolm Pharoah to show us around. After an excellent lunch we wound our way round through the narrow picturesque lanes to Marwood Hill, not far from the North Devon coast, to his beautiful garden hidden in the hillside, where the soil is acid and rain-fall heavy. Average 45 inches a year.

Malcolm Pharoah greeted us and told our assembled members how Dr Smart came to start the garden here by buying the fields which were pasture land - some 12 acres - forming a valley with a little stream running through, and in 1969 dammed the stream to make the 2 lakes which we see today. He then planted many flowering Cherry and Eucalyptus trees, really as nurse plants to shelter the young Rhododendrons and other more delicate shrubs he was to plant. Over the years many of the Cherries have been removed after serving their useful purpose as the Rhododendrons etc. have now become well established. About 9-10 years ago Dr Smart purchased another 12 acres of adjacent hillside land further down the valley and a part of this has been planted out as a bog garden where a fine collection of Primulas, Irises etc. abound, and the remainder developed with trees and shrubs with a final planting this year of trees extending the garden to 20 acres. Malcolm reminded us that when Dr Smart originally bought the garden they were in fact an extension of the walled garden and rose garden of his old Georgian house, which he sold when he built an entirely new split level house in 1972 with large glass windows in a strategic position overlooking the lakes and most of the gardens.

Malcolm then gave us a conducted tour of the gardens in brilliant sunshine and proudly pointed out the glorious flowering Magnolia \times *loebneri* 'Merrill' - a cross between *stellata* and *kobus* for which Dr Smart was awarded an F.C.C. about 4 or 5 years ago, and across at the other side an outstanding specimen of another \times *loebneri* form in pink 'Leonard Messel', whilst nearby that rare and magnificent species of Magnolia from West China *dawsoniana* which takes 15 years to flower. Just below was Rhododendron 'Alpine Glow' of the Avalanche Group with its widely funnel-shaped delicate pink fragrant flowers and next to it the large trusses of bell shaped pale yellow purple blotched flowers of *Rhododendron macabeaenum* and a little further on *Rhododendron desquamatum* with its aromatic oblong elliptic leaves and mauve flowers. We then passed a group of Camellias, including 'Philippa Forwood', 'Donation' and *saluenensis*, before coming to a fine 25 year old specimen of Eucalyptus *simondsii* followed by another *R. macabeaenum* but nearby *R. falconeri* a magnificent Himalayan species with rust coloured tomentum and trusses of waxy, creamy-yellow, purple blotched bell shaped flowers. At this point, the glorious Spring sunshine with the joy and tranquility of the gardens was disturbed by R.A.F. aircraft, from, we were told,

the Chivenor Training Base. However our attention was soon drawn to a fine collection of Spruce and standing out so majestically was *P. likiangensis* with its very distinct young reddish shoots and reddish-pink cones. As we wound our way round the hillside we passed a fine showing of Camellia 'Donation', *Pinus nigra maritima* and then came to a plantation of Birch with the striking white bark and showy catkins of Betula 'Jermyns', *B. Jacquemontii*, *B. turkestanii* and *B. utilis* Grayswood. We next came to a beautiful young specimen of *Eucalyptus gregsoniana* (A.M. last year) and amongst the collection of these attractive Australian Gum trees which had survived the recent severe winter were found *E. debouzevillei*, *E. niphophila* (Snow Gum), *E. coccifera* from Tasmania, *E. johnstonii* also a specimen of the rare *E. pauciflora* 'Pendula' of which we were told that this was brought back as seed from the Snowy Mountains in New South Wales where it grows in a very limited area. It comes true from seed.

One had to pause at *Viburnum carlesii* 'Diana' and enjoy its fragrance, also *V. × burkwoodii*. Down by the stream we were attracted by *Lathraea clandestina* which is a parasite growing on the roots of the Willows, and also the wide variety of Astilbe, whilst in the pond large carp and golden orfe were visible.

We then visited the area outside the gardens by the Church containing Camellia mother stock plants and what a wonderful collection we found. Malcolm told us these were mainly those collected by Dr Smart from Australia and America in recent years and many just flowering for the first time. We noticed in flower 'Little Bit', 'Janie Anderson' and a very good red single form labelled "Portugal (5)", a variegated leaf form labelled "Portuense", 'Grandiflora alba', 'Lady Vansittart', 'Star above Star' showing a pretty pink flower, 'Freedom Bell' and 'Kerlerrec'. Apart from this outside mother stock area Dr Smart also has a large glasshouse planted out with Camellias, some touching the roof, and here in bloom amongst so many there were excellent specimen plants of 'In the Pink', 'High Wide N' Handsome', a tiny form called 'Kitty', 'Spring Sonnet', 'Grand Prix' - a fine red, and 'Reg Ragland' - a good red semi-double flower which has such outstanding foliage.

After this well conducted tour of the gardens and Camellia stock plants we made for either or both of the plant sales areas where there was a large selection of containerised ornamental plants propagated at Marwood Hill or to the well organised tea room where delicious cream teas were being served under the kind and attentive eyes of Dr & Mrs Brook.

We found Marwood Hill Gardens of great interest and containing a very varied collection of carefully selected choice plants. It is a garden for all seasons and this report simply attempts to highlight what caught my eye during our short April visit which cannot do justice to the foresight, dedication, toil and love which Jimmy Smart has given to this once grassland valley in North Devon and now a unique garden for posterity.

A visit to the original habitat of *Camellia reticulata* in Yunnan Province in South West China

H. A. FRASER

Visite dans l'habitat original de *C. reticulata*: la province du Yunna, dans le sud-ouest de la Chine

Una visita al hábitat original de la camellia *reticulata* en la provincia de Yunnan en China meridional

Una visita all'habitat originario della *Camellia reticulata* nella Provincia dello Yunnan nella Cina sud-occidentale

Besuch im Herkunftsland der *Camellia reticulata* in der Provinz Yunnan in Südwest-China

In November, 1985, my wife and I received an invitation from the Kunming Institute of Botany Academia Sinica to be their guests for three weeks from 22nd February, 1986, as they wanted to take us to areas not yet opened up to tourists, to see *Camellias* growing in the wild including some very old and large ones.

Also invited were Bruce Bartholomew and his wife, Terese, of California. Bruce like ourselves had visited Kunming Institute in 1978 and had kept in touch with members in a friendly way and we helped them in many ways over the years. Also invited were Mr. & Mrs. Andoh of Japan, but unfortunately Mr. Andoh's father was ill and they could not accompany us.

We felt we could not decline the honoured invitation although it meant leaving our garden in the hottest part of summer, trusting that with automatic sprinklers and good neighbours it would survive.

Travelling from Hong Kong on 22nd February, 1986 along with Dr. and Mrs. B. Bartholomew from the Academy of Science, California, U.S.A. The four of us landed in Kunming high in the mountains in glorious spring sunshine to be met by the President of Academia Sinica and others; what a welcome and honour it was. We were greeted as "Old Friends" and their first Western contacts to visit Yunnan (30 million).

We dined privately with eminent people in the plant field. After visiting the "Garden of Friendship" which we organised in 1984 and were shown the trees planted by 1985 by the President of all China, Premier, and Secretary General Mr. Hu Yoa Bang.

Our efforts to promote friendship in this field have been taken very seriously here and much appreciated by the people of China.

For two weeks we travelled in remote West Yunnan 3,000 kms in bus, 500 kms in jeep, walked 140 kms up and down mountain ranges, from a 6,000 foot plateau to almost 10,000 foot. Extensive scenery, where we saw plants on the tableland tops and field crops with livestock.

Yunnan is a tableland at 6,000 feet elevation and mountains to 10,000 foot and above. Height to 20,000 with snow cover and glaciers. Some river valleys go down to 2,000 foot or as low as 400 foot.



H. A. Fraser with the Abbot at Jade Temple

We were said to be the first foreigners ever to be allowed into this area west of the Mekong in the past 50 years and in some of the high mountain forests ever. There were a few last century and the 1920's but not these specific places described herein.

The journey was undertaken in a small bus. 2 ladies of Academia Sinica and a young man as guide who spoke limited English, and an experienced driver. The Burma Road travels generally west along latitude 25 to Dali, an ancient city over 4,000 years old, on Lake Er Hai. The road junctions to go WSW crossing the Mekong River by a new suspension bridge replacing one built in the 15th century and operating to 1930's. Situated in a deep gorge the road engineering was fantastic, climbing from 3,000 feet to over 9,000 feet and down again to river fast flowing down to some 2,800 feet in some of the world's roughest terrain.

The hillsides are mainly pine forested with undercover of rhododendrons, camellias and azaleas and flowering plums was of great interest, likewise the agriculture and land use.

The volume of traffic, heavy trucks, and commuter buses in both directions was at times passing at minute intervals. I recorded numbers and having an altimeter was able to take readings frequently of heights.

The valleys close by the river and towns were cultivated, cereals, rice, sugar cane, pepper and coffee. Crossing the Salween-Irrawaddy Divide in high altitude we left the Burma Road, 170 kms approximately from the border past the city of Baoshan to go WNW and climb to the Salween-Irrawaddy Divide, by narrow dangerous unsealed dusty road. But the scenery to the valley floor and to the high mountains beyond was indeed an experience. With pine trees and under cover of thickets of flowering camellia grown for seed from which oil extraction takes place, presented an exciting view.

Excellent photos were taken from the bus and occasionally we paused for a comfort stop at a safe place. A slip meant a crash down several thousand feet if one strayed from the stopping place.

The air on mountain tops and tableland is rare and in valleys hot and humid. In the 'dry season' it is dusty and in 'wet season' mud and insects.

Crossing the great Salween River by a suspended army 'Bailey Bridge' permitting only 2 trucks, single file at a time was a slow affair. Altitude was low at close to 2,500 foot on the flood plain by the bridge.

We walked over past military guards, could not take pictures but recorded details in log book.

Our bus took some 20 minutes to negotiate the vital crossing on the road to Tengchong. The road going on to the last town of Bhamo. Boats go down it to Mandalay and Rangoon or one can take a train at Lashio in Burma. (In 1982 we were close to that town).

On we pressed by mountain staircase road, crossing the Salween-Irrawaddy Divide through sublime vegetation and little habitation. The camellias were in bloom. Forests of rare ancient trees worked and tended by a few residents. Some trees are 300 to 700 years old. Just a riot of colour in places.

New plantations of varying red could be seen in the distance and mainly young pines on steep slopes with small camellias.

Eventually we reached the last City in China Tengchong, in the valley of one of the rivers flooding into the Irrawaddy. At the modest Hotel we were welcomed by some 'friends' and officials we met in Kunming in 1984 and were participants at the Conference.

Excited they were to see us and brought out photos.

We had good clean rooms overlooking the old City being modernised and on to the high Mt. Barrier topped with a T.V. Tower overlooking the Burma Border. The last City in China. Marco Polo came this way on his last return to Venice. He reported that it was a "fast run down to Burma" dropping some 6,000 feet in five stages (20-30 miles).

There was a customs house here in the days when Burma was under British control but it was closed in the Japanese War of 1940's, and no foreigner had come this way since. (n.d. Rewi Alley 'A Citizen of China').

A monument in the Hotel complex records the sacrifice of the Chinese Soldiers in repelling the Japanese attack and driving them back to Burma in World War II.

The welcome was warm and friendly and we were glad to have a bath in the public bath house after supper, and retire, using the distant outside toilet. As yet no sewerage, no airport, no bitumen, but electricity, TV, radio but plenty of Australian Eucalyptus trees on the roads and mountain sides.

We had a call from a medical doctor to see our health record, but we declined a consultation being fit and well.

A hard day of over 400 kms, in high altitude, perfect sunshine closed at 9 pm. Not a bad effort for people past the 'allotted life span', to undertake.

A day spent in Tengchong. The ladies, i.e. Dorothy and Terese remained in the Hotel and visited sights of the City. Myself and companion from California left with officials and the two Academy students to explore the high mountain areas to the west overlooking the Irrawaddy River and border.

Setting out in heavy frost at sunrise we were in two 4-wheel drive jeeps and climbed as far as the mountain track would take us on wheels and then on foot. What an experience. An enchanted land. Glorious trees mostly *Camellia reticulata* in bloom, all shades of red, pink and white, in height to 15 metres, about 50 feet, and of ages said to be

from 200 to 700 years old, set in farms in which maize, barley, wheat and vegetable crops are grown. With pigs, goats and cattle to graze the hills too steep to cultivate. Pack mules are used for transport on this rough terrain.

The few inhabitants make their livelihood from cultivation of the camellia "apples" and extracting the oil for local use and sale in the cities and beyond the confines of Yunnan. Oil is pressed from seed, the residue being used for insecticide in rice crops.

One camellia tree with a coverage span of 60 feet was about 40 foot high and two people holding hands could not encompass the trunk. A glorious specimen. Like a small Morton Bay fig.

A few cattle were eating the falling flowers and enjoying the sweet nectar.

All day we walked along lanes stone walled and lined with flowering trees of Camellia. All ages shapes and height.

Occasionally we called in on a farm commune and left packets of vegetable seed, creating much interest.

An experience I will never forget, and the locals say that no white man had passed that way before. Far away from habitation or town.

We had to obtain official permission to go into the area and were our passports held in Kunming City.

Returning to Tengchong City, finding the ladies waiting to tell us that an official welcome banquet had been called to honour us at 5.30 p.m. Here County high officials, entertained us and we left behind tokens and presents from far away Australia, and seed, we were granted 'friendship' and told we could come again and be welcome.

Next day we visited gardens in the city and saw ancient flowering camellias, some again at 40 feet in courtyards of the old houses. All a delight to see: core tests confirmed scent.

Again we visited a Tea Oil Plantation of some 12,000 acres on a mountain side, camellias in full bloom.

This area was interesting, for my friend Rewi Alley told me of this on my first trip in 1978. He had advised the Provincial Government to reclaim mountain land, plant pines, and camellias and here I saw the result, a profitable business for the future.

After 3 days, at sunrise we took our leave, of many friends, left good friends behind and set off on the long day's drive back to Dali arriving at suppertime, seeing the countryside from a different angle.

After a good night's rest, we rose to find snow was falling, and set out for the 10,000 foot climb travelling North West to Lijiang and on the Tibet Highway North.

Travelling in snow all day. Fortunately the mountain passes were open, as it was a sudden unseasonal fall and there was no build-up. Reaching the City of Lijiang the snow had ceased but a cold wind brought temperatures down. Our Hotel had no heating and our room was down to -3°C , at an altitude 9,000 feet. Heavy snow overnight presented a spectacle of great beauty next morning.

Rising early we were on the road at 08.30 bound for Jade Mountain Monastery at about 9,300 feet, climbing on foot several hundred feet.

Sunshine made our trip pleasant but we had to trudge about $1\frac{1}{2}$ kms in snow to this ancient 15th century monastery to see ancient trees and the "Flowering Camellia" over 500 years old in red flower bloom and snow covered, also an ancient Magnolia tree close by.

We had the Deputy Commandant with us and he was a medical doctor who was surprised at our health and walking ability.

I visited this place last year and we were now the second group of Westerners through this way. Lunching in a town at a very old house (700 years) in which there was a mural painting of great value and interest depicting life and the countryside. Others had been destroyed with the ravages of time and warfare.

Returning to our Hotel we caught a glimpse of the setting sun on the snow caps on Jade Mountains, Mt. Lijiang about 17,000 feet being the highest.

The modern Hotel had good hot water and this helped us to endure the intense cold in our rooms.

Next day we set out to see the "Great Bend" of the upper Yangtze River close to Shigu. We were able to look down on the snow covered valley but could not go beyond a small village to be received by the Cadrae in his home.

A fine old house with courtyard garden. A scholarly man. Said the house was built 500 years ago – in perfect repair. Well furnished with chairs made from camellia wood.

We sat on chairs covered with tiger skins. For Shigu is close to the "Tiger's Leap" on the Yangtze and these animals are still hunted.

The morning was spent visiting houses and seeing flowering camellia trees of great age. One 700 years old was in courtyard. Damaged 100 years ago when the house caught fire but flowering 'en masse'.

Being the first ever western visitors, the school was brought to the house to meet us. I had my card in Chinese and gave some away and a few prints of kangaroos I had in my log book. – Great excitement when we talked about them to a crowded audience.

Lunch cooked specially in the village. Café was good, as it was still cold we enjoyed the warmth of a brazier! After toileting in the "Bank" compound as it was secluded because of the building holding money and 'out of bounds' was appreciated. As we left to go to climb a mountain range on foot in the snow to get a glimpse of wild low growing camellia species, rhododendrons, etc.

Our guide was my own age, and a farmer and other companions half my age. Dorothy remained behind at the farm house with the ladies. They took us up a mountain track to gaze over to Jade Mountain and the Yangtze River some 40-50 kms away, but the road was not for wheels. A day's journey on a mule and overnight stay.

Late in the afternoon, we returned to the city along a steep mountain road with much snow and distance of some 100 kms for the day. Much in snow slush.

Cold and tired, bed was at 7.30 pm after hot bath to rise at 6 am next day in the dark to go some 400 kms to Chuxiong City close to the Kunming Chengdu Railway. The sun rose on Jade Mountain a glorious sight as we climbed the highway pass.

Retracing our steps to Old Dali for lunch and on to the Burma Road going east. A puncture on the mountain road was an eventful affair. All out, and standing, with heavy traffic at one stage one a minute passing down hill and one every two minutes on the climb. We looked down on a huge valley 2,000 feet below. A mosaic of beauty, green crops, red soil, and yellow rape glowing off the water in the rice paddies.

Later we were safe at our Hotel at sundown. Another long day, 8 trips along this way for me and 6 for Dorothy.

A night's rest, early rising and out to a mountain area north past Dayoo village, to a tableland area above 9,000 feet of great beauty. Pine forests, small farms, and to my great delight found flocks of Merino sheep, if you please. I identified these as Spanish Merinos and eventually found that they came there in 1916 from North Xinjiang, coming earlier from Spain.

I was able to catch one with permission from the shepherds and examine the wool. Large framed, being plain bodied.

Travelled the area on foot visiting ancient farms growing barley, oats, peas, maize. Saw some extremely old and twisted camellias, over 700 years old on a terrace bank.

The notice on one farm house said it had been built about 800 years ago. The stone was in good condition but woodwork was under much needed repair.

We walked in this tranquil place, past a TV Tower for it was on the summit and looked to the never ending mountains of Yunnan, a four point of compass.

Lunch in a military barracks, in perfect sunshine with huge flowering cherry trees, was a delight to experience in clear rare mountain air.

The long downward drive to the Burma Road was an experience in itself. How the driver negotiated the sharp bends, was amazing. Safely on the black top road and to the hotel for supper and rest.

The driver spent several hours servicing the bus outside our room. For we were on the last leg back to Kunming City.

An early start for the last day's drive, which was full of interest as we were able to stop at times and to walk into the mountain area, and also to inspect the farm crops.

Lunch in a small town was in the "real old China", the last day of our 14 days in West Yunnan.

Back to the City of Kunming and evening engagements with the Academia Sinica, some shopping amongst huge crowds. Preparation for an important honour Banquet in Green Lake Hotel concluded a memorable journey.

At the banquet our hosts thanked us for our help, since 1978, our establishment of a friendship link in Plant Science, and showered us with their kindness. Presenting us with a first copy of a book which took ten years to present. We had sent colour film over in 1979. "Yunnan Camellias in China".

So concluded a journey and association with great people who have passed through hard times, to rise up, and work for the betterment of all people in People's Republic of China.

Farewells to make, and plans for departure for Beijing the Capital and Headquarters of Academia Sinica in China.

A rest day and packing to leave finally on March 10th by Trident Aircraft for Beijing.

A large crowd farewelled us and our host Prof. Zhang Aoluo travelled with us to Beijing and looked after all our travel arrangements. Right to arrival in our Hotel.

March 11, we dined with famous Prof. Tang Peisung, a friend of long standing and now Emeritus Head of Academia Sinica, China.

This honour for Dorothy and I is one we will long remember.

Again thanks from China and a statement that we have seen more of China than most of the Chinese themselves, certainly more than our hosts.

Next day was free to attend to business in Beijing and Trade matters and call at the Embassy to sign the visitors' book for the 8th occasion. Visited Rewi Alley (88 years) our great friend – (came to China in 1923) in his residence. Discussions with businessmen completed the day.

Next day leaving for Sydney direct at 16.15 by C.A.A.C. to arrive back in Australia at 0900 and the XPT Train to Wagga and in our home at 16.30 just 24 hours, when before it would take up to 4 days, 1985 2 days.

10 trips to China over the past 7½ years, spending in all 10 months in China.

The Camellias of Yunnan

T. J. SAVIGE

Les camélias du Yunnan

Las camelias de Yunnan

Le Camellie dello Yunnan

Die Kamelien von Yunnan

Yunnan, the south-western province of China, situated on the tropic of Cancer, is a country of high plateaux and mountains, deep valleys and fast rivers. It has long been recognised as the "Kingdom of Plants" for its rich and varied flora. Amongst the most beautiful of its flowering plants is the *Camellia reticulata*, which has become famous throughout the Camellia growing world, ever since they were brought to universal notice by Professor T. T. Yü at the 1950, R.H.S. Camellia and Magnolia Conference in London.

Since that time, considerable research has been carried out into re-establishing the old varieties and adding to their number, by the botanists at the Kunming Botanical Gardens. Foremost amongst those who specialized in this work were the scientists, Feng, Guomei; Xia, Lifang and Zhu, Xianghong.

The final result of this work has been three different editions of "The Camellias of Yunnan" that have been published over the five years, 1981 to 1986. The first book, published in Japan with a Japanese text, illustrated and described 106 cultivars of *C. reticulata* with their transliterated Chinese names and the English equivalents. This was published in 1981. The second work, published the same year, was in Chinese with the same cultivars, illustrated by paintings and colour photos, the only English being the translated names for each cultivar. Finally a third publication, fully in English, has come to hand, published by the Science Press, Beijing, China, which illustrated and describes 120 cultivars of the Chinese *C. reticulata* plus a separate chapter on the Camellia species which grow in Yunnan. While some of these illustrations are common to two or all three editions, each also has many new ones. To compare the common illustrations is to realize the considerable variability in the quality of the colour of the plates in the different edition.

The valid names of these Camellias are in the original characters or their transliterations. The English translations are only regarded as synonyms. As none of the editions has an alphabetical index of the transliterated names in romaji, this has been compiled and is as follows:

Characters	Transliterated Names in Pinyin	Japanese Edition Page No.	Chinese Edition Plate Page	English Edition Page No.	English Synonym or Translation
宝石花	Baoshihua	73	49,p.30	53	Jewel Flower
宝玉红	Baoyuhong	56,57	33,p.21	48	Red Jewel
宝珠茶	Baozhu Cha	138	110,p.69	93	Noble Pearl
碧玉	Biyu	32	7,p.7	28	Flushed White Jade
彩玉	Caiyu	43	21,p.14	39	Beautiful Jade
春之恋	Chunzhilian	—	—	80	Spring Love
大桂叶	Daguiye	66	41,p.26	50	Large Osmanthus Leaf
大红袍	Dahonpao	71	47,p.30	51	Bright Red Gown
大金毵	Dajinsui	36,37	15,p.11	36	Early Sunshine
大理茶	Dali Cha	143	117,p.24	98	Dali Queen
大理蝶翅	Dalidiechi	86	65,p.39	64	Dali Butterfly Wings
大玛瑙	Damanao	142	121,p.77	96	Large Cornelian
淡大红	Dandahong	94	75,p.45	70	Pale Spinel Pink
大桃红	Dataohong	104,105	83,p.50	72	Crimson Robe
大银红	Dayinhong	74,75	50,p.31	56	Shot Silk
大云片	Dayunpian	44	22,p.15	41	Large Cloudy Petal
丁香红	Dingxianghong	52	28,p.19	45	Lilac Red
独心大理茶	Duxindali Cha	146	119,p.76	99	Single Heart Dali Camellias
独心蝶翅	Duxin Diechi	100	79,p.47	63	Single Heart Butterfly Wings
独心银红	Duxin Yinhong	—	—	37	Single Heart Spinel Pink
二乔	Ergiao	30	8,p.8	31	Beauty Twin
飞霞	Feixia	88	64,p.38	77	Flying Cloud
粉丹	Fendan	97	76,p.45	71	Sunset Glory
粉娥娇	Fenejiao	—	—	75	Pretty Pink
凤山茶	Fengshan Cha	115	90,p.54	87	Fengshan Camellia
粉红蝶翅	Fenhong Diechi	95	70,p.42	67	Light Pink Butterfly Wings
粉红星	Fenhongxing	70	45,p.29	54	Pink Star
粉蝴蝶	Fenhudie	85	62,p.37	63	Pink Butterfly
粉通草	Fentongcao	—	—	85	Pink Chrysanthemum Petal
粉玉	Fenyu	—	9,p.8	30	Pinkish Jade
粉玉兰	Fenyulan	—	—	32	Pink Magnolia
粉翎云	Fenzhaoyun	49	26,p.17	43	Rosy Clouds
宫粉	Gongfen	—	—	30	Pink Palace
归霞	Guixia	91	69,p.42	67	Captain Rawes
桂叶洋红	Guiye Yanghong	70	53,p.32	57	Osmanthus Leaf Carmine
桂粟桃红	Guiye Taohong	69	48,p.30	—	Osmanthus Leaf Crimson
鹤顶红	Hedinghong	121	96,p.59	87	Crane Crest Red
恨天高	Hentiangao	125	98,p.60	86	The Dwarf
红宝石	Hongbaoshi	—	—	101	Red Jade
红金翎	Hongjinling	145	122,p.78	102	Crimson Petaloid
红梅	Hongmei	103	81,p.48	71	Crimson Mume
红碗茶	Hongwan Cha	29	10,p.8	29	Red Bowl Camellia

Characters	Transliterated Names in Pinyin	Japanese Edition Page No.	Chinese Edition Plate Page	English Edition Page No.	English Synonym or Translation
红五心	Hongwuxin	106	84,p.51	73	Crimson Five Heart
红霞	Hongxia	90	68,p.41	65	Red Cloud
厚叶蝶翅	Houye Diechi	98,99	78,p.47	69	Butterfly Wings
花叶宝珠	Huaye Baozhu	137	109,p.69	94	Variegated Leaf Jewellery
尖叶桃红	Jianye Taohong	67	42,p.27	53	Pointed Leaf Crimson
靖安茶	Jingan Cha	147	120,p.76	97	Jingan Camellia
锦袍红	Jinpaohong	128,129	101,p.62	91	Brocade Gown Red
金蕊芙蓉	Jinrui Furong	39	17,p.12	38	Golden Stamened Hibiscus
金心宝珠	Jinxin Baozhu	62	38,p.24	44	Golden-Heart Jewellery
金心大红	Jinxin Dahong	38	16,p.12	35	Golden-Heart Scarlet
九心紫袍	Jiuxin Zipao	132	123,p.78	101	Nine Hearts Purple Gown
卷瓣蝶翅	Juanban Diechi	83	55,p.33	77	Rolling Butterfly Wing
卷瓣牡丹	Juanban Mudan	110,111	108,p.68	78	Rolled-Petal Peony
菊瓣	Juban	113	86,p.52	84	Chrysanthemum Petal
昆明春	Kunmingchun	61	40,p.26	54	Kunming Spring
亮叶银红	Liangye Yinhong	76	51,p.31	57	Glossy Pink
莲片托珠	Lianpian Tuozhu	42	20,p.14	40	Lotus Pearl
连蕊	Lianrui	40	19,p.13	38	Double Bowl
六角限天高	Liujiiao Hentiangao	126	99,p.61	90	Hexangular Dwarf Rose
柳叶银红	Liuye Yinhong	58	34,p.22	47	Willow wand
卵叶银红	Luanye Yinhong	41	18,p.12	39	Ovate Leaf Pink
玛瑙菊瓣	Manao Juban	114	87,p.53	84	Cornelian Rose
玛瑙紫袍	Manao Zipao	124	97,p.59	82	Cornelian Purple Gown
麻叶桃红	Maye Taohong	55	32,p.21	46	Reticulate Leaf Crimson
麻叶银红	Maye Yinhong	50,51	30,p.20	50	Reticulate Leaf Pink
玫红桂叶	Meihong Guiye	64,65	43,p.28	51	Rosy Osmanthus Leaf
梅红五翅	Meihong Wuchi	—	—	90	Rosy Five Wings
牡丹茶	Mudan Cha	133	102,p.63	92	Peony Camellia
平瓣大理茶	Pingban Dalicha	60	37,p.24	48	Flat Dali Camellia
蒲门茶	Pumen Cha	148,149	124,p.79	99	Pumen Camellia
俏玉兰	Qiaoyulan	35	13,p.10	33	Pretty Magnolia
罄口	Qingkou	28	6,p.7	29	Empty Mouth
曲瓣桃红	Quban Taohong	68	46,p.30	52	Rolling Crimson
赛芙蓉	Saifurong	—	—	89	Superior Hibiscus
赛菊瓣	Saijuban	112	27,p.18	85	Super Chrysanthemum Petal
赛牡丹	Saimudan	136	107,p.67	97	Super Peony
赛桃红	Saitaohong	102	82,p.49	73	Super Crimson
狮子头	Shizitou	140,141	112,p.71	95	Lion Head
水芙蓉	Shuifurong	59	36,p.23	49	Pink Hibiscus
送春归	Songchungui	107	85,p.51	74	Late Spring
松子鳞	Songzike	120	95,p.58	88	Pine Cone Shell

Characters	Transliterated Names in Pinyin	Japanese Edition Page No.	Chinese Edition Plate Page	English Edition Page No.	English Synonym or Translation
松子壳	Songzium	118,119	94,p.57	83	Robert Fortune
桃红宝珠	Taohong Baozhu	—	—	76	Pink Jewel
桃红牡丹	Taohong Mudan	134	103,p.64	102	Crimson Peony
桃红绣球	Taohong Xingju	101	80,p.48	70	Crimson Ball
桃红朝阳	Taohong Zhaoyang	47	60,p.36	43	Crimson Perfection
童子面	Tongzimian	122,123	91,p.55	81	Baby Face
团叶蝶翅	Tuanye Diechi	96	74,p.44	68	Broad Leaf Butterfly Wings
万朵茶	Wanduo Cha	130,131	—	103	Ten Thousand Flowers Camellia
晚春红	Wanchunhong	—	—	89	Late Spring Red
仙叶茶	Xianye Cha	82	59,p.36	61	Fairy Pink
小桂叶	Xiaoguiye	77	52,p.31	55	Osmanthus Leaf
小桃红	Xiataohong	80	58,p.35	60	Small Crimson
小叶牡丹	Xiaoye Mudan	135	105,p.66	94	Small Leaf Peony
小叶银蝶	Xiaoye Yindie	—	—	76	Small Leaf Pink
小银红	Xiaoyinhong	—	—	59	Small Crimson
小玉兰	Xiaoyulan	33	11,p.9	34	Small Magnolia
细桂叶	Xiguiye	72	44,p.28	55	Narrow Osmanthus Leaf
喜迎春	Xiyinchun	46	24,p.16	37	Happy Spring
雪撒桃花	Xuesa Taohua	—	—	88	Snow Flake on Peach Blossom
洋红绣球	Yanghong Xiugiu	84	80,p.48	80	Carmine Ball
银粉牡丹	Yinfen Mudan	109	104,p.65	78	Pink Peony
迎春红	Yingchunhong	63	39,p.25	59	Welcome Spring
银荷花	Yinhehua	48	25,p.17	42	Silver Lotus
银红蝶翅	Yinhong Diechi	87	63,p.38	65	Spinel Pink Butterfly Wing
银红狮子	Yinhong Shizi	—	—	74	Spinel Pink Lion
一品红	Yipinhong	127	100,p.61	91	First Class Red
玉带红	Yudaihong	54	31,p.21	46	Jade Striped Red
玉兰茶	Yulan Cha	34	12,p.9	33	Magnolia Camellia
虞美人	Yumeiren	45	23,p.16	42	Corn Poppy
云华茶	Yunhua Cha	81	57,p.34	60	Yunhua Camellia
玉狮子	Yushizi	92	71,p.42	68	Jade Lion
早牡丹	Zaomudan	108	106,p.66	79	Early Peony
早桃红	Zaotahong	89	87,p.41	66	Early Crimson
张家茶	Zhangjia Cha	93	73,p.43	62	Chang's Temple
朝霞	Zhaoxia	79	54,p.32	58	Morning Cloud
紫袍	Zipao	116,117	88,p.53	82	Purple Gown
朱砂紫袍	Zhusa Zipao	139	115,p.73	100	Vermilion Purple Gown
醉娇红	Zuijiaohong	53	29,p.19	45	Intoxicatingly Charming Red

International Camellia Society Trials in UK

Report No. 3 as at March 1987

A. E. F. LANE

Expériences de la Société Internationale du Camélia au Royaume-Uni; rapport no 3 (état mars 1987)

Concursos de la Sociedad Internacional de la Camelia en el Reino Unido. Informe No. 3, marzo de 1987

Le gare dell'Associazione Internazionale della Camelia nel Regno Unito - Relazione N.3 al marzo 1987

Versuche der Internationalen Kameliengesellschaft im Vereinigten Königreich - Bericht Nr. 3, Stand von März 1987

A further audit of progress has now been made and the following table shows the extent to which plants were in bud on 30 March, losses since the last report and numbers remaining in the trial.

	Belfast	Edinburgh	Harrogate	Willoughbridge	Total
Over 10 buds	25	26	3	10	64
Over 50 buds	6	10	—	7	23
Losses 86-87	1	3	26	16	46
Number now in trial	72	87	38	69	266

The losses have been heavier in the past 12 months than in previous years – as much as 15% of the plants on trial – but they occurred mainly at Harrogate and Willoughbridge. At Harrogate most of the losses can be attributed to the failure of many varieties to recover during the summer from the severity of their exposure in the winter of 85-86. At Willoughbridge, although there were 16 losses, it was a generally good flowering season with a large increase in the number of varieties producing over 50 buds. The encouraging results at Edinburgh and Belfast are due to the more congenial sites there (allied to a high standard of husbandry!) and at these centres a good show of blooms can now be relied upon. There are few losses and there is a consistency of flowering.

This year's results point again to the importance of local conditions as an ingredient for success. Good siting to provide screening from prevailing winter winds, acceptable soil conditions and continuous care in cultivation are critical and of equal significance to location in UK in terms of degrees of latitude.

The varieties doing best at each of the trial centres were:

BELFAST (plants producing over 50 buds): St Ewe, Lady Vansittart, Blue Danube, Brigadoon, Charles Michael and Inspiration.

EDINBURGH (plants producing over 50 buds): Dainty Dale, Bow Bells, Citation, Garden Glory, George Blandford, Mary Christian, Mary Larcom, Water Lily, Grand Jury and Inspiration.

WILLOUGHBRIDGE (plants producing more than 50 buds): Glenn's Orbit, Charles Michael, George Blandford, Mary Christian, Bridal Gown, Clarise Carleton.

HARROGATE (plants producing *any* buds): Innovation, Bridal Gown, Dainty Dale, Mary Larcom, J C Williams, Brigadoon, Dr L Polizzi, Freedom Bell, Charles Colbert, Elegant Beauty and Inspiration.

Looking at the results overall this year the varieties which flowered particularly well are:

Inspiration	Charles Michael
George Blandford	Dainty Dale
Mary Christian	Mary Larcom
Bridal Gown	

The best variety in the Society's trials this year is Inspiration, a *reticulata* hybrid introduced in 1954, which incidentally takes pride of place for the third successive year.

At each of the trial centres there are developments to report. In Belfast the Director of Parks, Mr Craig Wallace, continues to take a close interest in the trial and his panel of nine judges have been active throughout the year assessing merit under a variety of headings. Resistance of flowers to adverse weather was specially noted and St Ewe and Joan Trehane were outstanding and good respectively in this regard. Joan Trehane was also most highly commended by the panel in a list of "best cultivars" along with St Ewe, Brigadoon, Anticipation and Inspiration. At Edinburgh there was an excellent flowering season and a number of improvements have been made to the south-facing trial bed. Edinburgh has now the largest plants in the trial, several standing over six feet. At Willoughbridge improvements in layout, signs and labels are in hand to increase interest for visitors to the garden – surely one of the most delightful in the Midlands. At Harrogate the disappointing showing has resulted in a decision to move the plants under trial to a less exposed site in a bed where there will be a mixed planting with other shrubs. Particular attention is to be paid to careful preparation of the bed to mitigate the effects of the heavy clay.

The Society is indebted to the four sponsors of the trials who continue to give practical help in tending the plants and whose records have enabled this annual review to be made. The plants on trial are on view to the public at each of the centres and visits by members of the Society would be specially welcomed.

Camellia Oil Production in Australia moves into Field of Commerce

H. A. FRASER

Wagga Wagga

La production d'huile de camélia en Australie entre dans sa phase commerciale

La producción de aceite de camelia en Australia entra en la esfera del comercio

La produzione dell'olio di Camelia in Australia entra in campo commerciale

Die Kamelienölerzeugung in Australien dringt in den kommerziellen Bereich ein

Readers will be wondering what has become of the seed they collected and sent to me. Things are moving a stage further as you will see from this article.

Please accept my grateful thanks for past help.

A consignment of 'grain' was forwarded to France for evaluation. Only 20kg were available and this was not sufficient for a mill run. Other than expressing keen interest in obtaining larger quantities and saying the oil was of desired quality nothing further to hand from "Bertin" of Courbeavoie, France.

As mentioned in the January, 1986 Journal -

The C.S.R. Co., consulted with me on the question of producing oil from *Camellia* species including the variety *sinensis* used for tea, now growing in both N.S.W. and Queensland on increasing areas commercially.

I was awarded a consulting brief to formulate a production unit for the areas producing Macadamia nuts adjacent to Nambor in Queensland and Tweed-Richmond areas of N.S.W., having made a number of visits to inspect same in 1982.

As you will see in an article written in this journal by my wife we visited Yunnan Province in February, 1986, and I looked into the production of "Red Tea Oil" as the Chinese call it in the vicinity of Tenchong, on the Irrawaddy-Salween River divide close to the Burma Border where there is a viable oil industry. Many thousands of hectares of native *reticulata* forests are controlled by a number of communes (5 in all) and in addition some 12,000 hectares of land have been re-afforested by the Forestry Authorities at Tenchong using *reticulata* and here an established research station named "Red Tea Oil Research Station", staffed by highly trained scientists working on *reticulata* species is an important project.

This friendly contact is most valuable and information obtained will be of great assistance to the 'industry' about to start in the areas mentioned.

On returning home I was informed that the C.S.R. Co., had sold its' entire Macadamia enterprise and a Company had been formed with considerable capital and overseas market connections to exploit the potential of acquired lands suitable for Macadamia nuts, tea, and to establish a *Camellia* Oil plantation, and extraction plant.

The C.S.R. staff have, in the main, transferred to the new company and comprise

highly trained Horticulturists, Orchardists, Engineers, Chemists and Market Personnel.

I have been retained by this new company to advise on the formation of the project in conjunction with a Tea Estate. So things have changed direction a little and a step further forward.

Company policy will now be to produce the oil in Australia and market same as a finished product and thus gain the maximum return.

Residue is of value as an insecticide and for incorporation in ready mixed concrete. It is not intended to now sell unprocessed 'grain' for overseas oil extraction. The Companies concerned in the venture have the capacity to undertake this new and exciting enterprise having the necessary expertise to get it going on a profitable long range commercial enterprise.

The emphasis will be in developing plantations mainly of *reticulata* species and also *sasanqua* along with the 'grain' from tea plantations. A large quantity of *C. sinensis* from productive tea plantations will be crushed in mid-1987. Seed for base planting of *Reticulatas* is being imported and research staff will make clonal selections of stock plants for improved yield.

The writer is spending a period of residence in the Queensland area in the coming winter to get field operations under way.

There is a future for this new industry in Australia in utilising the *Camellia* plant "as an article of Commerce" as the Chinese do (using the words of Rewi Ally to me in Beijing in 1978).

After some ten visits to China and researching *Camellias* I see no reason at all why we could not develop a thriving new industry for Australia. The conditions in Queensland are in my opinion equal to and in some cases better than Yunnan, China. The by-product of oil in the large tea industry will be of great commercial value. We have machinery designed and made in Australia for this work.

The table below previously published in oil content of Australian *Camellia* species is interesting in comparison with recent (published 1986) work done by staff of Kunming Botanical Institute which I acknowledge.

Australia

Average of samples from 1982

<i>C. sinensis</i>	23.1%
<i>C. japonica</i>	66.4%
<i>C. sasanqua</i>	61.4%
<i>C. Hybrid (Various)</i>	61.8%

By solvent extraction.

China

Reticulata (Simplex-Sealy) "Red Tea Oil"	- Tengchong 57.6%
Reticulata Variety Dalicha	- Kunming 57.5%
Reticulata Variety Zautauhong	- Kunming 53.75%

Oil in China is largely extracted by the press method with heat and is agreed to be not as efficient as solvent method. *Reticulata* oil is of the highest quality while oil from *C. sinensis* is lower and is largely used for industrial purposes mainly in paints.

Camellia oleifera also used for oil in China, is not used for culinary purposes as it is inclined to go rancid on storage.

New Registrations, 1987

Nouvelles inscriptions au registre 1987

Nuevos registros, 1987

Nuove iscrizioni, 1987

Neuregistrierungen 1987

No. 13 *C. japonica* cv. Erminia Sevesi.

Originator: Dr Antonio Sevesi, Piazzale Cadorna 6, 20123 Milan, Italy

Flower: White, loose paeony form with notched petals and central petaloids; filaments white, stamens yellow, RHS 12A, intermixed with petaloids. Number of petals about 40. Flowers remain on bush. Flowering season very late, short.

Leaves: ovate, flat, glossy, mid-green, RHS 138c juvenile, 138A mature, apex acuminate, serrations average, size 5.9 cm long by 3.5-5.8 cm wide.

Plant growth: fastigate, slow.

Name: 'Alessandra Anelli'

Originator: Dr. Antonio Sevesi, Piazzale Cadorna 6; 20123 Milano; Italy.

A *C. japonica*, rose form double, opening to semi-double, with 26 rose pink (R.H.S., C.C. 52b) petals standing apart, and a central column of stamens, with yellow anthers and white filaments. Some light streaking (R.H.S. 49b). Average flower size, 11 cm. wide by 5.5 cm. deep. Blooms midseason. Leaves, midgreen, glossy, flat, oval, moderately serrated, apex acuminate, average size, 10 cm. long by 5 cm. wide. Plant growth, fastigate, slow.

Book Review

H. JOHN TOOBY

Notes bibliographiques

de libros

Rassegna libraria

Buchbesprechung

Les Camélias by Jean Laborey. La Maison Rustique, 26 Rue Jacob, 75006 Paris.

I believe that this is the first book on camellias to be published in France for some years. As such it is particularly welcome being comprehensive, reliable and well-illustrated.

Following the bilingual introduction by former I.C.S. President, Mrs. Violet Lort-

Phillips, and the preface by SNHF President Michel Cointat, the acknowledgements are largely a roll-call of most of the top experts of our Society.

As befits a Gallic work the book is divided into three parts.

History starts off with fresh information on the life of George-Joseph Kamel brought to light by Louis Winter. In the story of camellias in France due acknowledgement is made to the work of Paul Plantiveau in gathering together in the parks of Nantes one of the best and best-labelled collections of camellias to be found anywhere in the world.

Descriptions of several French gardens, mainly in the north and west follow and there is an interesting discussion on the problems met by camellia growers in the mainly calcareous south-east. The limitations of soil, of pH and of climate are discussed and interspecific hybridisation is recommended as a means to extend the area where camellias can be grown. In this connection the survival of *C. oleifera* P.I. 162475 in the U.S. National Arboretum at Washington is noted, and the pioneer breeding work of Dr. W. L. Ackerman and Dr. Clifford Parks is acknowledged. The section on culture is sound with clear diagrams on fertilisation, growing from seed and cuttings and on layering and grafting. As befits a European author, M. Laborey deplores the American practice of introducing virus into camellias and draws attention to Dr. Crézé's work on virus elimination by means of meristem grafting. The use of camellias in the landscape is considered by several eminent gardeners and there is a good discussion on companion plants. Bonzai camellias are mentioned and Ikebana is described by a French expert. In the chapter on pests there is an intriguing reference to research in progress which may lead to the use of a nematode to destroy the larvae of the vine-weevil.

The botany section commences with a contribution on camellia species mainly culled from Chang and Bartholomew by our past President and Registrar Tom Savige which includes descriptions of all species known to be available in the west. This is followed by descriptions of those cultivars recommended for northern France, mainly of *C. japonica*, but including 15 *C. sasanqua* (with a suitable note on finding the warmest possible position) and 17 hybrids of various sorts. The captions on the illustrations of 'Anticipation' and 'Brigadoon' seem to have been misplaced by the printers, as have those of 'Charles Michael' and 'Cornish Snow'.

Altogether this a good book, a must for French readers and worth considering by other northern members with a reasonable knowledge of the French language.

INCOME AND EXPENDITURE ACCOUNT YEAR ENDED 31st DECEMBER, 1986

	NOTE	1985			
		£	£	£	£
INCOME					
Subscriptions	1	8	6566		3761
Sale of:					
Ties			77		139
Notelets			41		20
Deposit account interest			567		452
Development grant			—		525
Brighton Congress 1985					
Income		966		79675	
Less Expenses		35	931	59770	19905
				8182	24802
EXPENDITURE					
Printing and stationery		97		99	
Postage and telephone		407		124	
Room Hire		33		35	
Journal:					
Printing		6849		4936	
Postage		1617		1065	
Australian Congress leaflet		—		148	
Membership leaflet and envelopes		—		262	
Purchase of notelets		—		618	
Accountancy		200		330	
Bank charges and interest		26	9229	—	7617
				1047	—
Excess of Expenditure over Income				—	17185
Excess of Income over Expenditure					

BALANCE SHEET AT 31st DECEMBER, 1986

	NOTE	At 31/12/85	
		£	£
ASSETS			
Debtors	2	2103	756
Cash at bank:			
Current account	3	2161	—
Business reserve account		18658	—
Deposit account		—	89
Special interest account		—	4000
Congress 1985 account		—	19905
		<u>22922</u>	<u>24750</u>
LIABILITIES			
Creditors	4	2194	2847
Bank overdraft		—	128
		<u>2194</u>	<u>2975</u>
NET CURRENT ASSETS		20728	21775
		<u>20728</u>	<u>21775</u>
ACCUMULATED FUNDS			
Balance at 31st December 1985		21775	4590
Excess of expenditure over income		1047	—
Excess of income over expenditure		—	17185
		<u>20728</u>	<u>21775</u>
Balance at 31st December 1986		<u>20728</u>	<u>21775</u>

H. John Tooby, *President*
Peter A. Reynolds, *Treasurer*
As approved by the Directors.

Continued over

NOTES:

1. *Subscriptions* Also include income from the sale of journals and ties and bank interest, less expenses incurred, received from Regional Treasurers.
2. *Sundry debtors* comprise:

	£
U.K. and Western European Region	1745
Australian Region	358
	2103
3. *Bank Deposits* totalling A\$ 2555.72 (£1135 approximately) being the residue from the 1986 Sydney Conference and retained to cover future expenses have not been included in the Balance Sheet.
4. *Sundry creditors* comprise:

	£
Quintrell & Co. — Postage for Journal	1618
Reynolds & Co. — Accountancy	530
R. Budge — Expenses	46
	2194
5. The 1985 comparative accounts have been re-stated to incorporate the 1985 Brighton Congress income and expenditure.

1987 I.C.S. Membership

	New Members	Life		Ordinary		Total Members
		Single	Family	Single	Family	
Argentina				1		1
Australia	8	9	2	117	64	258
Austria	2			6		6
Belgium	1			2	1	4
Canada				1		1
Channel Islands	14	6		39	13	71
China				2		2
Denmark				4		4
France	32			59	13	85
Germany	46	1		74	17	109
Hong Kong				2		2
Isle of Man		1				1
Italy	12	4		25	4	37
Japan	51	15	1	192		209
Korea				1		1
Malta				1		1
Netherlands	2			2	1	4
New Zealand	11	3	2	28	30	95
Portugal		1		1	8	18
Republic of Ireland	2	1		8	3	15
South Africa	1	8		13	2	26
Spain	4	1		33	2	37
Switzerland	3			8	4	16
U.K.	22	22		199	66	353
U.S.A.	14	12		102	57	228
Zimbabwe		1				3
TOTAL	225	85	6	920	285	1587

ICS Members Subscription Rates and Membership Representatives to whom payable:

AFRICA (R 10.00, or Husband and Wife R 13.00) Mr Leslie Riggall, Fern Valley, Igwababa Rd., Kloof, 3610 Natal, S.A.

ASIA (Y 2400, or Husband and Wife Y 3300) Mr Tsuneo Nakamura, 3-17-4 Mejiro, Toshima-ku, 171 Tokyo, Japan

AUSTRALIA (\$ 10.00, or Husband and Wife \$14.00) Miss Nance Swanson, 43 Wellington Rd., East Lindfield, N.S.W. 2070, Australia

FRANCE (60.00 Frs, or Husband and Wife 80.00 Frs) M. Claude Thoby, Le Vieux Grand Chemin, Route de Paris, 44470 Carquefou, France

GERMANY (22.00 DM, or Husband and Wife 29.00 DM) Herr Dr Klaus Häcklander, Simeonstrasse 5, D5500, Trier, Germany

ITALY (L 12000, or Husband and Wife L 16000) Arch. Franco Giorgetta, Via Fiori Chiari, 8-20121 Milano, Italy

NEW ZEALAND (\$ 12.00, or Husband and Wife \$ 16.00) Mr R. H. Clere, 8 Chesham Avenue, Taupo, New Zealand

PORTUGAL (E. 800, or Husband and Wife E. 1000) Senora Clara de Seabra, Praceta Prof. Egas Moniz, 167-4° Esq, 4100 Porto, Portugal

SPAIN (P. 1100, or Husband and Wife P. 1400) D. Juan Diez de Rivera Armada, Paseo de la Castellana 213-4°, 28046 Madrid, Spain

UNITED KINGDOM & OTHER REGIONS (£6.00, or Husband and Wife £8.00)

ENGLAND, SCOTLAND, WALES & NORTHERN IRELAND Mr Geoffrey Yates, Stagshaw, Ambleside, Cumbria, LA22 0HE

BELGIUM, CHANNEL ISLANDS, DENMARK, ISLE OF MAN, MALTA, NETHERLANDS, REPUBLIC OF IRELAND and Miscellaneous Mrs Ann Bushell, Lower Hall, Rue de la Pompe, Augres, Trinity, Jersey, Channel Islands, via U.K.

UNITED STATES (\$ 11.00, or Husband and Wife \$ 15.00) Mr Thomas H. Perkins III, 405 Perkins Drive, P.O.Box 750, Brookhaven, Miss. 39601 U.S.A.

Subscriptions fall due on the 1st January each year and should be paid to the appropriate Membership Representative before the 1st June at latest.

Life Memberships are available for an amount of at least twenty times the rate for annual subscriptions.

Report of the Membership Registrar

Compte rendu du responsable des Membres

Informe del Secretario del Registro de Socios

Relazione del segretario del registro dei soci

Bericht des Mitgliedschaftsregistrarers

A complete list of members was last published in the 1984 Journal, and at the Brighton Congress in 1985, the Board of Directors decided that a complete list would only be published every third year. In the intervening years, the Journal will contain the names and addresses of new members, as well as changes of address or status of existing members, and corrections of any errors in the previous list. This decision was published in the 1985 (International) Number of the Journal, on page 102, where it may have escaped some members' notice, and there appears to have been some confusion as to when the next complete list would be published, and the date by which membership returns should be sent in.

This year, Membership Representatives were asked to send in their lists of members registered at the 30th June, broken down to show Life and Ordinary members, single and family, as well as new members, to reach the Editor by the end of July, and the majority did so; the last return being received at the beginning of September.

Consolidation of these returns, in the process of putting together the List of Members, showed a total of 1587 members in 1987, including 225 new members. Comparing this list of members however with that published in the 1982 journal, the year that the Membership Registrarship came to the United Kingdom, it was found that 485 names were unaccounted for, and it was suggested that the post of Membership Registrar, vacant since the retirement of Mrs Bowskill two years ago, should be filled, and the Board of Directors has asked me to perform these duties until the Executive changes at the end of 1988. Going back a little further, I see from the 1974 Journal (the earliest that I possess) that the society then had 986 registered members in 34 different countries, 462 of them in the United Kingdom where there are now only 353 paid up, and 101 posted as missing.

Accordingly, I have sent the various Membership Representatives a list of those former members living in the countries with which they are concerned, whose names are not in the current list, and asked if they could let me know the reason for the lapse of membership in each case. A report will be submitted to the Board of Directors when replies are all received.

E.W.M.M.
15.9.87

Erratum

The author of the article entitled "Breeding Camellias in New Zealand" which appeared on p.120 in the 1986 International Camellia Journal was actually Mr Harry Cave, not Mr R. H. Clere.

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Thanks and Good Wishes to our Retiring Directors and Membership Representative for Asia

All of our members will be very sorry to learn that our distinguished Directors for Asia, Dr. Kaoru Hagiya and Mr. Yoshiaki Sakakura have thought it necessary to retire. They have served our Society extremely well since 1982.

Dr. Hagiya's contributions to our Congresses and to our Journal are always of a very high standard, reflecting the quality of the research work he has carried out for many years at Niigata. And whenever any of our members have visited Japan he has always been extremely helpful in showing them the fascinating Snow-camellias that grow in the mountains around Niigata.

The work of the Seibu Maizuru Botanical Institute which is strongly supported by Mr. Sakakura is absolutely first-class and the Bulletin of that Institute will surely gain an international reputation.

Mr. Goro Iimure is also retiring as Membership Representative. He too has worked hard for our Society since 1982 and his willing help and cooperation at all levels has done much to ease the work of our officers.

Their retirement is for the best of reasons; Dr. Hagiya is now President of the Japan Camellia Society and Mr. Sakakura and Mr. Iimure wish to support him in that important office. We wish them every possible success.

SAYONARA.



Top: Typical wild *C. reticulata* (p.112)
Bottom left, right: *C. impressinervis* (p.83)





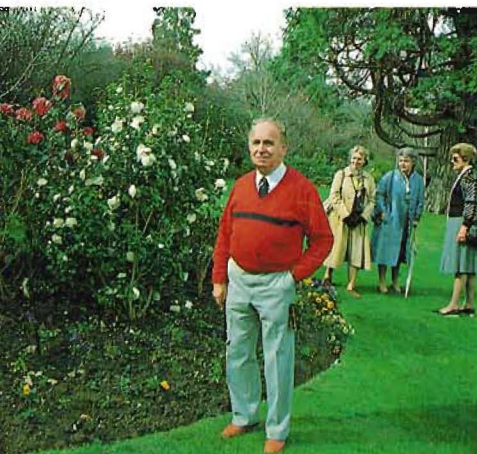
Wild C. reticulata (p.112)



Result of pruning C. reticulata 'Mayhills' (p.65)
Top left: 13 September 1982 - Immediately after cutting back
Top right: November 1982 - Adventitious buds
Bottom left: April 1983 - New growth
Bottom right: August 1984 - display blooms



*Top left: Brittany tour (p.93)
Centre left: Newquay Conference - Marwood Hill (p.107)
Bottom left: Eric Craig with Brushfield's Yellow (p.125)
Top right: C. St. Ewe in I.C.S. Trial at Belfast (p.120)
Bottom right: Miss Carlyon with Rosie at Tregrehan (p.12)*





Top left: C. chrysantha fruiting in the wild (p.31)

Centre left: Mrs Tooby at Newquay Conference with Prof. Ming Tianlu, Prof. Xia Lifang, Dr. Zhang Aoluo and Mr Sing Wang (p.101)

Bottom left: Camellia of 10,000 flowers at Yufang Lamaserai, Lijiang (p.112)

Top right: Camellia of 10,000 flowers (p.112)
Bottom right: C. euphlebia (p.82)





C. 'China Clay' A.M. (p.53)



Yukimigurama



Ezonishiki



Kara-Nishiki



Hagorama



C. reticulata in the wild, Tengjong County (p.112)



I.C.S. display at *R.H.S. Camellia Show*, Spring 1987



Tremcer, St. Tudy, Cornwall (p.106)

