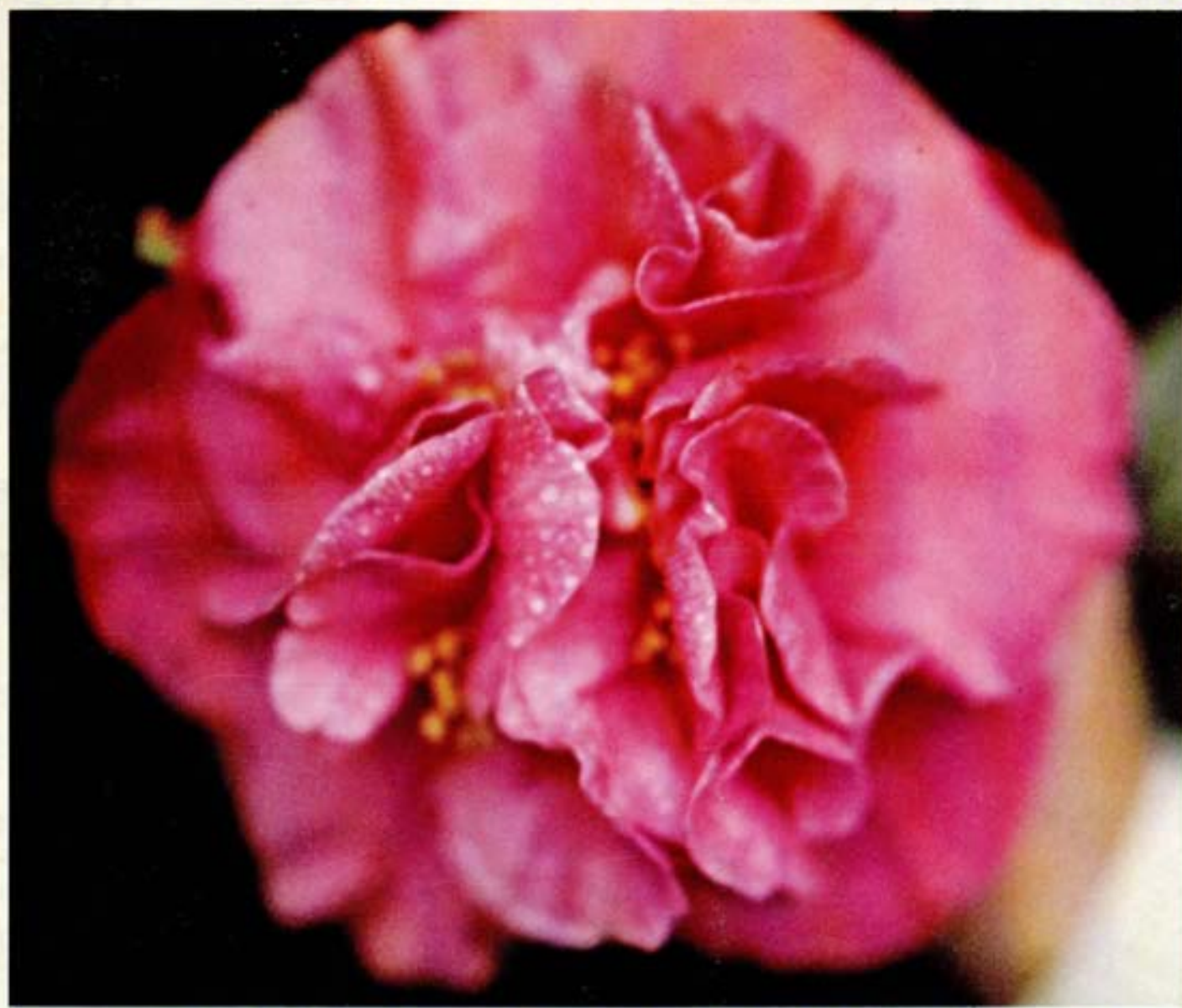


The *Camellia* Journal



'MARY STRINGFELLOW'

ACS Reg. No. 1645

'Mary Stringfellow' is a very large bright pink, semidouble *C. reticulata* hybrid ('Cornelian' x 'Mrs. D. W. Davis'). It blooms mid-season to late. This lovely flower, honoring the wife of ACS President Roy C. Stringfellow, was originated by Frank V. Pursel, Oakland, California (Formerly his seedling No. 12) and is propagated by Ray Gentry Nursery, Jackson, Mississippi.

AN OFFICIAL PUBLICATION OF THE AMERICAN CAMELLIA SOCIETY
VOL. 36, NO. 1 PRICE \$3.00 FEBRUARY, 1981
SPECIAL ISSUE ON SPECIES



CAMELLIA CHRYSANTHA (HU) TUYAMA

In these lovely photographs we can see, for the first time, actual color pictures of this exciting species that has only become available in the Western World in 1980—The Year of the Camellia. The photographs of the single bloom and a blooming plant were made available to us by our Wonderful new camellia friend, Dr. Chang Ao-lo, Vice Director of the Kunming Botanic Institute.

In this historic and eventful issue of *The Camellia Journal* you will find an exciting article by Dr. Chang and his success at hybridizing this species with others. You can also read about the activities of Dr. William L. Ackerman with the *C. chrysantha* at the United States Arboretum.

Now we can look forward, not just to yellow color, but hues of peach, apricot, orange. We look forward to as much co-operation from hybridizers in the Western World as we have obtained from our good friends in The People's Republic of China.

1980—The Year of the Camellia has brought about true and friendly meetings of camellia lovers in both the Eastern and the Western Hemispheres of our World. We in ACS are glad that we named 1980—The Year of The Camellia. It has turned out to be an international success as well.



The Research History and Present Status of *Camellia chrysantha* (Hu) Tuyama in the Kunming Botanical Garden

CHANG AO-LO

XIA-LI-FANG

Camellia chrysantha (Hu) Tuyama is called "Jinhuacha" (Golden Camellia) in Chinese. It is native to Guangxi, China and probably also to adjacent Vietnam. It was found by the Chinese botanists in the 1960s. In 1965, Hu Hsien-hsu, a famous plant taxonomist in China named the plant "*Theopsis chrysantha* Hu" and published it as a new species. The Japanese botanist Tuyama revised it as *Camellia chrysantha* (Hu) Tuyama in 1974. The study of *C. chrysantha* in

(Continued on page 3)

The Camellia Journal

WORLD'S LARGEST PUBLICATION DEVOTED TO THE GENUS CAMELLIA

Volume 36

Number 1

February, 1981

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President's Message



ROY C. STRINGFELLOW

The Convention in San Mateo, Cali-
fornia, marks the completion of my
two-year term as President of the
American Camellia Society. It has
been a most rewarding experience. I
would like to take this opportunity to
thank each of you for your support. I
will not attempt to single out each
individual, but I would like to sin-
cerely thank our Committee Chairmen
and their Committee Members, each
State Director and each Vice Presi-
dent.

Being President of A.C.S. has given
me an insight on happenings in our
Camellia Society of which the usual
member is not aware. Even when
elected State Director and then Vice
President, I would go to the Conven-
tions and Governing Board meetings
to try to help solve the few problems
that arise over the year, still not real-
izing how very fortunate this Society
has been in having our Executive Sec-
retary-Editor in A.C.S. Headquarters.

Milton H. Brown, affectionately
known as "Brownie", goes above and
beyond the call of duty in taking care
of all aspects of his position. With his
boundless energy and expertise, he is
constantly searching for new ideas

and innovations to better our Society.
One of the nicest things about this
gentleman is his lovely wife, Ann. She
gives untiringly of her time to Massee
Lane and to A.C.S. She conducts
guided tours through our Massee
Lane gardens. Ann is an expert on
Boehm Porcelain and gives lectures to
visitors who come to view our famous
collection. She helps in the office when
needed, and—along with Brownie—
gives talks to various Garden Clubs
and Camellia Societies. What a won-
derful lady!

In our Headquarters Office Brown-
ie's "Girl Friday", and full time Sec-
retary, Helen Teeter, is assisted by
part time Secretaries Helen Bryan and
Frances Bowden. I am constantly
amazed at the work done by this
small work force. Joe Pyron, Execu-
tive Secretary Emeritus/Assistant Edi-
tor, is almost always there to give
Brownie a helping hand.

We have not accomplished all that
I had hoped we would these past two
years, especially our membership goal.
But let me *again* remind you that if
EACH member would sign up ONE
additional member our membership
problems would be solved.

This has been a great two years for
Mary and me. Whatever contribution
I may have made is small compared to
the recognition you have given me.

Our President Elect, Thomas C.
Evans, is known to most of you. He
has the qualifications and executive
ability to make an excellent leader. I
urge you to give Tom and his lovely
Dotty the same fine support you have
given me.

BRING YOUR HEART TO
SAN MATEO

the Kunming Botanical Garden was begun in 1966 and a series of the research work have been done since then.

In July 1966, Messrs. Shi Zongming and Yang Shaozhong made a special trip to Yongning County, Guangxi, to investigate and collect the plants of *C. chrysanth*. Unfortunately, most of the plants collected by Messrs. Shi and Yang died because *C. chrysanth* is a deep-rooted plant with flourishing tap root but undeveloped lateral roots and fibrous roots. The research work had to stop during the Cultural Revolution.

In November 1973, Mr. Zhu Xianghong and Mrs. Zhang Zanying went to Yongning to dig the plantlets and collect the pollen. The work of cross-breeding *C. chrysanth* has been started since then.

In February 1974, Prof. Feng Guomei went to Dongxing County to make the investigation and collect the scions and the pollen.

In May 1974, Mrs. 's Xia Li-fang and Zhang Zanying went to Yongning

County and then to Dongxing County to conduct the investigation and did inarching in wild. The cutting and grafting work had been done in the People's Park, Nanning City, Guangxi in the same year.

In December 1979, Messrs. Xie Lishan and Cai Ming went to Guangxi to collect the seeds.

After several years study, the ecological habit and the developmental regularity of *C. chrysanth* have been further realized and some results have been achieved.

The original native place of *C. chrysanth* is the tropical zone. There the annual average temperature is 22°C. In January, it is 13°C, In July, 28°C. Annual rainfall is 1000-2500mm. The altitude in Kunming is 1900m above sea level. Annual average temperature is 14.8°C. In January, it is 7.8°C. In July, 19.9°C. Annual rainfall is 990mm. The climate in Kunming differs greatly from that in

* Kunming Institute of Botany, the Academy of Sciences of China, Kunming Yunnan China.

Guangxi. However, *C. chrysanth* can grow well in Kunming. There was an exceptionally cold wave in Kunming from December 31, 1973 to January 8, 1974. The lowest temperature was -6.6°C. during the cold wave period. All the plants of *C. chrysanth* in the Kunming Botanical Garden passed the cold wave and hibernated safely only with simple shades as the measure of cold wave prevention. This indicated that *C. chrysanth* is a plant with strong adaptability.

The chromosome of *C. chrysanth* has been examined. It is $2n=30$. An interesting phenomenon has been found. i.e. *C. chrysanth* has 3-5, most cases 4, cotyledons instead of 2. It is a rare occurrence among the Camellia genus. The cotyledon colour is light purple with some deep purple streaks on the surface of the leaves and saw-toothed leaf margin. The cotyledons of this species can embed each other.

C. japonica can be used as the stocks for grafting *C. chrysanth*.

(Continued on page 4)

**The Largest Selection—Choice Camellias—Growing in Metal Containers
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'Lisa Buono'—ACS Cover August *Journal* 1980

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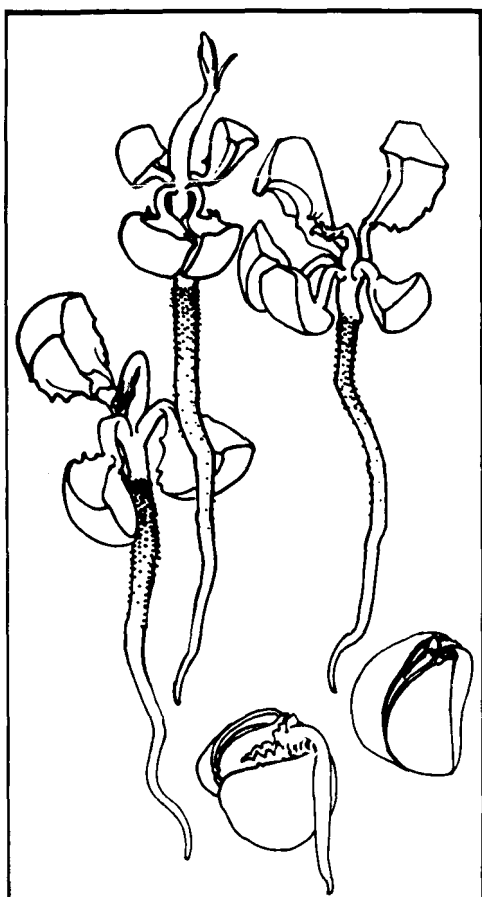
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Those by inarching thrive best and the cutting is easy to root.

Since 1973, the crossbreeding work has been conducted by using *C. reticulata*, *C. japonica*, *C. saluenensis* and *C. pitardii* var. *yunnanica* as female parents and *C. chrysantha* as male parents. Altogether 3400 flowers were pollinated and 561 fruits were achieved. Now more than 500 hybrid seedlings have been achieved.

At present, the seeds of *C. chrysantha* have rooted in America, Japan and Australia. It is a glad tidings for the international camellia circle and this is also a little contribution to the world horticultural circle made by the Chinese botanists. We sincerely anticipate that *C. chrysantha* will blossom sooner in these countries and more beautiful varieties will be obtained in the near future.



金花茶种子萌发图

Diagram of *C. chrysantha*; dehiscent seeds and the four cotyledons.

Growing the Yellow Camellia (*C. chrysantha*)

W. L. ACKERMAN*

Now that the yellow camellia, *C. chrysantha*, has been released to the Western World from the People's Republic of China, it seems only appropriate to keep ACS members current on what progress is being made regarding its growth, development and distribution. Thus, this follow-up article to the one that appeared in the August 1980 issue of the *American Camellia Journal*.

A recent trip to Japan has disclosed that *C. chrysantha* is grown in that country and in the United States much more widely than had been previously supposed. This is good, for the more people in the free world who have this species, the greater is our assurance against losing it. I believe it can be said with reasonable confidence that *C. chrysantha* is sufficiently established that there is little doubt that in a few years it will be available to all camellia breeders interested in using it in their programs.

In my previous article, I listed those people in the United States, Japan and Australia who, to my knowledge, had plants of *C. chrysantha*. I am now aware of a considerably wider distribution. In Australia, a letter from Harold Frazer indicates that he first received seeds of *C. chrysantha* in January 1980, about the same time as we received seeds in the United States. Also, similarly, Harold received five seeds, as did Dr. Bruce Bartholomew of California and myself. In February 1980, Tom Savige received seven seeds of which he successfully germinated five. Both Harold and Tom di-

vided their plants and sent part of what they had to others. Thus, in Australia, five people are now growing *C. chrysantha*.

While I was in Japan during October 1980, I had an opportunity to observe *C. chrysantha* grown by a number of Japanese camellia specialists and discuss the general presence and distribution of this species in that country. Among those who are growing *C. chrysantha* are Mr. Yoshiaki Andoh of Kobe, Dr. Kaoru Hagiya, of Niigata, Mr. Hiroshi Terada of Oshima Is., Prof. Takashi Tuyama of Tokyo, and Dr. Shunpei Uemoto of Fukuoka. I also learned that there are at least five additional Japanese camellia growers who have *C. chrysantha*.

In the United States, Dr. Bruce Bartholomew, Berkeley Campus, University of California and myself have been successful in establishing *C. chrysantha*. According to several Japanese sources there are at least four other Americans who presently are growing *C. chrysantha*, but who prefer to remain anonymous.

It would appear that the earliest introductions of *C. chrysantha* seeds into Japan were in December 1979 followed by January and February 1980 in United States and Australia. Thus, no one has any distinct advantage of time in growing this species. It is quite possible that others may have *C. chrysantha* that I am not aware of. However, in summary, present data indicates that *C. chrysantha* is being grown by five people in Australia, ten people in Japan and six people in United States. There has been no indication that anyone in either Europe or New Zealand is presently growing this species.

Although we now have considerable information regarding the taxonomic

* U. S. National Arboretum, U. S. Department of Agriculture, Science and Education Administration, Agricultural Research, Washington, D. C. 20002.

(EDITOR'S NOTE: See articles by Chang Ao-Lo and Xia-Li-fang and by Chang Hung-ta in this issue; also the article by Dr. Tuyama in the 1980 issue of *The Camellia Yearbook*.)

characteristics of *C. chrysantha*, and the two forms *C. chrysantha* var. *Macrophylla* and *C. chrysantha* var. *microcarpa*, data regarding its climatic adaptability and its grafting and breeding compatibility are still quite limited. If we are to utilize this species in active breeding programs in the future, knowledge about these characteristics will be important.

Climatic considerations: All of the plants now grown in Australia, Japan, and the United States have been received through the generosity of the Yunnan Botanical Institute, Kunming, China, from seeds collected by the staff from wild specimens growing in the low regions west of Nanning near the border of China and North Vietnam. This is the native habitat of *C. chrysantha*, where it grows at an elevation of about 600 feet (200 meters) along river and creek banks. This region, which lies just below the Tropic of Cancer has minimum winter temperatures (January) of 56°F (13°C) and summer temperatures (July) of 84°F (29°C) with an annual rainfall of from 72" (1800 mm) to 88" (2200). The region is suitable for the growing of tea, cotton, sugar cane and tobacco. From this we may assume it is probably too tender for the mid-Atlantic area but may do well out of doors among the Gulf Coast States and southern California.

Grafting compatibility: Two of the plants growing at the National Arboretum formed side branches during the summer of 1980 and these were inarched successfully onto *C. sasanqua* root stock. There has been no signs of incompatibility to date, indicating that this is apparently a fully compatible combination. In early November, several grafts were made onto *C. japonica* stocks, but at the time of this writing there has not been sufficient time to determine their success. While in Japan, I was told that inarching *C. chrysantha* onto *C. sinensis* stock had been successful. It was also reported that *C. reticulata* stock has been used, but here I am not certain about a successful union.

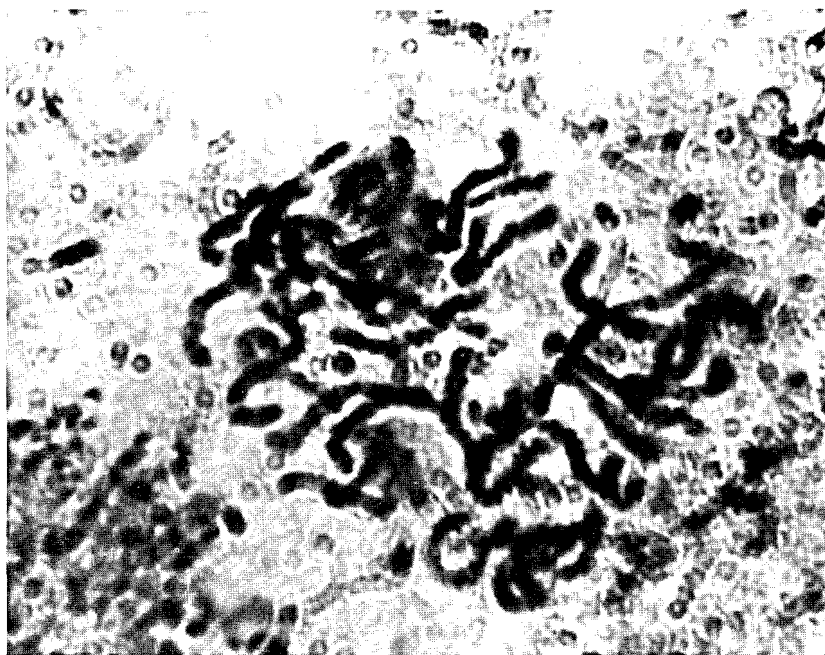


Figure 1. Root-tip chromosome of *C. chrysantha* with 30 chromosomes ($2n\ 30$) diploid. (x2,300).

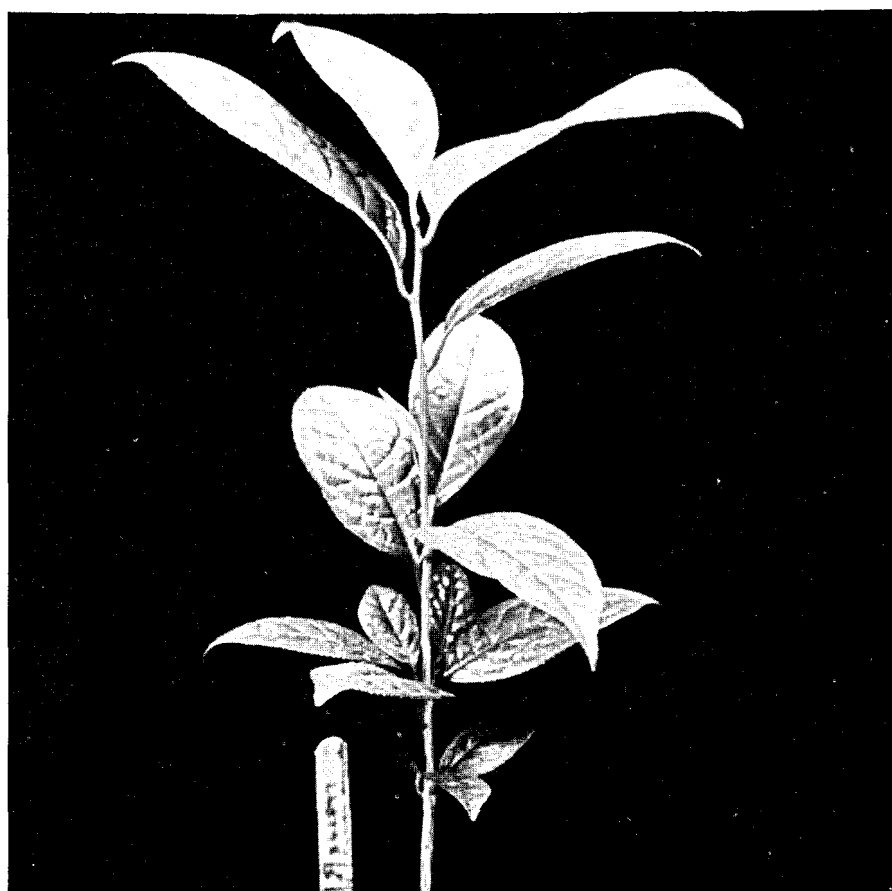


Figure 2. Seedling plant of *C. chrysantha* grown at the United States National Arboretum, Washington, D. C., September 1980 photo—plant was ten inches (25cm) high.

Inheritance of Yellow Flower Pigment: The question has been asked me several times in the last few months. "Will *C. chrysantha* actually

transmit yellow flower color to its hybrids?" The answer is yes, if the taxonomic information we have on

(Continued on page 6)

this species is correct—and we have no reason to question its accuracy. Unlike our many cultivars of *C. japonica* (and also those of *C. sasanqua*) which are genetically highly heterozygous from their thorough intermixing selection, and probably outcrossing with other species for many centuries, *C. chrysantha* is a wild species. The seedling plants we have were collected from wild specimens. As such, the primary taxonomic characteristics (including yellow flower color) are relatively stable and in the homozygous condition. In this diploid both homologous chromosomes carry the gene for yellow flower color. If this were not so, descriptions of *C. chrysantha* would include other flower colors besides yellow. If the gene for yellow flower color is dominant then this pigment will appear in the F_1 generation of interspecific hybrids unless it is masked by another dominant gene (for example an intense red pigment) from the other species. If the gene for yellow flower color is recessive it may be necessary to sib cross among the F_1 hybrids to bring out the yellow flower characteristic. Since white flower color in camellias is recessive to all pigmented colors we've worked with, quite likely it would be recessive to the yellow pigmented gene also. Thus, the most logical first hybridization step would be to cross *C. chrysantha* with other species (example *C. japonica*) with pure white flowers.

Breeding Compatibility: One can only speculate on how well *C. chrysantha* will cross with other camellia species, particularly with our standard cultivars. An examination of root tips from *C. chrysantha* seedlings at the Arboretum disclosed that it is a diploid, $2n=30$ (Figure 1). This, of course, gives it the same chromosome number as other diploid camellias (example, *C. japonica*), which, in itself, is encouraging information regarding its possible compatibility with the many cultivars available. The Chinese reportedly have successfully crossed *C. chrysantha* with *C. reticulata* and have several young hy-

brids, none of which has as yet flowered. If true, then it should also be quite compatible with other members of subgenera section *Camellia*, such as *C. japonica*, *C. saluenensis*, *C. rusticana*, *C. pitardii*, *C. hongkongensis* and *C. heterophylla*.

Only time and the opportunity to develop various interspecific hybrids involving *C. chrysantha* will reveal how well *C. chrysantha* will hybridize with other camellias. Assuming it will, quite possibly the F_1 hybrids will be highly sterile as were those involving *C. lutchuensis* in our search for flower fragrance two decades ago. These difficulties were overcome then and will be overcome again, if necessary. The road toward developing commercially acceptable yellow camellias may contain obstacles, but I'm certain that with the greatest one, (physically securing *C. chrysantha*) now behind us, an entire new range of flower colors in camellias is not far in our future.

—ACS—

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Our long drive for a camellia stamp ended in late November thanks to Mrs. Clarence Dodson of Plains, Georgia who gave the added effort for our Society. The Dodsons are close personal friends of President Jimmy Carter and First Lady Rosalyn Carter. The President and Mrs. Carter became very interested that there be such a stamp and contact was made with the Postal Authorities.

The First Lady most graciously invited the Executive Secretary and his wife to come to The White House to receive the announcement. Mrs. Carter then showed the Browns the Christmas decorations—it was December 17th—in The White House, chatted about Georgia, talked about the family dinner there and the plans to go to Plains for Christmas. There was activity about the home getting ready for a reception, nevertheless Mrs. Carter was most gracious and giving of her time; she then gave us hot spiced cider and cookies while we completed the personal tour.

The Camellia Society of the Potomac Valley "rustled" up some camellias to decorate the reception room where we were met by Mrs. Carter. She was most pleased with them and asked that they be taken to the reception. ACS Director Philip Ireland gathered blooms from Mrs. John C. White, the Arthur Maryotts, the Walter Hamers, Mrs. William Jarvis, A. A. Piringer, the William L. Ackermans and the Irelands.

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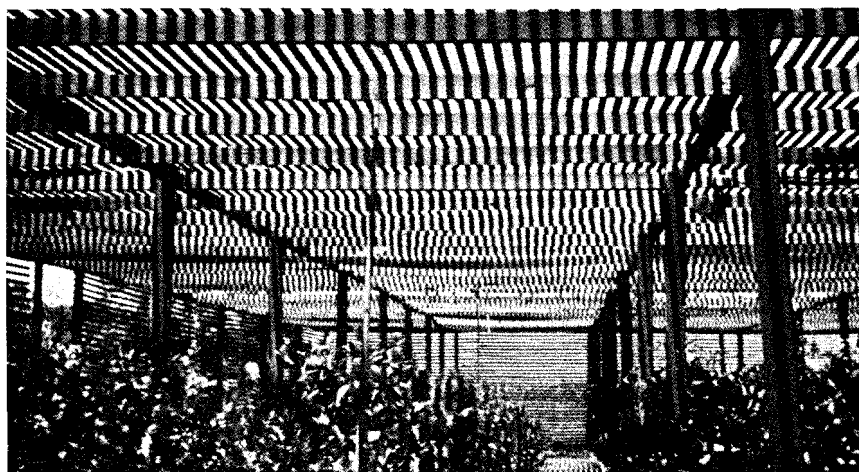
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The Genus *Camellia*, its Species and Hybrids*

T. J. SAVIGE
Wirlinga NSW
Australia

Starting with the naturalist Carl Linnaeus who first applied the name *Camellia* in his *Systema Naturae* published in Leyden in 1735, the Genus and its species have been continually added to as botanical investigation was carried out on the plant material from China, Japan, Burma and Indo-China.

Various attempts were made in the light of the information available at the time to systemitise the Genus. One was the publication "*Sino-Japanese Genera and Species which belong to the Tribe Camellieae*" by T. Nakai produced in 1940. However, it was not until Robert J. Sealy produced his *A Revision of the Genus Camellia* in 1958 that a truly definitive text was available. This became the standard reference and remains so with some few variations and additions which further investigations and new finds have added.

* Glossary of terms follows article.

At the present time there are 114 species or otherwise differentiated groups of plant material, including 102 recognized botanical species or sub-species involved in the Genus. Of these only 42 are available and grown in the Western World. These are slowly being added to and no doubt the next few years will show a sudden increase due to the better relations with China where most of the species occur.

The botanical hierarchy of this section of the plant kingdom is as follows:

Family—*Theaceae*
Tribe—*Gordoneae*
Subtribe—*Camelliinae*
Genus—*Camellia*

The Genera in the tribe *Gordoneae* which are closely associated with the Genus *Camellia* following Sealy, are as follows:

Gordoniinae—*Gordonia*; *Laplacia*
Schiminae—*Stuartia*; *Schima*;
Franklinia
Camelliinae—*Pyrenaria*; *Yunnanea*;
Tutchera; *Camellia*

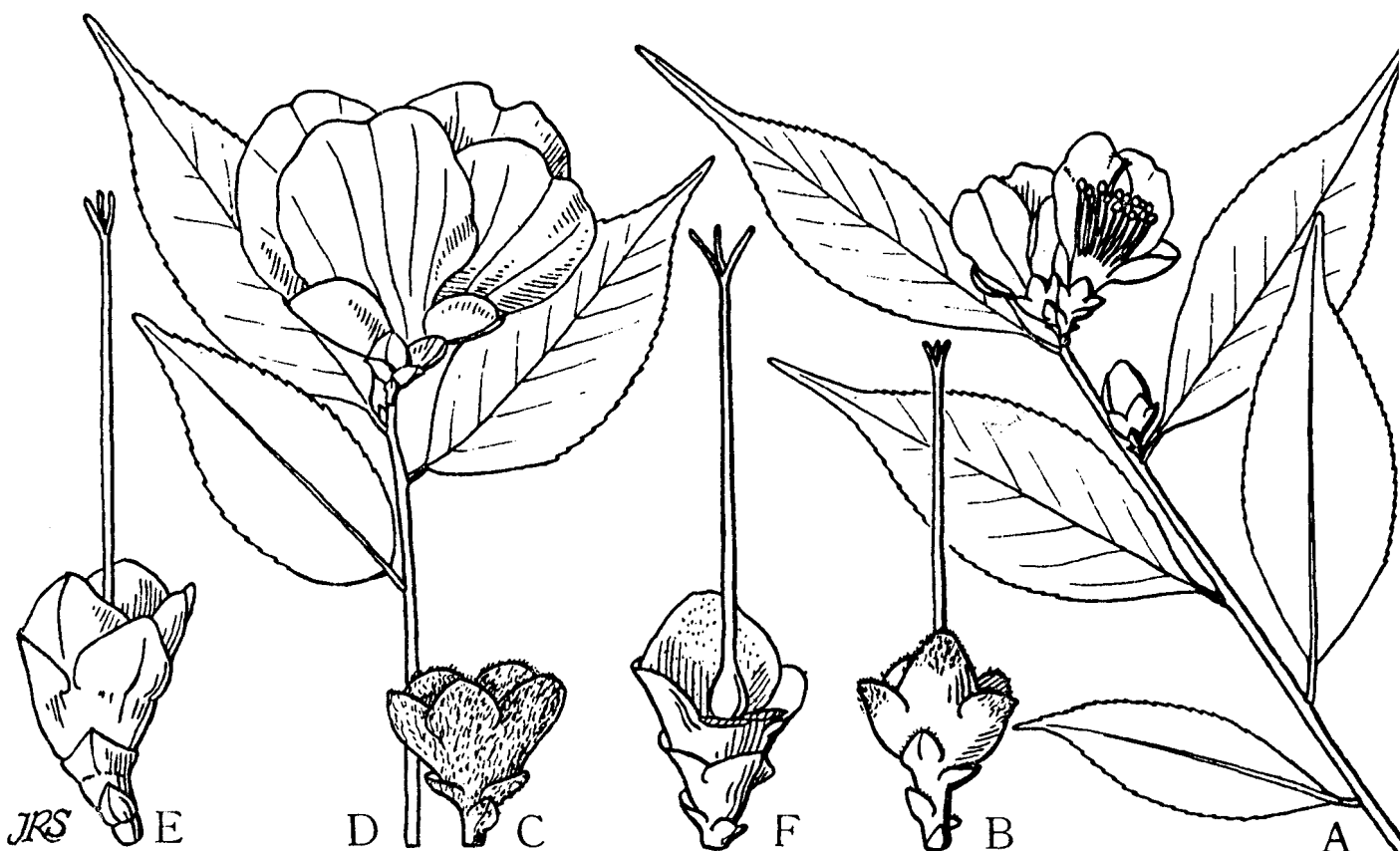
Sealy introduced a grouping of the species

of *Camellias* into Sections, which were basically groups of species with certain common taxonomical features. That this group was, in the main, valid has been demonstrated by members within a section being generally more interfertile than with members of other sections.

Due to the great volume of interspecific hybridisation done in the past 30 years, it has been found that some degree of interfertility exists between virtually all of the known species. This has been found so, not only between the more usual diploid species, but also with the tetraploids and hexaploids. The fertility of the resultant hybrid varies, as might be expected, between quite viable and complete sterility.

Following are the species or differentiated groups listed in their sections. Where known by living material in the Western world they are marked by an asterisk and dealt with in detail later.

1. Section *Archecamellia*. Sealy
krempffii; *pleurocarpa*; *flava*; *Tonkinen-*
(Continued on page 10)



C. *cuspidata* var., *chekiangensis*: A, flowering shoot from Faber 170, natural size; B, pedicel, bracteoles, calyx and gynoecium from same, $\times 3$; C, pedicel, bracteoles, and calyx from China 1479, $\times 3$. C. *cuspidata* var. *grandiflora*: D, flowering twig, natural size; E, pedicel, bracteoles, calyx and gynoecium, $\times 3$; F, same, two sepals removed, $\times 3$; D-F from Handel-Mazzetti 1115.

- sis; *euphlebia*; *petelotii*; *amplexicaulis*.
2. Section *Stereocarpus*. (Pierre) Sealy *dormoyama*.
 3. Section *Theopsis*. Cohen Stuart *crassipes*; **forrestii*; **cuspidata*; *assimiloides*; **acutisepala*; *lawii*; *punctata*; *villicarpa*; *stuartiana*; **fraterna*; **dubia*; **rosaeiflora*; **maliflora*; **Tsaii*; *synaptica*; *handelii*; **transarisanensis*; **transnokoensis*; *tricholada*; *rosthorniana*; *costei*; *tsoufuii*; **lutchuensis*; **euryoides*; **nokoensis*; *parvilimba*; *indochinensis*; *elongata*; *tsingpiensis*; *euonymifolia* *longipedicellata*; *lungyaiensis*; **chrysantha*. (Tuyama now places it in *Arche-camellia*—Editor's Note.)
 4. Section *Camelliopsis*. (Pierre) Sealy **salicifolia*; *melliana*; *cordifolia*; *wen-shanensis*; **caudata*; **assimilis*.
 5. Section *Piquetia*. (Pierre) Sealy *piquetiana*.
 6. Section *Thea*. (L.) Dyer **sinensis* var. *sinensis*; **sinensis* var. *assamica*; **irrawadiensis* **taliensis*; *pubicosta*; *gracilipes*.
 7. Section *Corallina*. Sealy *corallina*; *amplexifolia*; *nematoclea*; *gilberti*; *parviflora*.
 8. Section *Calpandria*. (Bl) Cohen Stuart **connata*; *lanceolata*.
 9. Section *Pseudocamellia*. Sealy *tuberculata*; *szechuanensis*.
 10. Section *Heterogenia*. Sealy **Crapnelliana*; *gaudichaudii*; *furfuracea*; *fleuryi*; *wardii*; *paucipunctata*; *henryana*; **yunnanensis*; *tenii*; **granthamiana*; *albugigas*; *gigantocarpa*; *vietnamensis*; *latipetiolata*.
 11. Section *Camellia*. (L.) Dyer **hongkongensis*; *edithae*; *marei*; **japonica*; **japonica* subsp. *rusticana*; **reticulata*; **saluenensis*; **pitardii* var. *pitardii*; **pitardii* var. *yunnanica*; **chekiangoleosa* *polyodonta*; *semiserrata* var. *semiserrata*; *semiserrata* var. *magnocarpa*; *semiserrata* var. *albiflora*.
 12. Section *Paracamellia*. Sealy *grijisii*; *brevistyla*; *fluvialis*; **kissi* var. *kissi*; **kissi* var. *stenophylla*; **sasanqua*; **oleifera* var. *oleifera*; **oleifera* var. *confusa*; **hiemalis*; **miyagii*; **vernalis*; *octopetala*; *microphylla*; **tenuiflora*.
 13. Imperfectly known, unclassified and doubtful *lutesceus*; *tegumentosa*; *yersini*; *laotica*; *nervosa*; *oxyanthera*; **wabisuke*; *austroyunnanensis*; *sumingensis*.

In examining the material available for hybridising and considering where the greatest success may lie, it will be found firstly, that the most difficult crosses are the intergeneric and where seedlings result it should be expected that these would be sterile.

Generally most success will be obtained within the subgeneric groups or sections,

with improved chances of producing fertile seedlings. The great interest and the considerable work done recently in the field of interspecific hybridisation is leading to a better understanding of species compatability.

The species of *Genus Camellia* are mostly diploids, but rather infertile triploid forms occur; while some species are tetraploid and others hexaploid. Successful crosses have proved possible between species of different ploidy, but not only is the percentage of success lower, but there is loss of fertility in the seedlings.

Compatability in breeding between species is generally taken as evidence that they are close genetically. In fact, groups of plant material at present nominated as species may have developed from a cross infusion between species, with a plant population developing from the most successful individuals, eventually forming by interbreeding, a reasonably uniform type.

Following is a more detailed description of the species at present grown and available in the Western World.

C. acutisepala. H. T. Tsai and K. M. Feng 1953.

A shrub growing 3 to 4 meters tall, this species from Section *Theopsis* is close to *C. fraterna* and *c. cuspidata* and is most distinctive due to its long lanceolate sepals, which are even longer than *C. salicifolia*. The leaves are short stalked, elliptic with cuneate base and acuminate apex, averaging 5 cm long x 1.7 cm wide, serrulate-denticulate. Flowers pedicellate, solitary, white of 5 petals. The only material seen came from Park Hill, California but did not follow Sealy's description. No hybrids known.

C. assimilis. Champion ex Benth. 1851.

Classified in Section *Camelliopsis* this species was originally described by Champion from material from Hong Kong. It is noted for its foliage, which under varying cultural methods can develop a range of russet and wine red colours as it matures. Seedlings show a variation of depth of colour.

It forms a shrubby bush with a spreading habit due to its long slender branchlets. The leaves are oblong-elliptic with an acuminate apex, up to 10 cm in length, firmly papery, with blunt serrations on upper two-thirds, the upper surface a smooth dark green, developing reddish tints with age. The flower, white with 7 petals united at the base to the stamens and are about 1.8 cm in diameter. One to three seeds form in a capsule up to 2 cm in diameter.

It is close to *C. caudata* in its section but reports of hybridisation are limited, how-

ever it is known that it will cross with *C. salicifolia* and is a diploid.

C. caudata. Wallich. 1829.

A species of some variability and wide spread distribution it was originally described by Wallich in 1829. Specimens have been collected in Assam, Burma, Indo China, China and Formosa.

In its native state it can form a small tree up to 5 meters high with slender shoots and twigs, pubescent at first, becoming purplish as the bark exfoliates. Leaves very narrowly oblong-elliptic, with long caudate apex, 7 to 10 cm long, serrulate, papery; upper surface dark green, petioles densely hirsute. Flowers shortly pedicellate, pedicel thickening upwards, bracteoles 3-4, widely ovate, bluntly acute, silky villose, ciliate, Corolla, white 12-14mm in diameter, 5 petals, united with androecium; coriaceous, concave, usually undulate. Androecium, filaments united for lower third, white, densely villose; anthers yellow, Gynoecium, 12-15mm long, densely white villose. Style 9-13mm long, trifid. Seeds globose, 12mm in diameter, one to a capsule. The species is little distributed and little used for hybridising. Although it has tiny flowers, its graceful almost ferny foliage makes it a charming plant. The only report on hybridising is from David Feathers of California who has successfully crossed it with *C. pitardii* var. *pitardii* and a seedling of *C. japonica* c. v. 'Berenice Boddy'.

According to Bezbaruah (1971) the species is a diploid. It has an extended flowering period and with the growing interest in miniature hybrids it should be more used in future developments. It has not proved easy to propagate by normal grafting methods but strikes readily from cuttings. The wood is soft and damages easily making scions difficult to transport.

C. connata. (Craib) Craib. 1925.

A member of the small section *Calpandria*, which it shares with *C. lanceolata* (the only camellia to extend its natural habitat to the Philippines) its growing area is limited to Siam. It was originally classified as *Thea Connata* by Craib 1914, but moved into the Genus *Camellia* in 1925.

The species can form a small tree up to 7 meters high; young branches hirsute, exfoliating to glabrous; leaves oblong-elliptic, shortly acuminate, 6-9 cm long, shallowly crenulate, papery; petioles, densely hirsute. Flowers solitary at terminals or in upper leaf axels, very shortly pedicellate, 11-14mm in diameter, white, 5 petals shortly joined to the filaments; petals, obovate, rounded, concave, ciliate; perules 9-11mm long, yellow, united the full length to form a tube, with anthers on serrations and on short projections on the side. Ovary, tomen-

tose, with short conical style. Seed pod 3-locular with a large seed 2cm across in each locule.

This species is a forest plant with a natural habitat between 1000-2000 meters altitude.



Camellia Crapnelliana

C. crapnelliana. Tutchter 1904.

This interesting species from the Section *Heterogenea* shows characteristics that should make it useful for hybridising. It forms a tree up to 8 meters tall and has well formed flowers up to 7 cm across. Tutchter mentions blooms up to 10 cm in his original description after he made his collection now held in the Hong Kong Botanical Garden Herbarium.

This species was known only from this material as it seemed to have disappeared from the wild. However in 1967 Ralph Dean, then Director of Hong Kong Urban Services, supplied Mr. Walter Hazlewood with some seed. From these 5 seedlings raised. They were distributed, one to the writer, one to Mrs. Annette Riddle of Pumble, N.S.W., and one to the E. G. Waterhouse Garden at Miranda. All have been flowering for about 6 years now, but no seed has set, although considerable hand pollenating has been done.

The flower buds are rounded with dark grey sepals similar to *C. granthamiana*. The seedlings all have the typical brick red bark on the trunk remarked on by Tutchter and exhibit the uniformity of a true species.

It is close to *C. granthamiana* also from Hong Kong, such as glabrous stamens free above the union with the androecium and with a hairy ovary. However, it has the more common 3 carpels and free styles while *C. granthamiana* has 5 carpels and a united style.

It also has some features common with *C. hongkongensis* from Section *Camellia*. They come from the same area and both have the habit of being in vegetative growth for a considerable period. The young growth is tender for some time and subject to dying back in adverse climatic conditions. The seedlings flowered in from 7 to 9 years.

The bark on the main branches is brick red becoming tan on the smaller branches. Growth is stout and erect; leaves slightly obovate-elliptic to elliptic; apex mucronate; base, broadly cuneate, 9-17 cm long by 4-8.5cm wide; widely and obscurely denticulate, rigidly coriaceous, glabrous, deep green above, pale green below; midrib and veins impressed above, prominent below; petioles stout, tapered, glabrous, 8-12mm long. Flowers perulate, terminal, solitary sometimes geminate, 5 to 7 cm across. Perules persistent to fruit, sub-orbicular to obovate, deeply cupped, 10-13mm wide by 12-15mm long, hard and scale-like, brown, velutinous on back, smooth brown inside. Corolla 3-4cm long, white, 7-9 petals united to the androecium at the base, inner 5 large, 3cm x 2.2cm wide obovate, petaline; outer shorter, becoming coriaceous, slightly pubescent on back. Androecium, 13mm long, glabrous, stamens in excess of 200, in a central bunch 16mm across; free almost to attachment with the base of the petals; inner 10-12 long; outer, shorter; attached in about 6 irregular concentric rings about the ovary; filaments, yellow; anthers golden. Gynoecium 15mm long; ovary shortly sparsely villose; styles 3, 12mm long, glabrous; free to the base.

Its distribution in the wild seems limited to the Hong Kong area and probably nearby mainland and its habitat is in woodland.

It is early flowering, following *C. granthamiana* in late Autumn—early winter.

Although no seed set has been reported the flowers are perfectly formed and appear viable and interspecific hybridising should be possible.

C. cuspidata. (Koch) Wright. 1912.

Originally described as *Thea cuspidata* by Koch in 1900 it is now divided into three varieties; *C. cuspidata* var. *cuspidata*, *C. cuspidata* var. *grandiflora*, and *C. cuspidata* var. *chekiangensis*. There are also garden forms in China with pink and red flowers which are in the course of being imported into Australia.

The species has an extremely extensive range over most of south eastern China, herbarium material coming from Szechuan, Kwangtung, Yunnan, Hunan and Chekiang, and shows evidence of some variability.

Different clones of *C. cuspidata* have reached the West, first through England and, later, through the United States of America, but they appear to be the same, namely *C. cuspidata* var. *cuspidata*.



Camellia cuspidata

The species develops a compact, pyramidal form up to 5 meters high, with thin twiggy shoots, straw coloured with reddish tones when young, the wood maturing to light tan, older branches, grey. Leaves narrowly elliptic, bluntly long acuminate, 5-9cm in length, shallowly, bluntly serrulate, leathery, smooth dark green. Flowers on short pedicels, stout and thickening upward to 4 ovate bracts. Calyx cupular, closing in with age; five unequal sepals. Corolla, white, 5-6 petals joined to the androecium; outer petals, sub-orbicular; inner wide obovate, truncate, folded under; filaments, white; anthers orange. Seed capsule, globose 10-12mm in diameter, light brown, usually single seeded, splitting into three valves.

Buds form in abundance up to six at the tips of new shoots, with 2 to 4 in the leaf axils. Flowers mid-season.

The species first reached England when E. H. Wilson sent seed from China to the Veitch Nursery. It received an R.H.S. Award of Merit in 1912.

It was first hybridised with *C. saluenensis* by Mr. J. C. Williams of Cornwall, England, who produced the hybrids 'Cornish Snow' and 'Winton'. Another putative hybrid 'Sylvia May' has produced a line of second and third generation hybrids in the U.S.A., bringing *C. japonica* into the combination. Dr. Lammerts of California directly crossed the species with *C. japonica* producing the hybrid 'Lammertsii' and Dr. Hilsman crossed it with *C. fraterna* to obtain 'Milky Way'. Tuckfield of Victoria, Australia, raised a group of 'Cornish Snow' seedlings in 'Bellbird', 'Lollipop', 'Turkish Delight' and 'Harem' which apparently were obtained from a *C. x williamsii* pollen parent.

(Continued on page 12)

It has also been seed parent to crosses with *C. hongkongensis*, *C. lutchuensis*, *C. hiemalis*, *C. taliensis* and *C. tsaii*. It is a diploid and most fertile, many of its hybrids proving fertile also, and is a useful species for hybridisation; its extreme floriferous and dainty but fastigate growth habit can be exploited with improved flower size and added colour.

C. chrysantha (Hu) Tuyama. 1965.

Originally described and figured in Acta Phytotaxonomica Sinica Vol. X. April, 1965, by Dr. Hu Hsen-Hsu as *Theopsis Chrysantha*. Its main habitat is in valley forest in the Yungning County of the Kwangsi Province. The species has been collected and grown by some of the Botanical Institutes in China, in particular the Kunming Botanical Institute, who in late 1979 released some plant material and seeds.

It is an evergreen shrub growing to 3 meters, with grey white bark, branchlets becoming ash grey, glabrous. Leaves laxly alternate, widely serrate, leathery, lanceolate 9-15cm long by 2.5-4.5 cm wide, apex caudate-acuminate; shiny green above, glabrous, midrib and veins impressed above, prominent below; petioles 6-10mm long, glabrous; pedicels, short with 5 bracteoles. Flowers, perfect, regular, golden to sulphur

yellow, solitary or clustered at tip and leaf axils; petals 6-10, rounded, up to 3cm long by 2cm wide, connate at base, crinkled edges, sepals 5 unequal, pilose; stamens numerous in series; filaments, pilose; ovary, 3 locular, sub-globose, glabrous; styles 3, free, glabrous; fruit woody capsule, dehiscent into 3-4 valves with up to 6 seeds, flat convex, pale brown. (Ackerman places it as Diploid ($2n = 30$.)

Although originally classified as *Theopsis* it appears very close to *Camellia taliensis* and may turn out to be a member of the Thea Section. (Prof. Tuyana now places it in *Archeccamellia*—Editor's Note.)

Its arrival in Western plant breeders' hands will start a flurry of hybridising to bring its strong golden colour into more ornamental hybrids.

C. dubia. Sealy. Synonym: *Thea fraterna* (Hance) O. Kuntze. 1958.

Re-classified by Sealy who considers that, while *C. dubia* may be regarded as a variety of *C. fraterna*, it differs in having a shorter pedicel and calyx and a shallow, cupular calyx while the branchlets are pubescent instead of densely, coarse villose. It is also close to *C. rosaeflora*.

The species habitat is wide spread as material has been gathered in China from Kiangsi, Hupeh and Szechuan where it

grows in woodlands at from 900 to 1800 meters.

It forms a dense, spreading shrub up to 3 meters in height, young branches villose, greyish; older, rough with splitting bark. Leaves, short stalked, broad elliptic, bluntly acuminate; base, cuneate; shallowly bluntly serrate, thin coriaceous, dark green; midrib hirtellous, venation on lower surface, but obscure on upper surface. Flowers pedicellate, fragrant (similar to *C. fraterna*); pedicel 7mm long, glabrous, with 5 bracteoles; calyx, shallowly cupular, 2mm high x 7 mm across. Corolla 2.5cm across, white flushed pink to pink, 5-7 petals joined to the androecium for 6mm from the base; outer petals somewhat coriaceous and ciliate; inner, petaline, broad obovate; filaments united for half their length, glabrous; style divided at apex into three arms. Capsule, ellipsoid, 15mm in diameter, single locular, 1-2 seeds 10mm diameter, dark brown.

The species makes an attractive tubbed specimen, but has been little used in hybridisation.

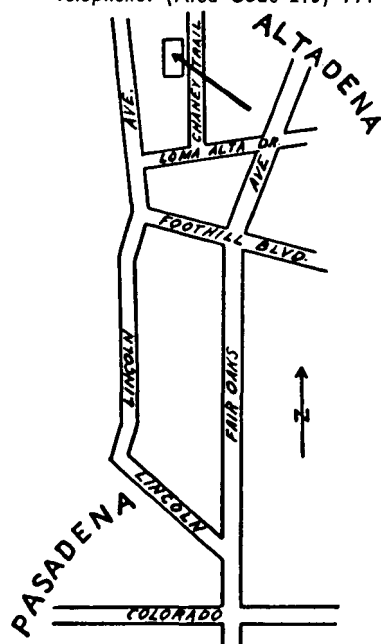
C. euryoides. Lindley. 1826.

This species, placed by Sealy in Section *Theopsis*, is interesting as it originally arrived in England as stock survivals of other camellias imported about 1822. It is native to the Chinese provinces of Fukien and

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Kwantung. Plants grown at Kew under the name *C. euryoides* were later identified as *C. rosaeflora* and apparently the species was lost in England.

It forms a shrub up to 5 metres high with slender branches and twiggy growth. New growth is densely villose. This is lost as the branches exfoliate with age and become brownish. Leaves are basically elliptic, bluntly serrulate, thinly leathery with hirtellous midrib. Flower about 2cm across, white, with 5 petals joined at the base to the stamen cluster. Androecium about 1.2cm long, glabrous, outer stamens united for half their length; anthers, yellow. The species is very close to *C. rosaeflora* and *C. fraterna*. It is little known and there are no reports of it being used for hybridising.



Camellia Fraterna

Camellia fraterna. Hance, 1862.

A widespread and variable species first collected by the East India Company physician, James Cunningham on the Island of Chusan in the year 1701, but was not given its present name until described by the botanist Hance in 1862.

This species, which is classified in Section Theopsis, develops into a shrub with thin, densely pubescent to coarse villose twiggy growth up to 9 meters high. It has soft leaves up to 7.5cm long with a blunt acuminate apex, broad elliptic, widely, bluntly, shallowly serrate, dark green above, midrib hirtellous; The petioles are up to 5mm long, villose. The small, white flowers are shortly pedicellate, fragrant, 25 to 30mm in diameter with 5 to 6 irregular petals, adnate to androecium; pedicel and calyx densely, coarse villose; pedicel, stout, 3-4mm long, bearing 5 wide ovate bracteoles; calyx cupular, 7-8mm in diameter. Androecium

up to 2cm long, glabrous, outer filaments white, united for half their length; anthers, golden; style up to 1.8cm long, divided at apex into 3 arms. Capsule globose, about 1.6cm in diameter, bearing one to two seed. Seed globose, 1.2cm diameter, mid-brown.

The species grows in thickets and gulleys on rocky hillsides in Chekiang and Kiangsi and other parts of south-east China. It is very close to *C. rosaeflora* and *C. dubai* and hybridises with both, as well as *C. cuspidata*, *C. japonica* and *C. reticulata*. Savada's 'Tiny Princess' is *C. fraterna* x *C. japonica* cv. 'Akebono'. David Feathers of California crossed *C. fraterna* with 'Buddha' (which produced the so-called "Budfrat" seedlings. Both Ackerman and Longley confirm the species as an hexaploid ($2n = 90$).

Specimens of this species were first introduced from China to the U.S.A. by the Department of Agriculture Plant Introduction Station, Maryland in 1948, and it has become widespread through the Camellia growing areas of the world. It has proved a good seed parent and is being considerably used in hybridisation.

Camellia granthamiana. Sealy, 1965.

Classified by Sealy in Section Heterogena, this species is grouped with a number of others, as yet unknown to the Western World, but would appear to have considerable interest from the hybridist's point of view. The only other species at present available from this section is *Camellia crappnelliana* and *C. yunnanensis*.

Only two specimens of this species have been located in the wild. The first plant was discovered in 1955 in the Hong Kong New Territories, and this plant is the source of all the material at present available. It was named for Lord Grantham, then Governor of Hong Kong.

The species has usually been propagated vegetatively, as seedling mostly prove lacking viability. It forms a small tree, up to 6 meters in height, young branches brown, slightly pubescent early, older branches roughened, ash grey. Leaves shortly stalked, narrowly to broadly elliptic, tending to be oblong; tip acuminate to cuspidate; base rounded to obtuse; 3 to 5.5 cm wide, 8 to 12cm long; shallowly finely serrate; leathery; upper surface shining green; venation deeply impressed; lower surface, light green, with raised midrib and veins, sparsely villose. Petioles, stout 5-10mm long, pubescent. Flowers usually in pairs and collateral with vegetative buds at the end of new shoots, perulate. Perules, 11 to 14 persistent to after the seed has dehisced; forming a capular involucre up to 6cm in diameter concave, leathery, crustaceous, dark brown, yellowish on base inside, outer surface grey, tomentose; corolla, 12 to 14 cm across, of 8-9 parch-

ment white petals, widespread, united to androecium for 8mm from base, obovate, deeply notched. Androecium, numerous filaments united for 6-8mm from base and forming a dense cluster at the centre of the flower, free parts of filaments, orange, filiform up to 2.6cm long; anthers golden; pollen, sparse, golden yellow. Gynoecium, 3cm long, sparsely white tomentose, up to the stigmatic arms; ovary, globose ovoid; style stout, tapering upward, 2.2cm long, divided into 5 glabrous, stigmatic arms at apex. Capsule embraced by the persistent perules, five valved; valves wide spreading, remaining attached to base of thick, woody columella. Seeds sub-globose up to 1.6cm diameter, bright brown.

C. granthamiana is one of the few tetraploid camellias (Fukushima, Ackerman $2n = 60$). However, it hybridises with both diploid and hexaploid species.

In experimental hybridisation carried out by the Los Angeles State and County Arboretum in 1964, successful crosses were obtained with *C. japonica*, *C. saluenensis*, *C. reticulata*, *C. pitardii*, var. *pitardii* and *C. sasanqua*. The *C. granthamiana* characteristics of early blooming, reticulate leaves and large stamen cluster were dominant in F1 hybrids.

The first *C. granthamiana* x *C. japonica* hybrid registered was 'Autumn Glory' while 'China Lady' was the first *C. x hybrid* 'Buddha' x *C. granthamiana*. This was followed by 'Lois Shinault', 'Pop Gee' and 'Grannie' and others are in the pipe line as the F2 generation is being raised. Most crosses made with *C. granthamiana* use it as a pollen parent as its seedling mostly lack vigour. However, there are reports of seedling clones of greater vigour than the parent.

According to Dr. W. Ackerman's report in 1970, *American Camellia Yearbook*, pollen counts on *C. granthamiana* showed a high 55% aborted pollen while those of most of its hybrids were even higher, that of the cross with *C. sasanqua* being the best with the count down to 22%. Hybrids with *C. saluenensis* and *C. japonica* have aborted pollen counts as high as 100% making them quite infertile.

Camellia heimalis. Nakai, 1940.

This group of plant material, although accorded specific rank by Nakai, was classified by Sealy as doubtful, and he includes it as a form of *C. sasanqua*. However, as its flowering period is later, its flowers are more double and it is only known from its garden forms, it is considered, from an horticultural point of view, to be a differentiated group of plant material. Tuyama has classified it as *C. sasanqua* var. *hiemalis*. It

(Continued on page 14)

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is mainly a hexaploid as is *C. sasanqua*, although Paterson counted 'Shishi-Gashira' as a tetraploid in 1950 and Kondo obtained a peculiar count of $2n = 102$ for 'Mirandy'. *Camellia Nomenclature* lists only 25 cultivars in the hiemalis section.

See *C. sasanqua* for botanical description.

Camellia hongkongensis. Seeman, 1859.

This species has been placed by Sealy in Section *Camellia*, even though it resembles species in Section *Heterogenea*. However, it differs in having united stamens adnate to the petals.

It has been found in Hong Kong where it was first collected by General Eyre who noted it was common in woodland and upwards of 30 ft. in height.

The species is upright growing with stout branches and long elliptic leaves, finely and minutely denticulate, bright red when young, becoming shining dark green on maturity. The flowers are red in colour, up to 6cm in diameter, erect, solitary and terminal on young wood. They are campanulate, with 6 to 7 long strap-like petals adnate to the stamen cluster at the base. The outer filaments unite to form a fleshy tube and the anthers are yellow. Gynoecium 3.5cm long; ovary densely tomentose; styles 3, free to base, glabrous. Capsule subglobose, up to 3cm in diameter, brown and rough, with persistent perules 3 locular, each cell with 1-2 seeds; walls woody; seeds dark dull brown.

About the only registered hybrid known is David Feather's 'Hong Kong', resulting from crossing with *C. saluenensis*. *C. hongkongensis* behaves more like a semi-tropical plant and it could be used to develop interesting hybrids for the warmer, more humid sub-tropical regions.

Camellia heterophylla. Hu, 1937.

Although Sealy accepts this species into Section *Camellia* he is strongly of the opinion that it is in fact a hybrid between *C. reticulata* and *C. japonica*°. At the time he wrote his *Revision* it was not known that these two species would hybridise and he thought that such a cross would be unlikely, so he left the specific ranking unchanged.

There is only one cultivar of this species and this came from a temple garden in Yunnan and is the type specimen. The plant is similar in many respects to *C. reticulata* but differs in having two japonica-like characteristics in that the leaves have a smooth surface between the veins and a number of scattered cork warts.

It grows to a shrub of over 2 meters high, with open growth and stout branches, leaves broadly acute apex, regularly serrulate, firmly coriaceous, venation visible, on both sides, smooth between the veins, irregular cork warts. Flowers perulate, single, axillary and terminal. Corolla semi-double, 10cm in diameter, crimson; petals 20, adnate to the androecium.

Camellia Nomenclature lists the English cultivar 'Barbara Hillier' as a member of this species, but it is a single and not the type form.

Camellia irrawadiensis. Barua, 1956.

This species was first described by P. K. Barua in the November, 1956 *Camellian*. The original plant of this type was the sole survivor of 5 plants grown at the Indian Tea Association Research Station at Tocklai, Assam, from seed collected in Burma in 1917 by L. O. Wilson of the Burma Military Police. The material came to Australia from Nuccio's Nursery and stemmed from the ma-

° (In early 1980 Dr. Chang Ao-lo, Vice Director of the Kunming Botanic Institute advised us that this is, in his opinion, not a separate species but, indeed is *C. reticulata*. It has been dropped as a separate species in the 1981 edition of *Camellia Nomenclature*. —Editor's Note.)

terial brought to California for the late Ralph Peer.

C. irrawadiensis is a member of the Section *Thea* and, on morphological characteristics is regarded as intermediate between *C. taliensis* and *C. sinensis* var. *assamica*, being chemically distinct as the only one of the three that does not contain caffeine. Its leaf form is also distinct as a percentage of the leaves do not have serrated edges.

The species forms a tall open branched shrub, up to 6 meters high. It produces numerous stems near the ground. Young branches are glabrous passing from reddish through green to light tan. The leaves alternate, peteolate, persistent for two to three years, short stalked, elliptic to narrow elliptic; apex, acuminate; base cuneate; margins shallowly denticulate to entire, undulate, glabrous, thinly coriaceous, soft midgreen above, lighter below; midrib and veins clearly defined and raised on both surfaces. New growth is brick red at first, persisting in petioles and leaf stems. Average leaves are 12.5cm by 5cm but some that were measured reached 17.5cm x 7.5cm. Petioles slender, pointed, glabrous; flowers pedicellate, inclined to be cernuous, usually two in leaf axils with up to seven immediately below the terminal but on the bracts of a short shoot; pedicel up to 10mm long, green, stout, glabrous, clavate, bearing 3 caducous bracteoles; sepals 5, unequal, wide ovate, up to 7mm long, green coriaceous with a thin membranous margin, glabrous outside, velutinous inside, persistent in fruit.

Corolla opening cup-shaped to wide spreading, 4.5cm diameter; consisting of 8-9 porcelain white, orbicular petals, united at the base and to the androecium. Petals 2-3 outer coriaceous, becoming petaline towards the edge, remaining petals, petaline, concave. Androecium, up to 1.5cm long, stamens numerous, adnate to the petals and to each other, filaments cream coloured; anthers yellow; pollen, golden. Gynoecium up to 2cm long; ovary about 2.5mm high, densely greenish-white tomentose; styles 4

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or 5 united for 10mm from base; style arms outcurved. Capsule, depressed globose up to 4.5cm diameter, green at first becoming flushed. Seeds 2-3 per locule, subglobose, brown, up to 9 in a capsule. Flowers have a musty scent.

C. irrawadiensis has been found to hybridise with *C. sinensis*, *C. saluenensis*, *C. taliensis*, *C. japonica* and *C. reticulata* but its potential is untested. Nuccio crosses with *C. japonica* produced plants with large and beautiful leaves.

The species is midseason flowering. It grafts readily on *C. sasanqua* and *C. japonica* stock and, on large stocks can send up to 2 meters of growth in a season when it virtually grows continually without hardening off. Cutting grown plants take considerably longer to establish a similar vigour.

Camellia japonica. Linæus, 1753.

This is by far the most wide spread species in the Genus *Camellia* extending throughout Japan, China, Formosa, and Okinawa.

As a wild species it can form a small tree up to 10 meters high, twigs and young shoots, glabrous, Yellowish or brownish; older branches grey; the bark exfoliating to leave a smooth surface. Leaves elliptic to broad-elliptic—to elliptic oblong, shortly and bluntly acuminate; base cuneate, denticulate or crenulate denticulate, coriaceous, glabrous, dark green above, smooth between veins with scattered cork warts, midrib prominent below; venation visible on both sides.

Flowers, perulate, terminal, solitary or geminate; perules persistent at anthesis, eventually deciduous, densely, greyish velutinous, with narrow membranous margin. Corolla up to 4.5cm in diameter, of 5-6 red petals adnate to the androecium for up to 1.5cm, from oblong-oval to suborbicular, notched at apex, firmly fleshy. Androecium up to 3.5cm high, glabrous; outer filaments united for two-thirds to form a fleshy tube, white, anthers, yellow. Gynoecium up to 3 cm long, glabrous; style up to 2.8cm long, divided at the apex into 3 arms. Capsule broadly ellipsoid, up to 3cm in diameter, 3 locular, splitting into valves with 1-2 seeds per locule; walls thick and woody when dried; seeds dark to mid-brown, sometimes mottled.

C. japonica is the best known species of the Genus as its horticultural cultivars have spread over the globe. It has been cultivated for well over 1000 years and its named cultivars exceed 15,000. Centuries of cultivation and selection, with ancient contamination from other elaborate flowered species, have been the cause of the development of the beautifully modified and varied flower forms and the widely varied vegetative char-

acteristics and growth habits that mark the many garden forms.

A sub-species '*rusticana*', although found and described by Siebold as early as 1841, was not differentiated and named by Honda until 1950. It differs from the main species by having shorter petioles, flatter flowers and filaments united for a shorter distance. It becomes mainly from Honshu and is known as the "Snow Camellia" due to its habit of blooming as soon as uncovered by the melting snows of spring. It has tough wiry twigs and stems and a semi-prostrate growth habit.

'*C. japonica*' has been crossed with almost every available species, but two of the most successful groups of garden plants have been those where it was crossed firstly with *C. saluenensis* to form the *C. x williamsii* group and secondly with *C. reticulata*.

The species is basically diploid ($2n = 30$) but amongst the garden cultivars are a number of triploids which have shown a poor fertility rate.

The original collection of material from this species was made by Cunningham in 1700-02 and the specimens still exist in the British Museum Herbarium.

Camellia kissi. Wallich, 1820.

This species was named and described by Wallich as early as 1820 from material from Nepal where it had been collected from 1814 onwards. It is a wide spread species, extending into Assam, Burma, Indo-China and China.

Sealy has classified it in Section *Paracamellia* with *C. sasanqua* and *C. oleifera*. However it varies from these two species by reason of its much smaller flowers and caducous petals. As it is most variable as far as its leaf dimension ratios are concerned, there is some overlap with the leaf form of *C. oleifera*. A form with very narrow leaves has been designated *C. kissi* var. *stenophylla* while the original form is *C. kissi* var. *kissi*.

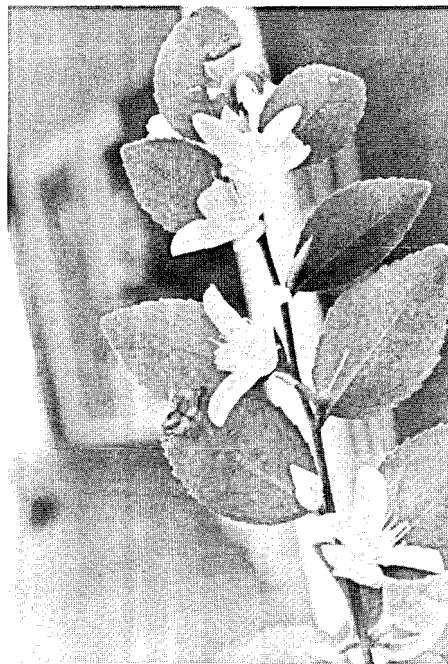
There only appears to be one clone introduced to the West judging from the very close similarity of the plants seen, although there is some variation in leaf form in the seedlings

The species received a number of synonyms such as *Camellia caduca* due to the early caducous nature of the petals, also incorrectly as *Camellia oleifera* and *Camellia drupifera* thereby invalidating the use of that name for the species *Camellia oleifera*.

The name of the species was derived from a Nepalese epithet "Kissi-soah". An oil of medicinal value is expressed from the seeds in Nepal.

The species forms a small tree up to 12 meters high, young shoots green, pubescent becoming brown and glabrous as they harden off. The bark is deciduous, the main branches becoming roughened and greyish.

Leaves medium stalked, narrowly lanceolate-elliptic; apex bluntly acuminate; base cuneate; denticulate for three quarters of the length, thinly coriaceous; upper surface dull green, slightly hirtellous midrib, venation both sides visible; petioles densely pubescent. Flowers 2cm in diameter, serrulate, one to two in terminals and leaf axils. Perules caducous, falling before the flower opens, semi-orbicular, concave, brown with thin membranous margins, velutinous. Petals white, 6-7, free to base, caducous; two outer transitional to perules, five inner obovate, emarginate, petaline. Androecium, 1.2cm long, glabrous, outer filaments united at base, white to creamy; anthers yellow. Gynoecium, ovary densely silky tomentose; style 8mm long divided into 3 arms. Fruit sub-globose, 2cm in dia, villose, splitting into 3 valves, leathery. Seed, rounded 1.2cm diameter, brown. The species has been crossed with *C. sasanqua* and *C. oleifera*.



Camellia lutchensis, Taiwan Form

Camellia lutchuensis. T. Ito. 1900.

This is a common woodland shrub on the islands of Okinawa, the Iriomoto Island, and the Islands of the Liu Kiu group southwest of Japan. From these areas botanical specimens were collected as early as 1887.

It is a vigorous growing shrub, densely furnished with small leaves and fine twiggy growth, the main branches arching out in a spreading manner. It bears small, single, white flowers 1.5 to 1.8 cm across, of 5-6 petals, growing in clusters of up to 6 at the tip of the twigs and 2-3 in leaf axils. It flowers heavily when in full blossom and is distinctly and pleasantly fragrant.

Sealy placed it in Section *Theopsis* where it is closest to *C. euryoides* and *C. ros-*

(Continued on page 16)

thorniana. The original material in Australia stemmed from the Peer collection of species.

Camellia lutchuensis grows to a shrub of up to 3 meters high, young branches spreading, young twigs finely villose, reddish to pale grey-brown, older branches grey, glabrous. Leaves 3-4.5 cm long x 2-3 cm wide, short stalked, oblong; apex blunt acute; base cuneate, finely bluntly serrate, teeth incurved, thinly leathery, bright green above, lighter below; midrib defined, venation just visible on both surfaces, stalks reddish brown; petioles pubescent. Flowers shortly pedicellate, fragrant; pedicel and calyx glabrous; pericel slender, thickening upward and covered with 7 closely appressed bracteoles, calyx cupular; sepals 5, semi-orbicular; corolla about 2.6 cm across, 5-6 petals united at base, outer 2 transitional to perules, inner thinly petaline, broadly ovate, more or less emarginate. Androecium 1.2 cm long, smooth, outer filaments united in a fleshy tube. Gynoecium glabrous; ovary globose; style 1.2 cm long divided into 3 horizontal arms. Capsule 1.0 cm in diameter, single locular, single seed splitting into three valves with thin leathery walls. Seed, globose, dark brown.

This species has formed the base of the breeding for scented cultivars. It crosses with other members of its section such as *C. cuspidata* and *C. tsaii* and it has been crossed with *C. japonica*, *C. saluenensis* and *C. pitardii*. The F1 hybrids with *C. japonica* proved almost sterile. However this sterility barrier was broken by Dr. W. Ackerman by inducing a tetraploid form by the use of colchicine. This form produced viable pollen allowing the F2 hybrids to be developed.

An interesting form of *C. lutchuensis* from Taiwan has been collected. It is smaller, denser and more twiggy than the Okinawa form with a much smaller flower which opens en masse on the under surface of the branchlets and twigs.

This form develops into a spreading shrub, up to 2 meters high with branches bearing spreading horizontal layers of small, twiggy growth with flowers, two per leaf axel, all down the stems, young twigs villose, tan to grey-brown, older branches glabrous. Leaves short stalked, 2-3 cm long by 1.5-2 cm wide, broadly elliptic; apex blunt acute; base, obtuse; finely bluntly serrate, thinly leathery. Midrib defined, glabrous above, sparsely hirtellous below, venation clearly visible on top surface, obscure below; stalks green, sparsely villose; petioles, glabrous. Calyx cupular; sepals 5 equal triangular lobes; corolla 1.5-2 cm across, 5-6 petals outer three, transitional to sepals, 1 intermediate and 2 larger petals, thinly petaline, broadly elliptic. Androecium, 1 cm long; filaments white, united at base; anthers yellow; style 8 mm long, divided into 3

spreading arms 1 mm long at the tip. Besides its miniature size this form differs in its more villose new growth, but glabrous petioles.

Camellia maliflora. Lindley, 1827.

Cytological examination by Dr. Janaki Ammal has established that this species is diploid ($2n = 30$). It is close to *C. fraterna*, *C. dubia* and *C. rosaeiflora*, but is readily distinguishable because of its double flower. It was brought from China in 1818 by Captain Rawes. Sealy believes its origin is problematical and states "It is tempting to regard *C. maliflora* as a hybrid between species of the Sections *Theopsis* and *Camellia*, but it is difficult to suggest the species involved"

Its poor fertility, malformed gynoecium and double flowers all point to hybrid origin, possible between garden forms of *C. cuspidata* and *C. saluenensis* as both are diploids. The polyploid species *C. fraterna*, *C. dubia* and *C. sasanqua* would appear to be excluded.

The species was first described and illustrated in the *Botanical Magazine* 1918, under the name *Camellia sasanqua* by Sims. It was later re-classified as a new species *Camellia maliflora* by Lindley as published in the *Botanical Register*, 1827. It has been considered as a double form of *C. rosaeiflora* and was grown at Kew for many years under the erroneous name of *C. rosaeiflora* var. *flore pleno* and was often listed in early catalogues as "Sasanqua Rosea". It has not been possible to associate this camellia with any wild species and, as far as is known, all existing plants have stemmed from the original clone first introduced in 1818.

Seedlings with *C. maliflora* parentage are rare, although Dr. Parks reported a seedling from *C. maliflora* pollen on *C. japonica* c.v. 'Snow Bells' (Code 165 AB).

The species forms a densely and uniformly leafed shrub up to 4 meters high, with new stems, brown to greyish, sparsely villose becoming yellowish and glabrous; mature branches roughened and greyish. Leaves shortly stalked, broadly elliptic, shortly bluntly acuminate; base rounded; minutely regularly serrulate-denticulate, thinly leathery, dark green and glabrous above with prominent, sparsely villose midrib; bright green below, glabrescent. Petioles pubescent; flowers shortly pedicellate, double, falling as a whole, the pedicel mostly breaking from the shoot, tending to prevent seedset.

Pedicel and calyx 1.2 cm long; pedicel covered with imbricate bracteoles, passing indeterminately into sepals and together forming a series of perrules; bracteoles rounded, greenish, tan edged, occasionally ciliolate; calyx shallowly cupular; sepals 5, concave, innermost slightly petaline. Corolla

4 to 5 cm in diameter, blush rose, paler to centre, composed of numerous petals united at the base, auxilliary petals developed from the petaloidity of the stamens, all graduations represented, outermost orbicular, remainder, suborbicular or spatulate, entire or emarginate. Stamens rare; filaments 8 mm long, white; anthers yellow; gynoecium 1.8 mm long, irregular, petaloid, glabrous; styles three or more, variously united in the lower parts. Capsule and seeds unknown.



Camellia Miyagii

Camellia miyagii (Koidz) Makino and Nemoto, 1931.

Originally described under the name *Thea Miyagii* by Kordzumi in the *Botanical Magazine*, Tokyo, 1918, it was re-classified as *Camellia miyagii* by Makino and Nemoto in *Flora Jap.*, 1931.

The species is very close to *Camellia sasanqua* and, as such, fits into Section *Paracamellia*. Sealy listed it amongst imperfectly known species, but since then it has been extensively distributed.

The species will grow into a small tree 6 meters high, the young twigs light brown, glabrous, becoming deeper brown with the bark splitting and roughening when mature. Leaves shortly stalked, oblong elliptic to obovate elliptic, obtuse or very bluntly acute, base cuneate, 5.5-7.5 cm long by 3 to 4 cm wide, margins shallowly crenulate to crenulate-serrulate, mostly in the upper two-thirds; stiff and leathery, glabrous with a slight pubescence at the base of the raised midrib on the upper surface, bright green, venation obscure but with some swelling between veins, verruculose; lower surface a lighter green, venation almost obscure,

midrib more prominent. Petioles 6mm long, glabrous at first, becoming somewhat pubescent. Flowers perulate, solitary, sessile, erect at the end of shoots and at the base of secondary summer growth, collateral with terminal vegetative bud; perules glabrous, caducous, falling as the petals open, sub-orbicular to ovate, scale-like; sepals imbricated, obovate, coriaceous; petals 6-7 inversely cordate or obcordate, apex notched and deeply emarginate, white pubescent at back; outer petals about 1.6 cm long, inner up to 2 cm. Androecium 1.2cm, stamens numerous, united at their base for 1/3 their length; filaments white; gynoecium densely white tomentose, except the style; style 10mm long, splitting into three arms for half its length. Fruit globose to ellipsoid, about 1.4cm in diameter, green, tomentose, walls thick and woody, splitting into two or three valves, mostly single seeded; seeds dull brown 10mm in diameter, globose.

This species falls readily into Section Paracamellia with its perulate flowers, caducous perules and readily falling petals lightly adnate to the androecium. Although its thick textured leaves resemble *C. oleifera* var. *oleifera* its flowers are smaller, the petioles glabrous, leaf serrations noticeably different and the fruit tomentose, while that of *C. oleifera* is glabrous. *C. miyagii* has flowers with smaller petals than *C. sasanqua* and shorter styles, while its leaves are heavier and notably verruculose. It has different leaf serration and new growth is glabrous instead of hairy. Both *C. sasanqua* and *C. oleifera* have much larger seed pods than *C. miyagii*. These differences would seem substantial enough to rate *C. miyagii* separate species standing.

Camellia nokoensis. Hayata, 1919.

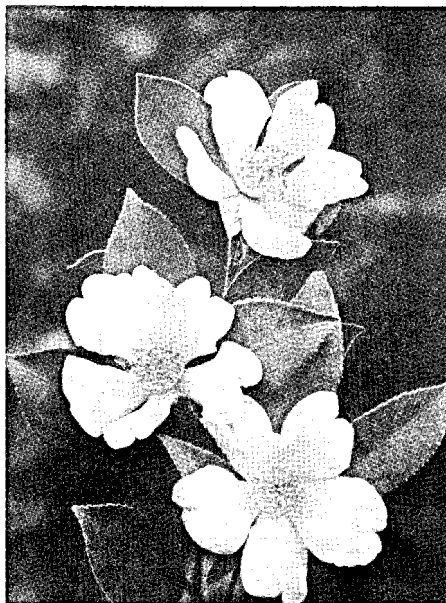
This small species of the Section Theopsis comes from Taiwan. It is the only species from Section Theopsis in the Western World with sparsely hairy filaments.

Dr. J. L. Creech collected specimens in Taiwan in 1968 which he sent to the U. S. Plant Introduction Station, Maryland, from whence they have been generally distributed during 1971 and onwards.

It will form a small tree up to 8 meters in height, young branches slender, densely puberulous, greyish, becoming glabrous, finally brownish with numerous pale lentils. The branches are gracefully pendulous. Leaves shortly stalked, elliptic to lanceolate-elliptic; apex bluntly acuminate; base cuneate, 3-5 cm long x 1-2 cm wide, serrulate, leathery, deep green, glabrous above; lighter green below; midrib raised, venation obscure, young leaves and shoots pinkish-red changing to green on maturity. Flowers pedicellate; pedicel 4.5mm long, thickening upward, carrying 4 separated, bluntly tri-

angular bracteoles, ciliolate, glabrous; calyx very shallow; sepals 5, unequal, glabrous ciliolate. Corolla, 1.2 - 2cm diameter of 4-5 white petals adnate to the androecium. Androecium 10mm long, uneven, outer filaments united at base for up to 4mm, sparsely and finely villous; style 12mm long, minutely trifid. Capsule 1-locule; wall thinly leathery, holding a single seed, spherical, brown.

The outstanding characteristic of *C. nokoensis* is its graceful habit and thin, pendulous branchlets with extreme floriferousness.



Camellia Oleifera

Camellia oleifera var. *oleifera*. Abel, 1818.

Classified in Section Paracamellia along with the closely related species *C. sasanqua*, *C. kissi* and *C. miyagii*, *Camellia oleifera* is wide spread both in the wild and in cultivation, specimens having been collected in China in the provinces of Kiangsu, Anwei, Hupeh, Hunan, Kiangsi, Chekiang, Fukien and Kwangtung, as well as in Hong Kong and Indo China.

Due to its widespread habitat, the species varies very considerably, particularly in its leaves and flowers.

The species was confused with forms of *C. sasanqua* for considerable periods. Indeed the first full account given of the plant was by Sir George Stanton in 1793-4) when he identified it as *C. sasanqua*. It was later recognized as a distinct species by Abel, who gave it the name *C. oleifera* in 1818. However, the two species were re-united by Seemann in 1859, and they remained generally confused until 1915.

The synonym *Camellia drupifera* was originally given to the species by Loureiro in 1790, but was later misapplied and Sealy proposes it be set aside as a *nomen confusum*. The species is cultivated in China to produce an oil known as "tea oil" from

the seeds. This oil is used in cosmetics and cooking.

The species forms a tree 7-6 meters high; young branches light coloured, older branches dark brown, becoming smooth and reddish. Leaves, shortly stalked, narrow to broad elliptic to oblong elliptic, bluntly acuminate; base, wide cuneate; mostly about 4cm long by 2.5cm wide, but specimens extremely variable; serrulate, stiffly coriaceous; upper surface, dark green, glabrous; lower surface light green with a few hairs on midrib which is raised on both surfaces. Flowers perulate, terminal, solitary to germinate, fragrant. Perules caducous, lunate, scale like to obovate with membranous margins, with backs tomentose to densely long tomentose, on the face glabrous. Petals 5-7 free to base, obovate to oblanceolate, apex bilobed, from 2.5cm long by 1.2 wide to 4 cm long by 2.4cm wide, white; glabrous; outer transitional to the perules. Androecium 1.5cm long, filaments uniting at the base, creamy, anthers yellow. Gynoecium; ovary densely long white tomentose; style 10mm long, trifid. Capsule, globose, villous; 3-locular, wall thick and woody. Seeds 2cm in diameter, dull brown to light brown.

Sealy considered a species known as *C. confusa* classified by Craib in 1912. This was found to agree closely with *C. oleifera* and was reduced to a variety of that species.

Camellia oleifera var. *confusa* (Craib) Sealy. 1958.

Living material of this subspecies had been received by Walter Hazlewood about 1956 from Kew Gardens. Seeds were also collected by Dr. Valder in Indo China and grown on in Australia. A substantial amount of this material is available for study.

The species forms a small tree somewhat larger than *C. oleifera* var. *oleifera*. The habit and colouring of the branches are the same, but the leaves show some differences. They vary from broad elliptic to obovate elliptic; base cuneate, very shallowly and widely serrulate becoming obscure towards the base, from 8-13cm long by 3 to 6cm wide, coriaceous, pubescent along the base of the midrib; petioles are longer, up to 12mm and not so hairy. The flowers are white, fragrant 5 to 7 petals, falling easily, and open earlier than *C. oleifera* var. *oleifera*. The style, while being slightly shorter, is long hairy towards the base 3-sulcate and divided at the tip for 3mm into 3 arms.

Both forms of *C. oleifera* hybridise readily with *C. sasanqua* and, according to Dr. Ackerman form highly cold resistant plants. Chromosome counts by most cytologists show the species to be a hexaploid ($2n = 90$).

(Continued on page 18)

Camellia pitardii Cohen Stuart, (1916).

This species was originally named *Thea speciosa* by C. J. Pittard and published by Diels in 1912. In 1916 Cohen Stuart pointed out this name had been previously used and was therefore invalid. He re-named *C. pitardii*. When plants grown in England from seeds collected by Forrest in China came into flower, it was found some of the material represented the original *C. pitardii* but another group of material appeared to be a new species. However, Sealy designated it *C. pitardii* var. *yunnanica*, the original species becoming *C. pitardii* var. *pitardii*.

As far as hybridising is concerned, it is found that *C. pitardii* var. *pitardii* is a diploid and very close to *C. saluenensis* while var. *yunnanica* is a hexaploid and close to the wild form of *C. reticulata*. In fact Dr. Clifford Parks suggests that they are biologically the same species.

Camellia pitardii var. *pitardii*.

An open shrub up to 6 meters, branches glabrous, brownish, becoming grey. Leaves oblong-elliptic, to broad elliptic, tips caudate, base cuneate, about 6cm long by 3cm wide, regularly serrulate, stiffly coriaceous, veins visible on both surfaces. Petioles about 8mm long, reddish, glabrescent. Flowers perulate, perules persistent to anthesis, glabrous with a ciliate margin. Corolla up to 6cm in diameter, white to rose, 5 to 6 petals adnate to the androecium, petals broadly ovate, deeply notched. Androecium 2.5cm high, sparsely pilose, outer filaments united for half their length. Gynoecium 3cm long; ovary densely tomentose, style 2.8cm long, silky pubescent towards the base, shortly 3-fed. Capsule globose, up to 4cm in diameter, splitting into 3 valves, thick walled; seed up to 1.8cm in diameter, dull brown.

The species forms hybrids readily with *C. japonica*, *C. fraterna*, *C. tsaii*, *C. reticulata* and *C. cuspidata*. A new race of interesting miniature hybrids is developing, lead by the Durrant's 'Snippet' and 'Prudence'. There is an interesting red anthered form in cultivation.

C. pitardii var. *yunnanica*. Sealy, 1949.

This differs from var. *pitardii* by having pubescent young branches, laxly disposed leaves, narrower at the base, with an acute apex, margins less prominently serrate.

The species forms a small tree up to 7 meters high; young branches tan, glabrous, older branches grey and roughened; leaves medium stalked, narrowly elliptic; apex acute to long acuminate, re-curved; base narrowly cuneate; margins finely, regularly serrulate becoming obscure on the lower third, slightly undulate or twisted, up to



C. Pitardii var. Yunnanica

10cm long by 3.5cm wide, coriaceous; midrib prominent on both surfaces, venation well defined, slightly impressed below, raised above. New growth bronzed green, lower surface sparsely villose; older leaves glabrous. Flower perulate, mostly solitary at the ends of new growth; perules persistent forming a cupular involucre, velutinous on the back, broadly ovate; corolla up to 3cm in diameter, rose coloured, 5 to 6 petals adnate to the androecium, broadly ovate, cordate; outermost shortly, partly coriaceous and velutinous; androecium, outer filaments fleshy, united for half their length; anthers golden; gynoecium 3.2cm long; ovary, densely tomentose, style 2.5cm long, silky pubescent towards the base, with 3 short arms, persistent on fruit. Fruit densely tomentose, russet brown when mature, depressed globose, up to 5cm in diameter, 3-locular, splitting into 3 valves, thick walled. Seeds semi-globose on back, cuneate front, dull brown.

The species has been found to hybridise with *C. reticulata*, *C. japonica* and *C. saluenensis*. Many *reticulata* hybrids have this species in their make up, 'Buddha', 'Confucius' and 'Carl Tourje' being amongst them, and show their influence in their leaf forms.

Camellia reticulata. Lindley 1827.

Classified in Section *Camellia* this species was originally named and described by Lindley from an anomalous garden form brought to England in 1824 from China by Captain Rawes, and this particular clone now bears the renowned Captain's name. A further *camellia* of the same species was

introduced about 1850 by the plant hunter Robert Fortune.

In 1924 Forrest who was collecting plant material in China on behalf of members of the R.H.S. sent a collection from Yunnan which included seeds. The resultant plants were identified as the wild form of *C. reticulata* by the late Dr. Stapf of Kew. In 1950 Dr. T. T. Yü, (in a talk given at the R.H.S. Conference on Camellias and Magnolias) drew attention to a group of horticultural varieties of the species which existed in the province of Yunnan.

As the type of the species *Camellia reticulata* is a semi double form the wild form has been designated forma *simplex* i.e.: *C. reticulata* Lindley forma *simplex* Sealy.

The species forms an open tree up to 11 meters high, occasionally 15 meters, with stout branches, light brown becoming greyish with age, glabrous. Leaves up to 12cm long, broadly elliptic; tip bluntly shortly acuminate, deeply regularly serrated, the upper surface dull dark green with distinctive, conspicuous, net-like venation. The flowers are terminal and axillary, up to 10cm across, rosy coloured of 5-6 petals. Cultivated varieties are larger with more petals with colour varying from pale rose to deep purplish crimson and size up to 17cm in diameter. Androecium, glabrous; outer filaments united for half their length, pale yellow; anthers yellow. Gynoecium 3cm long; ovary white tomentose; style 3cm long white villose at base, dividing at apex into 3, sometimes 4 arms. Seed capsule up to 4cm in diameter, brown, rough, minutely wrinkled, splitting into 3 valves; walls thick and fleshy.

The wild form and cultivars, with one exception, are hexaploids. The exception is the type 'Capt. Rawes' which is an allotriploid and apparently the result of haploid merogamy. This is a poor subject for hybridising although its pollen has produced some results.

The wild form and most of the garden forms exhibit various degrees of fertility and hybrids have been obtained when crossed with *C. japonica*, *C. pitardii*, *C. saluenensis* and *C. sasanqua* as well as with some of Section *Theopsis*.

It is speculated that the *reticulatas* are the result of ancient cross infusion between the species *C. pitardii* and *C. japonica* with the large flowered Yunnan *reticulata* cultivars being developed from selected forms. The cross with *C. japonica* has proved most fruitful in producing good garden plants with beautiful flowers. Most of these F1 hybrids are fertile in some degree. Some excellent forms have been obtained by crossing with both *C. saluenensis* or *C. x williamsii* and *C. pitardii* var. *yunnanica*. A group of use-

ful garden plants was produced by hybridising with *C. sasanqua*.

Camellia rosaeiflora Hooker, 1858.

A member of the Section Theopsis, this species grows into a shrub up to 4 meters high with a lax growth habit. Branches, finely pubescent becoming glabrous. The leaves are broad elliptic with a long blunt apex, thinly leathery, with wide crenulations and up to 7cm long. Flowers up to 3cm in diameter, soft pink of 6 to 8 rounded petals of even size, white filaments and yellow anthers. The flower fall easily and can form a pink carpet beneath the plant. The pedicel and calyx are covered with 5 or 6 overlapping bracteoles, of which the uppermost are deciduous, with 5 sepals at the base of the calyx. This is where *C. rosaeiflora* differs from other members of the section which are mostly braceolate. In *C. roseaiflora* the bracteoles and sepals form a single series of perules so that, in this respect, it is closer to the perulate division of species. *C. maliflora* is similar in this regard and seems close to *C. rosaeiflora*. Sealy in "A Revision of the Genus *Camellia*" says:—

"They are both only known from cultivated material and differ from others in this section by the bracteoles and sepals forming a single series of perules. It is tempting to think that they are hybrids with one parent from Section *Camellia* and the other from Section *Theopsis*".

The species forms seed capsules about 10-12 mm in diameter, splitting into three valves, thin walled, with sepals persisting. Usually one, rarely two, seeds to a capsule. Seeds dark brown, globular.

The species has hybridised with *C. saluenensis*, *C. x williamsii*, *C. fraterna* and a group of small flowered hybrids have been produced from intercrossing with a progeny of *C. rosaeiflora* x *C. williamsii* and *C. fraterna*.

Camellia salicifolia, Champion ex Bentham, 1851.

This species has been classified in the Section *Camelliopsis* by Sealy and is grouped with the other braceolate species having united styles. This Section has 6 species differentiated by reason of their villose stamens, tomentose gynoecium, and small white flowers.

C. salicifolia is found in Hong Kong, Formosa and the Kwantung and Kwangsi provinces of China, where it grows in protected positions in woods and copses and in sheltered ravines. The species has been in Japan for many years where it is called "Yangi-ka-sazanka". A cytological examination by Dr. Janaki Ammal in 1952 estab-

'ROBERT HILLS'

Our Cover Flower

The cover camellia 'Robert Hills', on the back cover, is another example of *nature* to show that she can create something new and different. First, the formal double bloom started out variegated instead of solid; then the flower petals were tightly imbricated which usually shows up on mutations or older plants; then bloomed a dark red formal double highlighted with clear white to make an unusually beautiful bloom.

Robert Hills is one of the guiding developers of The Freeport Sulphur and Minerals Company, with worldwide interests. He is a devoted camellia enthusiast with a large collection of well cared for plants. Robert Hills has given generously of his time and means to further the interest in and culture of the genus camellia.

lished that the species was a diploid ($2n = 30$).

The species was introduced into cultivation in England in 1950. There is a typical form and other forms differentiated therefrom by the length of the long acuminate sepals, those with longer, narrower sepals have been given varietal status as var. *warburgii* and var. *longisepala* by botanists. The species is somewhat variable in size of leaf and serration as well as depth of colour in new foliage.

The species forms a small tree up to 6 meters high with long slender branches and fine twigs. Young shoots are covered with densely spreading long yellowish to tawny hairs persisting into the second year, becoming smooth red purple to brown; old branches a dull red brown. Leaves short stalked, oblong to elliptic-oblong with long acuminate apex, up to 7.5cm x 2.2cm wide, shallowly serrulate from tip almost to base, teeth incurved, firmly papery, upper surface dark, reddish green to soft, yellowish green, smooth and glabrous, except for a well-defined depressed midrib which is villose to hirtellous; venation more or less obscure; lower surface paler, villose; midrib prominent, venation defined and raised. Petioles long and pointed, densely villose, tawny on upper surface; flowers white, soli-

An Apology

I wish to apologize publicly for a very serious error in our November issue of *The Camellia Journal*.

On the inside back cover, we have the very interesting color picture called "The Judge Judged". We just do not understand how or why we mentioned that the color separations were the courtesy of "Georgia Life" magazine. That magazine went out of existence last year.

This color separation was loaned to us by "Brown's Guide to Georgia". This most fascinating magazine is published monthly by Brown's Guide, Ltd., 3765 Main Street, Suite 292 (Box 87306), College Park, GA 30337. The cost of a one year's subscription to this magazine is only \$10.00.

All Georgians, and anyone interested in Georgia, would find this to be a real addition to their monthly reading and to their library.

To the publisher and staff of "Brown's Guide to Georgia", we deeply regret this error in our printing of our November issue.

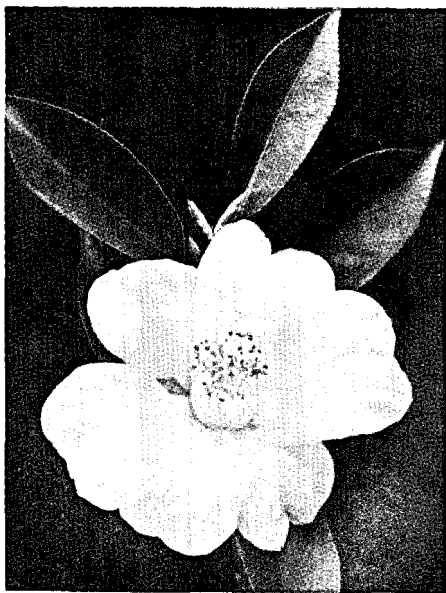
tary or in pairs at the ends of twigs and branchlets, and in the axels of the upper leaves, the vegetative bud well developed at flowering; pedicel 5mm long, densely villose; bracteole 5 persistent, narrowly lanceolate, long acuminate, 6mm long, densely villose on outer surface, glabrous on inner; sepals 5 persistent unequal, narrowly lanceolate and long acuminate to 12mm long, densely villose outer, glabrous inner.

Corolla, white, 6 petals joined to the stamen cluster for 3mm, outer 3 acuminate, somewhat coriaceous with thin margins, inner 3 to 12mm long, petaline, all more or less velvety on the back. Androecium 12mm long, outer filaments white, united for two-thirds their length, free part silky villose, anther pale yellow; gynoecium 18mm long, densely white tomentose, except style arms. Seed capsule globose, short beaked, 12mm in diameter, single locular, single seeded, walls thin, seed sub-globose, deep brown.

The flowers being small and carried beneath the leaves are often unnoticed although they carry a faint but pleasant perfume. The leaves are soft and easily damaged by the sun.

Camellia salicifolia has been hybridised with *C. saluenensis*, *C. x williamsii* and *C.*

(Continued on page 20)



Camellia Saluenensis—'Appleblossom'

pitardii var. *pitardii* but little development has occurred.

Camellia saluenensis. Stapf ex Bean, 1933.

A member of the Section *Camellia* this species first made its appearance in the Western World when seeds sent from China by Forrest were grown and flowered in England. The late Dr. Stapf of Kew named and described it. It occurs wild over most of Yunnan into Szechuan and Kweichow, where plants are common, growing in a wide variety of conditions in mountain country.

It was successfully crossed with *C. japonica* in England shortly after its introduction producing the well known hybrids 'Donation' and 'J. C. Williams'. This particular cross has become known as *C. x williamsii* after the originator. This particular cross occurs so freely that examples of the true species are rare in cultivation. These hybrids have proved cold hardy and most floriferous and are popular in areas of cold winters such as the United Kingdom.

The hybrid type has been made popular in Australia by the group of Waterhouse *williamsii*, in New Zealand by the Jury hybrids, while breeders such as Feathers and James are amongst those who have obtained good results in America.

The species has been crossed with virtually all other available *Camellia* species. Chromosome counts show the species is a diploid ($2n = 30$) but it has been crossed with the tetraploid *C. granthamiana* and the hexaploid *C. reticulata* and *C. pitardii* var. *yunnanica*.

The type is a thickly furnished, most compact shrub up to 5 meters high with densely leafed branches which are glabrescent when young. The leaves are lanceolate to elliptic, 3.5 to 6 cm long, closely and regularly serrated, stiffly coriaceous, a shin-

ing deep green with impressed venation. The flowers are perulate, freely produced, up to 7.5 cm diameter, pink flushed to deep rose pink with 5 to 7 petals joined at the base to the stamen cluster. The filaments are cream coloured, the stamens gold, quickly turning chocolate brown on maturity, a trait passed on to most of the progeny. The seed capsules are smaller and smoother than *C. reticulata* but of a similar tan colour. The perules are persistent at anthesis, forming an involucre round the corolla. The Gynoecium is about 2 cm. long; ovary densely white tomentose; style about 1.5 cm. long, hairy at the base, shortly trifid.

There is a form with notably smaller leaves and flowers classified as *C. saluenensis* f. *minor* Sealy.

Camellia sasanqua Thunberg 1784.

Classified in the Section *Paracamellia*, this native of Japan was the second species to be named. It is a woodland plant widely occurring over the southern part of Japan and the Liu Kiu Islands. It forms a dense leafy tree, up to 6 meters high, with slender twigs and branchlets, pale yellowish to reddish brown at first becoming greyish with age. The leaves are elliptic to broad elliptic, apex acute, base cuneate, variable in size from 3 cm. long by 1.2 wide to 7.5 long by 3 wide (in cultivated varieties), crenulate, thinly leathery, midrib and veins raised and visible on both surfaces. Flowers perulate, terminal; perules caducous, falling as flower opens, subcoriaceous with a membranous margin. Petals 6 to 8, free to base, occasionally adnate to the stamens, white to rose, apex deeply notched, margins sometimes recurved. Androecium 14 mm. long, glabrous; filaments yellow, widespread outer united at base; anthers yellow. Gynoecium; ovary densely silky tomentose; styles varying from divided into three arms at the tip to dividing to the base, 12 mm. long, villose at base. Capsule globose up to 2.0 cm. in diameter, 1-3 loculus, splitting into 2 or 3 valves; walls thin woody with thickened apex. Seeds hemispherical or cuneate-convex, reddish-brown.

The species is most floriferous, the flowers easily shattering, and early flowering, starting in autumn on into early winter. There are many hundreds of garden forms with considerable differences in habit of growth and flower size and form. It has been proved to be a hexaploid genetically, ($2n = 90$) but amongst the cultivars are some with chromosome counts up to $2n = 120$. It has not been easy to hybridize, even with other hexaploids, although fertile enough amongst its own cultivars. It is most popular in Japan where it has been cultivated for centuries and is closest to *C. oleifera* with which it has been often confused. Crosses with this species have proved very cold

hardy. Howard Asper was able to produce garden-worthy hybrids by crossing with *reticulata* hybrids. Notwithstanding its relatively high interspecific infertility, some seed have been produced from crosses with *C. sinensis*, *C. saluenensis*, *C. japonica* and *C. pitardii* var. *pitardii*.

Camellia sinensis (L) O. Kuntze 1887.

This is the tea plant of commerce which has given its name to the Section *Thea* in which it is classified. It occurs in two main varieties, *C. sinensis* var. *sinensis*, the small-leaved tea plant of China, Japan and Tibet, and *C. sinensis* var. *assamica* with large thinly-leathery leaves indigenous to Assam, Burma, Siam and parts of Southern China which is the main component of the mountain teas of Darjeeling.

A considerable number of cultivars exist, mostly distinguished by leaf size and foliage growth rate as they are specifically bred for tea production. The species is naturally a diploid but tetraploid clones exist amongst its cultivars.

C. sinensis var. *sinensis* grows into a small tree about 5 meters in height with dense growth and leaves from 6 cm. to 12 cm. long, elliptic with obtuse apex, bluntly serrated, dark glossy green. The flowers are small, white and occur one to two in each leaf axil of new wood. Pedicel about 8 mm. long, clavate, glabrous, bearing 2-3 caducous bracteoles, concave, ciliolate; sepals 5 or 6 wide ovate greenish with membranous margin, persistent in fruit. Ovary densely white, hairy; style about 12 mm. long, 3-fid, glabrous, filaments, outer united at base, white; anthers yellow. Capsule 1 to 3 chambers, walls thinly leathery; seeds suborbicular, dull brown.

Some hybridizing has been done with this species and it crosses easily with the other members of its Section. A form with pink flowers and dark purplish new foliage makes an interesting garden plant.

Camellia sinensis var. *assamica* (Masters) Kitamura 1950.

This variety differs from var. *sinensis* in forming quite a large tree and in having much larger, thinner leaves with greater leaf dimension ratios, the serrations ranging from obscurely denticulate to widely serrate. The leaves are undulate, thinly leathery, glabrous except for hairy midrib below. The leaf apex is bluntly acuminate instead of obtuse as in var. *sinensis*.

Some interesting hybrids have been obtained by crossing with *C. japonica* and with the hybrid 'Sylvia May'.

(Continued on page 22)

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Camellia taliensis (W. W. Smith). Melchior 1925.

This species is a close relative to the tea plant but differs in its larger leaves and 4 to 5 locular ovary. Seeds were sent to England from Yunnan, China by the late George Forrest. It was classified as *Thea taliensis* by W. W. Smith in 1917 but was redescribed and classified as *Camellia taliensis* by Melchior in 1925. The seed sent by Forrest was grown and flowered in the temperate house at Kew. It is early and long flowering, starting in late summer.

The gynoecium of *C. taliensis* is unusual in having five carpels (sometimes four) and a style with five arms. Dr. Janaki Ammal determined the species to be a diploid ($2n = 30$). It is grouped with the bracteolate species having united styles and is placed in Section *Thea* with *C. sinensis* and *C. irrawadiensis*. These species have flowers in the axils of the lowest scales of the vegetative bud, both at the tip of a shoot and in the leaf axils. Commonly 2-3 buds form, but there may be up to 8. The flowers form on a stout pedicel with 2-3 caducous bracteoles. *C. gracilipes* and *C. pubicosta* are included in the same Section but differ in having persistent bracteoles.

The species forms a small tree up to 7 meters high, with open erect branches, at first smooth and brown, becoming greyish with age. The leaves are elliptic, bluntly, short acuminate, 8 to 15 cm. long by 4 to 6 cm. wide, widely strongly serrulate, coriaceous, glabrous, bright deep green above, light green below, midrib and venation defined on both surfaces. Flowers pericellate, cernuous, pedicel 14 mm. long, stout, thickening upwards, green, smooth, decurved; sepals 5, unequal, persistent, coriaceous, green with thin margins; corolla about 5 cm. in diameter, 8-10 wide petals, united to each other and joined shortly to the stamen cluster at the base, outer shorter, more coriaceous, somewhat velvety on the back, inner firmly petaline, larger, smooth textured, creped margins. Androecium 18 mm. long, stamens up to 160 in number, outer united at base, pale yellow, glabrous; anthers deep yellow, fuscous when aged, gynoecium 2 cm. long; ovary flattened, densely white tomentose, 5 locular; style 2 cm. long, smooth, light green divided into five spreading arms at tip. Fruit depressed globose when single seeded, irregular when multi-seeded, green, walls thinly leathery, seed singular in locules, mostly 1 or 2 seed, dark brown, globose.

C. taliensis grows wild in Yunnan and its habitat is open scrub and woodland at 2-3,000 meters.

It differs from *C. sinensis* by reason of its larger flowers, more numerous petals and five locular gynoecium. The leaves are close to *C. sinensis* var. *assamica*.

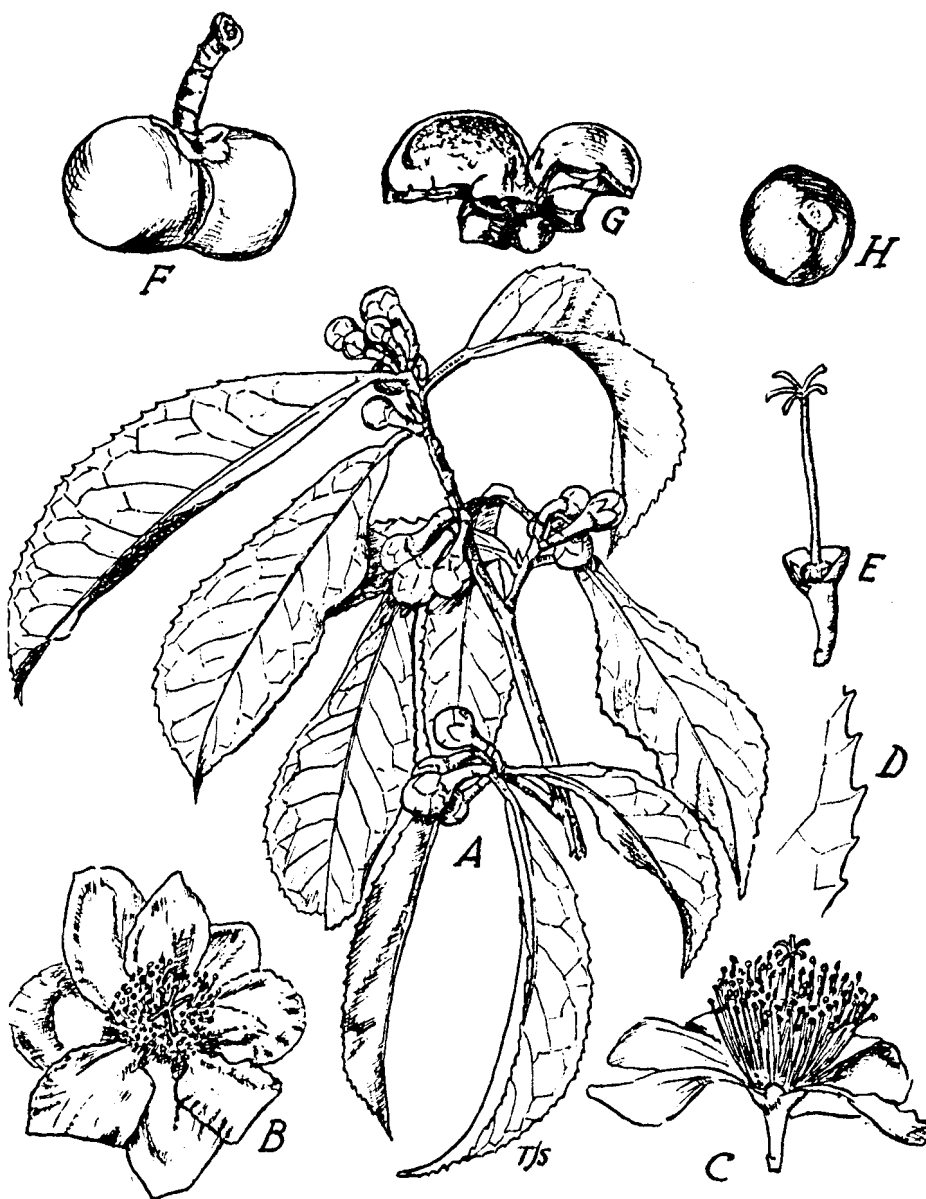
Seed ripens in late summer and flowering plants often have the previous year's seed crop on them. It hybridizes readily with *C. saluenensis* and *C. japonica* as well as its companion species and there is little doubt that there is an infusion of this species in many tea cultivars.

In its growth habit it tends to send up long cane like grows from near the base, with very large leaves. These last up to 4 years with progressively smaller leaves but an increasing quantity of flowers until they completely deteriorate and need to be cut out.

Camellia transnokoensis Hayata 1919.

This species from Formosa is common in forests at between 2-3,000 meters flowering in early spring. It forms a shrub up to 5 meters tall; twigs and branches very slender, finely villose and reddish brown at first, becoming greyish with age.

Leaves elliptic, tapering to long acuminate apex, cuneate at base, serrate, 3 cm. long by 1.5 cm. wide, thinly leathery, hirtellous lower midrib, venation suppressed below except midrib; petioles glabrous, becoming reddish. Flowers shortly pedicellate. Pedicel and calyx about 5 mm. long, glabrous, red-



Camellia taliensis: A. Twig showing well-developed buds and leaves x 2. B. Flower x 2. C. Flower with petal removed to show androecium x 2. D. Leaf serration x 1½. E. Pedicel and gynoecium x 1½. F. Fruit with two locules developed x 1½. G. Dehiscent seed capsule x 1½. H. Seed x 1½.

dish; pedicel 2.5 mm. long, widening upwards with 2-3 triangular bracteoles; sepals 5, bluntly triangular. Corolla of 6 petals, white united with the androecium at the base, outer 3, small, marked with pink on back at tips, inner larger 2 cm. long by 1.5 wide, recurved at apex. Androecium 1.5 cm. long, glabrous; filaments white, united at the base and to the petals, anthers brownish; gynoecium glabrous; ovary green; style 1.5 cm. long, greenish, glabrous; divided at apex for 5 mm. into three arms. Fruit 8 mm. in diameter, globose, green single seeded, walls thin; seed 6 mm. in diameter dark brown.

No evidence of hybridization, but the species makes an excellent tubbed specimen with its fine dense foliage and masses of small, white flowers.

Camellia transarisanensis (Hay) Cohen
Stuart 1919.

Another species from Formosa classified in Section Theopsis. Its habitat is in forests at altitudes of 2500 to 3500 meters where it forms a dense twiggy shrub up to 3 meters high with new shoots pubescent, light brown, becoming greyish with age. Leaves are lanceolate-elliptic, with blunt apex and cuneate base, 3 cm. long by 1.2 cm. wide, crenulate-serrulate, thinly leathery, deep green above with hirtellous midrib, venation obscure, petioles pubescent. Flowers subsessile; pedicel 3 mm. long stout with 3 imbricated bracteoles; sepals 5, wide ovate, obtuse, densely, golden villose on back. Corolla white, 5-6 petals adnate to the androecium for 3-6 mm.; outer 2 petals coriaceous, inner larger and more petaline. Androecium about 1.6 mm. long glabrous, united for about 12 mm. to form a fleshy tube. Gynoecium 12 mm. long glabrous; style about 11 mm. long divided for 1 mm. into 3 arms at the tip.

Camellia tsaii Hu 1938.

This species is widespread and occurs in Yunnan, Burma and Indochina in scrub and forest margins at from 1200 to 2600 meters altitude.

In the Western World, the species was first grown at Caerhays in England from seed sent from China by Forrest. It has been included in Section Theopsis by Sealy and is close to *c. cuspidata* and *c. fraterna*.

It grows into a small tree up to 6 meters high with branches and twigs somewhat pendulous; young wood is soft grey, more or less stout, and finely and densely pubescent. As the wood ages, the bark opens in a network of splits, exposing an under-brown. Leaves lanceolate-oblong, tapering to a long acuminate apex, up to 8.5 cm. long by 2.5 cm. wide, minutely serrulate, soft papery, edges undulate, bright green above, glabrous with slightly hirtellous impressed midrib;



Camellia Tsaii

lower surface light green with paler prominently raised midrib; venation obscure above, defined below. Petioles long, more or less densely pubescent. Flower pedicellate, pedicel and calyx 6 to 10 mm. long. Pedicel glabrous with 4 to 5 bracteoles, silky pubescent; calyx shallow cupped, thinly coriaceous with membranous edges, silky pubescent. Corolla 1.6 cm. long, 5 white petals joined at the base to the androecium, 2 outer petals suborbicular, coriaceous, concave, 3 inner petals broad ovate, shallowly emarginate, thin petalline. Androecium 1.6 cm. long, glabrous, filaments white, fleshy, irregularly united for 5 mm. from the base to form a fleshy tube; pollen golden. Gynoecium 1.8 cm. long, glabrous; ovary ovoid; style 1.6 cm. long, trifid; white. Capsule subglobose and apiculate; 1.6 cm. in diameter. Seeds rounded, dark brown, about 1.2 cm. in diameter.

Camellia tsaii has been used as pollen parent in such divergent crosses as *C. reticulata* 'Crimson Robe' x *C. tsaii* and *C. japonica* 'Donckelarii' x *C. tsaii*. It sets seed readily and crosses with others in its Section. It grafts readily onto both *C. sasanqua* and *C. japonica* stock and strikes readily from cuttings.

Its spreading growth which is inclined to be pendulous, and its small, white, cupped flowers make the species a charming tub specimen when young. Semi-shade and protection from wind is necessary if the soft and elegantly undulated leaves are to be kept undamaged.

Camellia tenuiflora (Hayata) Cohen-Stuart
1916.

Originally designated *Thea tenuiflora* by Hayata in 1911, its name was also published

in error as *C. tenuifolia* by Makino. Sealy listed it amongst the imperfectly known species due to lack of material for examination. He feels it would fall into Section *Paracamellia* as it is near to another Formosan species, *C. brevistyla*.

The species forms a plant of tall erect growth, reaching a height of up to 6 meters. Young shoots are slender, straw coloured, sparsely villose, becoming glabrescent, reddish-brown on maturing, the branchlets having wings in two or three tiers at the junction with branches, the bark splitting on older branches and exfoliating in long strings leaving a reddish surface with a granular appearance. Leaves medium stalked, elliptical to broad elliptic; apex blunt acute; base acute to cuneate; margins distinctly serrulate to crenulate serrulate, coriaceous; upper surfaces bright green, glabrous with raised midrib venation prominent; lower surface light green, midrib prominent, sparsely villose, venation obscure, slightly hirtellous at leaf base; average leaf 4.5 cm. long by 2.5 cm. wide. Petioles finely villose, flower buds silky tomentose, forming in clusters at the tip of twigs and in leaf axils. Sepals 5 in number, early deciduous, rounded, coriaceous, pilose, brown with thin margins. Petals white, 6 to 7, obovate, emarginate, petaline, stamens 5-6 mm. long, white, joined at the base; anthers cream coloured; ovary minute; styles thru, joined full length 3-4 mm. long.

The species does not appear to have any particular decorative qualities and there are no records of its use in hybridization.

Camellia vernalis Makino 1918.

The standing of this group of material as a species is in doubt as most forms of it have proved to be triploids having a chromosome count of $2n = 45$.

Makino originally classified it as *Thea sasanqua* var. *vernalis* in 1905 and suggests it was probably a hybrid between *C. sasanqua* and *C. japonica*. More recent investigation has shown that this is its most likely origin.

The species grows into a spreading shrub up to 6 meters high. Its branches are glabrous, leaves elliptic, apex blunt acuminate, margins crenulate-serrulate; shining dark green above, lighter below, up to 5 cm. long by 2.5 cm. wide. Flowers white, 6-8 cm. in diameter, semidouble. Stamens, shortly connate; ovary tomentose.

Generally, it is close to *C. sasanqua* but flowers later. It is not known in the wild, only cultivate forms are available.

It has been crossed both with *C. sasanqua* and *C. japonica* producing intermediate forms.

(Continued on page 24)

Camellia wakisuke (Makino) Kitamura 1950.

The name wakisuke, besides being that of a specific cultivar has also been given to a group of related plant material raised to specific rank by Makino as *Thea reticulata*. However, this was an invalid name and Kitamura later reclassified it as *C. wakisuke*.

This group of material is only known from horticultural cultivars and from various aspects is obviously the result of ancient hybridization. Makino and others have thought that it might have derived from a cross between *C. reticulata* and *C. japonica*, but this is most unlikely as it is a diploid, and also in view of the large quantity of this particular hybrid produced over recent years, none at all remotely similar to any of the wakisukes.

Most forms of *C. wakisuke* have small single flowers, with androecium reduced and abortive and the ovary from almost glabrous to tomentose, ovules generally imperfect. One of Makino's varieties var. *rosea* was

raised to the rank of a species under the name *C. uraku* Kitamura, however, he later reduced it to a cultivar as a seedling he grew from it was very similar to 'Beni-Wakisuke'.

Camellia yunnanensis (Pitard ex Diels)
Cohen Stuart 1916.

This species, which occurs over a great part of Yunnan and into Szechuan, has been classified by Sealy in Section *Heterogenia* where it is nearest to *C. henryana*. Its habitat is in open scrub and pine forests between 1,500 and 2,000 meters altitude.

It forms a shrub up to 6 meters high with young growth light brown, villous; becoming smooth, purplish-grey with age. Leaves are elliptic to broad elliptic, bluntly acuminate; base wide cuneate, up to 6.5 cm. long by 3 cm. wide; margins serrulate, coriaceous, dark green above, midrib hirtellous, pale green below, venation visible both surfaces but less so below, petioles pubescent, red-

dish. Flowers perulate, solitary, very variable in size. Perules persistent to fruit, bluntly triangular, coriaceous with a scorious margin, greenish to brown, concave, corolla, white, 8-12 petals united to the androecium for 3-5 mm. at the base; petals, broad obovate, rounded, outermost transitional to perules; inner petalline and glabrous. Androecium, up to 2.5 cm. long, glabrous; outer filaments united with the petals for 5 mm. at base. Gynoecium, 1.5-1.7 cm. long; very glabrous; styles 5 free to base, glabrous up to 1.6 cm. long. Capsule, subglobose, 4-5 locular; walls thick, rubbery. Seed about 13-16 mm. across, brown.

The species has a five locular capsule similar to *C. granthamiana* but is easily recognized by its 5 styles and thick-walled fruit.

There is no record of hybridizing with this species; but with flowers up to 5 cm. long, it may be useful in the small decorative hybrid group.

—ACS—

.... GLOSSARY OF TERMS

ACUMINATE: tapering toward the end to a gradual point.

ADNATE: united to an organ of a different kind, as the ovary with a calyx-tube.

ANDROECIUM: a collective term for the stamens.

ANTHERS: the polliniferous part of the stamen.

ANTHESIS: the expansion or time of expansion of a flower.

APICULATE: a part of a plant ending up in an abrupt short pointed tip.

AXILLARY: a part of or related to the axis.

AXIS: the longitudinal support on which organs or parts are arranged.

BRACT: a specialized leaf or leaf-like part, usually situated at the base of a flower.

BRACTEOLAS: a small or secondary bract, as on a pedicel.

CADUCOUS: tending to fall or dropping off early, as leaves.

CAMPANULATE: bell-shaped or cup-shaped with a broadening rim.

CENTIMETER: one inch is equal to 2.54 centimeters.

CERNOUS: grouping or bowing down, as a flower nodding.

CILIATE: marginally fringed with hairs.

CILIOLATE: minutely ciliate.

CLAVATE: club-shaped, gradually thickened upward.

COLUMELLA: a small column-like part; an axis.

CORDATE: heart-shaped, with the attachment at the notched end.

CORIACEOUS: leathery in texture.

CRENATE: having the margin notched or scalloped so as to form rounded teeth.

CRENULATE: finely crenate.

CUNEATE: wedge-shaped, triangular and tapering to a point at the base.

CUPULAR: Shaped like a cupule.

CUPULE: cup-shaped, involucre consisting of indurated cohering bracts as in an acorn.

COROLLA: collective term for the petals of a flower in place.

CUSP: a point, projection or elevation as on the crown of a tooth.

CUSPIDATE: tipped with a cusp or short and firm point.

DEHISCE: to open or discharge as in seeds.

DENTATE: toothed, usually with the teeth directed outward.

DENTICULATE: minutely dentate.

EXPUNCTATE: thoroughly or utterly punctate.

FILIFORM: thread-shaped, long and slender.

FULVOUS: tawny.

FUSCOUS: grayish-brown.

GEMINATE: equal or in pairs.

GLABROUS: smooth or bald; having a surface devoid of hair or pubescence (Glabose).

GYNOECIUM: the female portion of a flower in its entirety.

HIRTELLOUS: minutely hirsute or hairy.

INVOLUCRE: collection or rosette of bracts surrounding a flower-cluster or a head or a single flower.

LENTICELS: corky spots on young bark corresponding to epidermal stomata, or very small apertures or slits in the epidermis or leaves, stems, etc.

LOCULE: the cavity of an ovary or anther (Loculous).

LUNATE: crescent-shaped or half moon-shaped.

MEROGONY: the development of egg fragments.

METER: one meter equals 3.28 feet or 1.093 yards or 39.36 inches.

MILLIMETER: One inch equals 25.4 millimeters.

OBCORDATE: inverted heart-shaped.

OBLANCEOLATE: lance-shaped with the broadest part toward the apex.

OBOVATE: inverted egg-shaped with the narrower end basal.

OBTUSE: blunt in form or rounded at the extremity as in a leaf or petal.

OLIVACEOUS: olive-green.

PEDICEL: a small stalk or the support of a single flower.

PEDICELLATE: borne on a pedicel.

PERICARP: the walls of a ripened or matured ovary.

PERUAL: (Perula) thin, chaffy scale of epidermis.

PETALINE: pertaining to or resembling a petal.

PETIOLE: a slender stalk by which a leaf is attached to a stem.

PILOSE: covered with hair, especially soft hair.

PUBERULOUS: (also Puberulent) minutely pubescent.

PUBESCENT: covered with down or fine short hair.

PUNCTATE: marked with points or dots; having minute spots or depressions.

SCARIOUS: thin, dry and membranaceous, not green.

SERRATE: having sharp teeth pointing forward.

SERRULATE: finely serrate.

SESSILE: attaching by the base, or without any distinct projecting support, as a leaf issuing directly from the stem.

SUBEREOUS: the nature of or resembling cork, corky.

SUBSESSILE: somewhat or slightly sessile.

SULCATE: grooved or furrowed.

TOMENTOSE: closely covered with down or matted hair.

TRIFID: cleft into three parts or lobes.

VELUTINOUS: having a soft, velvety surface as certain plants; velvety.

VENATION: the character and arrangement of veins.

VERRUCULOSE: (perhaps what is meant is Verrucose, which means

studded with wart-like excrescences or elevations.)

VILLOSE: (same as Villous) bearing long and soft (not interwoven) hairs or villi. These are long, soft,

straight hairs covering fruit, flowers, or other parts of plants.

This Glossary of Terms was pulled together by the Editor from various books and dictionaries.

—ACS—

A FRIEND OF MINE JAY BIRD

Thinking of good vittles, and who does not? We know a good restaurant that specializes in cooter, catfish, and pan-fried quail, with fresh frog legs as a side issue. If you are not familiar with cooter, this is a soft-shelled, fresh water turtle, found in numerous lakes in the lower south. The flavor is like a mild veal, and the flesh is very tender. The popularity of the menu is indicated when you walk through the restaurant parking lot and note tags from all over the USA, plus Canada.

Incidentally, if anyone has a good recipe for cheese cornbread, we surely would like a copy.

Sometimes camellias remind me of bass fishing, some are big and some are hot, and if you tie into a big hot one, hang on for a long tussle, as you may never completely relax again.

The native azaleas were particularly beautiful in our camellia bed when they bloomed last spring, especially the yellow-gold 'Austrina'. Their fragrance also covered the entire yard. No wonder the name "bush honeysuckle" has been applied to them in some areas, although there is no relation to the vine.

We have noticed that quite a few gardeners incorporate well-rotted chicken manure in their planting beds and mixes, all with good results. If a source is available, you might try this as a source of nitrogen, if the poultryman has not obligated his entire production to a contract with a fertilizer plant. No wonder we occasionally find chicken feathers in store bought fertilizers. The commercial people know

it is a good and inexpensive product for them to use in making up their garden fertilizers. I imagine turkey and quail droppings would also be useful when available from growers of the fowl. A friend of ours insists turkey is the best of all fertilizers for camellias and amaryllis, her two favorite ornamental and flowering plants.

We surely hope we can see a bloom of 'Tomorrow's Dawn's Bessie' before long, as it must be a real beauty!

Question: What is your favorite understock for summer grafting? A good friend insists he has better success grafting retics and retic hybrids in the hot summer months than in the conventional cooler season. Our two or three attempts have not been reasonably worth while.

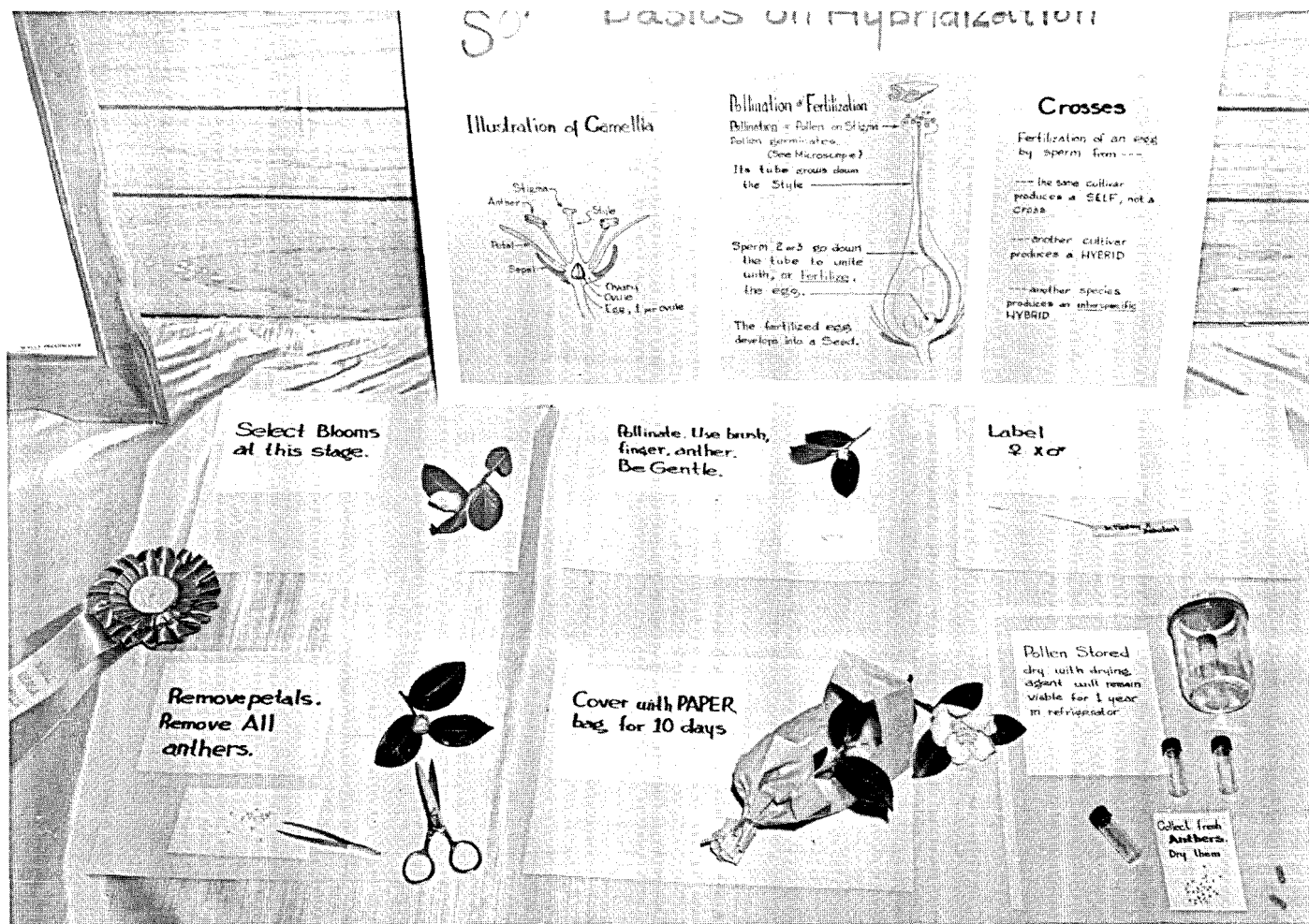
A few years ago several growers advanced the idea that broken chunks of styrofoam provided good drainage in the bottom of plant containers. Others found that the chemicals in the styrofoam were detrimental to the health of their plants. Could anyone comment on current findings in this field? As observations will vary from person to person and between different plants, an updated assessment should be interesting, especially since broken pieces of clay pots have not been easy to secure in recent years.

We need more contributions. Interesting short topics as well as comments on published topics or items will be welcomed. Forward to Jay W. Ellis, P. O. Box 888, Keystone Heights, Fl. 32656.

—ACS—

FUTURE MEETINGS OF THE ACS

February 18-22, 1981	San Mateo, California
November 6-8, 1981	Pensacola, Florida
March 4-6, 1982	Charlotte, North Carolina
October 29-31, 1982 (tentative)	Washington, D. C.
February, 1983 (Exact date to be announced)	Dallas/Fort Worth, Texas



This prize-winning educational exhibit was one of the highlights of The Middle Georgia Camellia Society's Show at Masee Lane last November. It is a fitting picture also for this Special Issue on Species. After all, that is why we want the new species with fragrance and with yellow color—to hybridize! Dr. Bill Horton of Warner Robins, Georgia put up this display. At the far right—off the picture—he had a lighted microscope that visitors could look into and see what pollen really looks like. (Photo by Dr. A. D. Brann)

CHRYSANTHA, A SECTION OF GOLDEN CAMELLIAS FROM CATHAYSIAN FLORA

CHANG HUNG-TA

Translator's Introduction

The following article (Chang Hung-ta. *Chrysantha*, A Section of Golden Camellias from Cathaysian Flora. *Acta Scientiarum Naturalium Universitatis Sunyatseni*. 1979, No. 3: 69-74) was originally published in Chinese with diagnoses and descriptions of new epithets in Latin. It is hoped that the English translation of the Chinese part of the text will allow this article to be more readily available to those interested in the genus *Camellia* in the United States.

Professor Chang is the botanist who will be responsible for the family Theaceae in the eighty volume flora of China (*Flora Reipublicae Popularis Sinicae*) which is scheduled for completion by 1985.

BRUCE BARTHOLOMEW
Botanical Garden
University of California
Berkeley

Camellias are usually red or white and are treasured flowers in horticulture. Together with rhododendrons they share international fame, and special camellia societies have been established internationally for broad exchange. Camellias originated in China where they have a long history of cultivation with many varieties, and they have long been treasured by camellia specialists and connoisseurs. A number of golden yellow camellia species have recently been discovered and they are valuable additions to the culture of camellias.

From 1910 when the first camellia, *Thea flava* Pitard was discovered until 1949 when *Camellia euphlebia* Merr. was published, these discoveries did not attract much attention. However, when *Theopsis chrysantha* Hu was published in 1965, it began to attract international attention, and many came to China to see it.

There are seven known species of the section *Chrysantha* distributed along the south-

ern border of Guangxi and its neighboring areas, in a narrow area of 15,000 square km. China has five species with three endemic; Vietnam has four species, with two endemic.

Sect. *Chrysantha* Chang, sect. nov.

Flowers axillary, pedicellate; 5-7 persistent bracts, 5-7 persistent sepals; 8-12 petals, golden yellow; stamens in 4 series, filaments briefly united; ovaries 3-5 locular, 3-5 free styles; 2-4 ovules in each locule.

Flores axillares, pedicellati; bracteis 5-7 persistentibus, sepalis 3-7 persistentibus, petalis, 8-12 aureis, staminibus 4-seriatis filamentis brevius connatis, ovarii 3-5 locularibus, stylis 3-5 liberis, ovulis 2-4 in quoque loculo.

Typus: *Camellia chrysantha* (Hu) Tu-yama.

Key to Species and Sections

- Ovaries 5 locular, styles 5 branched
Ser. I, Flavae Chang

2. Pubescent from the leaves extending to the ovaries, base of the leaves almost cordate to rotund 1. *C. flava* (Pitard) Sealy
2. Glabrous from the leaves extending to the ovaries, base of the leaves cuneate to obtuse 2. *C. aurea* Chang

1. Ovaries 3 locular, styles 3 branched

Ser. II, *Chrysanthae* Chang

3. Leaves leathery, capsule walls 3-5 mm thick.

4. Leaves oblong, largest to 17 X 5 cm. 3. *C. chrysantha* (Hu) Tuyama

4. Leaves elliptical, length 10-20 cm, width 5-9 cm, leaf veins sunken.

5. Pubescent from the branchlets extending to the back of the leaves 4. *C. impressinervis* Chang et Liang *

5. Glabrous from the branchlets extending to the back of the leaves .5. *C. euphlebia* Merr.

3. Leaves thin, nearly membranous, capsule walls 1-2 mm thick.

6. Leaves 10-15 cm long, flowers large 6. *C. chrysanthoides* Chang

6. Leaves 4-7 cm long, width 2.5-3.5 cm, flowers small. 7. *C. tungthinensis* Chang

Ser. I, *Flavae* Chang, ser. nov.

Ovaries 5 locular, 5 free styles, stamens almost free.

Ovaria 5-locularia, stylis 5 liberis, staminibus subliberis.

1. Huanghua Cha

Camellia flava (Pitard) Sealy in Kew Bull. 1949. 217.

Thea flava Pitard in Lec. Fl. Gen. Indo Chine, 1:346. 1910.

Camellia cordatula Merr. in Journ. Arn. Arb. 20:348. 1939.

Branchlets glabrous, leaves ovate to oblong, length to 15 cm, base rounded to slightly cordate, pubescent along the mid-vein of the lower surface, flowers pedicellate, 6-7 bracts; 5-6 sepals, length 8-15 mm; 8-12 petals, length 1.5-1.8 cm. filaments united at the base; ovaries 5 locular, with yellow hair, styles 5 branched, free, length 7-15 mm.

Distributed along the northern part of Vietnam.

Guangxi: Longzhou, 12 December 1970, Liang Shengye 700304 (Typus, in Herb. Univ. Sunyatsen); same locality, Wuliang Village, Banbi Hamlet, valley thicket, Chen Shaoqing 13286; Longjin, Sixth District, Banbi, Tan Peixiang 57315.

5. Xianmo Jinhua Cha

Camellia euphlebia Merr. ex Sealy in Kew Bull. 1949; Rev. Gen. Camellia, 41. 1958.



1 Flowers & Leaves. 2 The dorsal and ventral view of stamens (x6). 3 Ovary & styles. 4 Fruit (x3/2). 5 The longitudinal section of fruit (x3/2). 6 Seeds (x3/2) (Acta Botanica Yunnanica 1:54 1975).

Guangxi: Dongxing, Malu Commune, Dawang Brigade, Zhong Yexong 622.

Vietnam: Len Cen Prov. near the Chinese border, Tsang Waitak 27346 (Type, in Herb. Univ. Sunyatsen).

Branchlets glabrous, leaves elliptical, length 11-14 cm, width 5-6.5 cm, young leaves to 20 cm long, width to 9 cm, leathery, base obtuse; pedicels 5 mm long, 5 bracts, length 2-4 mm; 5 sepals, nearly orbicular, length 5-8 mm; petals approximately 4 cm long, 8-9 petals; stamens 3-3.5 cm long, lower half united; ovaries glabrous, styles 3 branched, free.

6. Boye Jinhua Cha

Camellia chrysanthoides Chang, sp. nov.

Subgen. *Thea* Chang, Sect. *Chrysantha* Chang, Ser. *chrysanthae* Chang

Shrub, 2.5 m tall, branchlets glabrous. Leaves nearly membranous, oblong to oblanceolate, length 10-15 cm, width 3-3.5 cm, apex acuminate to abruptly acute, base cuneate to slightly obtuse, in the dried state upper surface ash green, dingy, glabrous, lower surface light brown, glabrous, with black glandular dots, 9-11 pairs of lateral veins, mid vein impressed into the upper surface, protruding on the lower surface, margins serrulate, petioles 1 cm long, glabrous. Flowers not yet seen, capsules axillary, flattened tricoccus, with 3 indented grooves, diameter 4.5 cm, height 2.3 cm, glabrous, 3 locular, each locule with 1-2 seeds, opening into three valves, each valve thin, less than 1 mm thick, no central column; seeds globose to semi globose; pedicels 6-7 mm long, 3-4 persistent bracts; 5 semiround or orbicular sepals, length 4-7 mm, width 5-8 mm, glabrous.

A *C. chrysantha* (Hu) Tuyama foliis membranaceis in sicco opacis, nervis lateralibus 10-11-jugis, sepalis minoribus, pericarpio tenui circ. 1 mm crasso differt.

Frutex 2.5 m altus, ramulis glabris. Folia submembranacea 10-15 cum longa 3-5.5 cm lata, apice acuminate vel abrupte acuta, basi cuneata vel leviter obtusa, supra in sicco opaca subtus glabra atropunctata, nervis lateralibus 10-11-jugis, ut costa media impressis, margine serrulata, petiolis 1 cm longis glabris. Flores ignoti. Capsula axillaris compresso delto-globosa vel tricocca 4.5 cm diam. 2.5 cm alta glabra 3-locularis, 3-valvata valvis tenuibus haud 1 mm crassis, eocolumnaris, seminibus 1-2 in quoque loculo, pedicellis fructiferis 6-7 mm longis, bracteis persistentibus 3-4, sepalis 5 semirobundatis vel orbicularibus 4-7 mm longis glabris.

Guangxi: Longjin, Daqingshan, 10 September 1958, Zhang Zhaoqian (Typus in Herb. Bot. Inst. Austro-Sin. Acad. Sinica).

7. Dongxing Jinhua Cha

Camellia tungthinensis Chang, sp. nov.

Subgen. *Thea* Chang, Sect. *Chrysantha* Chang, Ser. *chrysanthae* Chang

Shrub, height 2 m, branchlets slender, glabrous, leaves thinly leathery or nearly membranous, elliptical, length 5-7 cm, width 2.5-3.5 cm, apex abruptly acute, base broadly cuneate, upper surface green, not shiny, lower surface with black glandular dots, glabrous, 4-5 pairs of lateral veins, apical half of the margin serrate, petiole 8-15 mm long. Flowers golden yellow, axillary, pedicel 9-13 mm long; 6-7 bracts, small; 5 sepals, nearly rotund, length 4-5 mm, glabrous; 8-9 petals, base united for 2-4 mm, length 1.5-2 cm; stamens in 4-5 series, outermost whorl of filaments basally united for 5-6 mm; ovaries glabrous, 3 locular, styles 3 branched, free, length 1.5-1.8 cm.

A speciebus ceteris differt foliis minoribus tenuibus 5-7 cm longis 2.5-3.5 cm latis, nervis lateralibus paucioribus, floribus minoribus, sepalis 4-5 mm longis, petalis 15-20 mm longis.

Frutex circ. 2 m altus, ramulis gracilibus glabris. Folia tenuiter coriacea vel submembranacea elliptica 5-7 cm longa 2.5-3.5 cm lata, apice abrupte acuta basi late cuneata, supra viridia opaca subtus atropunctata glabra, nervis lateralibus 4-5-jugis, margine serrulata, petiolis 8-15 mm longis. Flores aurei axillares, pedicellis 9-13 mm longis, bracteis 6-7 parvis, sepalis 5 subrotundatis 4-5 mm longis glabris, petalis 8-9, 1.5-2 cm longis basi leviter connatis, staminibus 4-5-seriatis exterioribus basi connatis, ovariis 3-locularibus glabris, stylis 3 liberis 1.5-1.8 cm longis, Capsula ignota.

Guangxi: Dongxing, Neisuo, Niulan Brigade, April 1977, Yan Suzhu 77001 (Typus, in Herb. Univ. Sunyatsen).

The Campaign For American Camellia Society Endowment Fund

The following members and friends have "joined" one of the clubs or made additional contributions to them since the August issue of the *Journal* (Information as of December 4, 1980):

Booster Club

Dr. Allen J. Ellender
E. C. Snooks
John G. DeArmond
Mrs. Boynton Cole
Mr. and Mrs. H. C. Rambath
Mr. and Mrs. I. Y. East
Marion S. Edwards
Floyd E. Carithers
Mr. and Mrs. C. G. Malmberg
Charles R. Phillips
Marie R. Glander
Mrs. Boynton Cole
George L. Counts
Mr. and Mrs. William C. Robertson
Mr. and Mrs. E. N. Kimes
Mr. and Mrs. Lawrence B. Schrage
Hugh Shackelford
Mr. and Mrs. Yates Green
Marshallville Garden Club
O. L. Jacobson

Guardian Club

Mrs. Charles F. Urquhart, Jr.
Mr. and Mrs. Alfus O. Johnson (3)
I. Y. East
Camellia Society of the Potomac Valley
Dr. F. M. Houser
Mr. and Mrs. Clyde X. Copeland
G. Stuart Watson

Challengers Club

Dr. Kenzo Iriyama

President's Club

Jack L. Mandarich
Mr. and Mrs. W. F. Mann
Thomas E. Hughes
George E. Luce
Albert L. Luce, Jr.
Joseph P. Luce
Membership in memory of Burrows T. and
Mable L. Lundy
Fred and Louise Mayo
Dr. Daniel E. Nathan
Mrs. Daniel E. Nathan
C. Allen Favrot

Camellias Registered with the ACS Since the November 1980 Journal

Name and Description	ACS Registry Number	Originator
'Marguerite Sharp', medium, pure white, anemone to peony form <i>C. japonica</i> chance seedling, mid-season	1691.....	Ferol and Sam Zerkowsky
'Harvey Short's Finale', very large, pure white, semi-double <i>C. japonica</i> chance seedling, mid-season to late	1692.....	Harvey Short
'Grover C. Chester', large, medium pink, semi-double to peony form <i>C. japonica</i> chance seedling, mid-season to late	1693.....	Grover C. Chester
'Jean Kernaghan', medium, white interspersed with medium pink, loose peony form <i>C. japonica</i> chance seedling, mid-season to late ..	1694.....	Grover C. Chester
'Dorothy Meredith Kernaghan', medium to large, blush pink, rose form double <i>C. japonica</i> chance seedling	1695.....	Grover C. Chester
'Dr. Jane Norwood', medium, Sweetpea colored, peony form <i>C. hybrid</i> chance seedling, mid-season to late	1696.....	A. R. Parler
'Bienvenu Ami', medium, medium pink, formal double, <i>C. japonica</i> chance seedling, mid-season	1697.....	Ferol and Sam Zerkowsky
'Cucamonga', medium, vermillion red, rose form double <i>C. japonica</i> sport of 'Kramer's Supreme', mid-season to late	1698.....	Kramer Bros. Nurseries
'Kramer's Beauty', medium to large, vibrant red, full peony form, <i>C. japonica</i> chance seedling of 'Kramer's Supreme', mid-season	1699.....	Kramer Bros. Nurseries
'Kramer's Delight', large, rose pink, full peony form, <i>C. japonica</i> chance seedling of 'Kramer's Supreme', mid-season	1700.....	Kramer Bros. Nurseries
'Mary Fischer', large, blush pink to deeper pink on outer petals, irregular semidouble to loose peony form, <i>C. japonica</i> chance seedling, mid-season	1701.....	Kramer Bros. Nurseries
'Marie Mackall', large, light pink with petals blending to deep medium pink toward edges, rose form double, <i>C. japonica</i> chance seedling of 'Tiffany', mid-season	1702.....	Kramer Bros. Nurseries
'Our Betty', medium to large, light pink, tulip form, <i>C. saluenensis hybrid</i> chance seedling, mid-season	1703.....	Kramer Bros. Nurseries
Red Dahlia', medium, scarlet red, loose peony form, <i>C. japonica</i> chance seedling, mid-season	1704.....	Kramer Bros. Nurseries
'Red Garnet', medium, garnet red, formal to rose form double, <i>C. japonica</i> chance seedling, mid-season to late	1705.....	Kramer Bros. Nurseries

- 'Flamenco Dancer', small to medium, deep rose coral shaded to light pink, *C. saluenensis* hybrid chance seedling, mid-season 1706 Kramer Bros. Nurseries
- 'Pink Dahlia', small, lavender pink, double dahlia form, *C. reticulata* hybrid chance seedling, mid-season to late 1707 Kramer Bros. Nurseries

CORRECTION:

- 'William C. Noell', ACS Reg. No. 1253
Change size from miniature to small, on instructions from the originator.

—ACS—

Show Dates

(ACS Cooperative Shows)

Place, Location and Sponsor	Date
Shreveport, Louisiana, R. S. Barnwell Art Center, 501 Fant Pkwy., Shreveport Camellia Society	January 31-February 1, 1981
Tuscaloosa, Alabama, West Alabama Camellia Club	January 31-February 1, 1981
Charleston, South Carolina, Charles Towne Square Mall, Coastal Carolina Camellia Society & Charles Towne Square Merchants Association	January 31-February 1, 1981
Jackson, Mississippi, Plaza of Walter Sillers Building, Jackson Camellia Society	February 7-8, 1981
Liberty, Texas, City Hall, Travis Street, Court House Square, Atascosito Camellia Club	February 7-8, 1981
Tyler, Texas, Citizens' First National Bank, Tyler Camellia Club and Citizens' First National Bank	February 8, 1981
El Dorado, Arkansas, Arkansas Power & Light Reddy Room, South Arkansas Camellia Society	February 7-8, 1981
Birmingham, Alabama, Eastwood Mall, Birmingham Camellia Society, Inc.	February 14-15, 1981
Lake Charles, Louisiana, Gayle Hall, MSU Campus, Southwest Louisiana Camellia Society	February 14-15, 1981
Columbia, South Carolina, Columbia Mall, Mid-Carolina Camellia Society and Columbia Mall Merchants Association	February 14-15, 1981
Fort Worth, Texas, Lobby of the First National Bank, Fort Worth Camellia Society, Inc.	February 15, 1981
Wilmington, North Carolina, Independence Mall, Oleander Drive, Tidewater Camellia Club	February 21, 1981
Atlanta, Georgia, Lenox Square on the Mall, 3393 Peachtree Rd., N.E., North Georgia Camellia Society and Atlanta Camellia Society	February 21-22, 1981
San Mateo, California, Peninsula Camellia Society (In conjunction with ACS 36th Annual Meeting)	February 21-22, 1981
Macon, Georgia, Macon Mall, Middle Georgia Camellia Society	February 21-22, 1981
Moraga, California, Campolindo High School, 300 Moraga Road, Delta Camellia Society	February 28-March 1, 1981
Charlotte, North Carolina, Eastland Mall, Men's Camellia Club of Charlotte	February 28-March 1, 1981
Beaufort, South Carolina, Beaufort Academy Gymnasium, Council of Beaufort Garden Clubs	February 28-March 1, 1981
Chattanooga, Tennessee, Eastgate Center Mall, Chattanooga Camellia Club	February 28-March 1, 1981
Nashville, Tennessee, Tennessee Botanical Gardens at Cheekwood, Middle Tennessee Camellia Society	March 7-8, 1981
Fayetteville, North Carolina, Cross Creek Mall, Fayetteville Camellia Club and Cross Creek Mall	March 7-8, 1981
Sacramento, California, Sacramento Convention Center, Sacramento Camellia Society	March 7-8, 1981
Fresno, California, Fashion Fair Mall at First and Shaw, Central California Camellia Society	March 8, 1981
Concord, California, The Willows, 1975 Diamond Blvd., Northern California Camellia Society	March 14-15, 1981
Greensboro, North Carolina, Four Seasons Mall, Piedmont Men's Camellia Club & Four Seasons Mall Merchants Association	March 14-15, 1981
Atwater, California, A.P.C. Hall, Atwater Garden and Camellia Society	March 15, 1981
Santa Rosa, California, Santa Rosa Junior College, Sonoma County Camellia Society	March 28-29, 1981
Portland, Oregon, Jantzen Beach Center, Oregon Camellia Society	April 4-5, 1981
Norfolk, Virginia, Virginia Camellia Society	April 4-5, 1981
Washington, D. C., U. S. National Arboretum, Camellia Society of the Potomac Valley	April 11-12, 1981
Baltimore, Maryland, Pioneer Camellia Society of Maryland	April 18, 1981
Washington, D. C., U. S. National Arboretum, Camellia Society of the Potomac Valley	October 31, 1981
Greenville, Alabama, Greenville Camellia Society	November 14-15, 1981
Fort Valley, Georgia, Massee Lane Headquarters of ACS, Middle Georgia Camellia Society	November 14-15, 1981
Slidell, Louisiana, Ozona Camellia Club	December 5-6, 1981

Atlantic Coast Camellia Society Formed*

ANN BLAIR BROWN

The Atlantic Coast Camellia Society was founded in Myrtle Beach, S. C. on Sept. 13, 1980—The Year of the Camellia. At the initial meeting, there were 142 paid memberships with 135 members attending the banquet Saturday night. Members are from Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana and Tennessee.

The officers elected are: President—E. Hulyn Smith of Georgia; first vice president—Oliver Mizzell, S. C.; second vice president—Annabelle (Mrs. L. M.) Fetterman, N. C.; Secretary/Treasurer—J. L. McClintock, Jr., N. C.; Assistant Secretary/Treasurer—James McCoy, N. C. The Directors are: Florida—Marion Edwards, Georgia—Buddy Cawthon and Marvin Jernigan, South Carolina—Elliott Brogden and Bill Robertson; North Carolina—Joe Austin and Jack Hendrix; Virginia—Dot Urquhart and Charlie Mason. The Historian is Curtis Godwin, N. C.

The new directors and officers made a contribution to the ACCS of \$150.00 in honor of Son and Ann Hackney for the great work they did in organizing this new regional camellia society. Elliott Brogden gave the ACCS a check for a program on camellias given by ACS Director Graem Yates.

There was a very stimulating program Saturday afternoon with a full house in attendance. The first speaker was Mark Cannon who gave an interesting talk on scions, a subject he knows well since he has been in the scion business for 26 years. The second speaker was G. F. Abendroth who outlined his successful program of growing camellias out-of-doors. He may even have given one or two of his secrets of growing the big ones out-of-doors. Bea Rogers then talked on the importance of regional camellia societies and local societies. She cited

* From "Gulf Coast Camellias", Vol. 9, No. 1, Fall 1980.

(Continued on page 30)

the Gulf Coast Camellia Society, the Southern California Camellia Society and the California Camellia-Rama as examples. She pointed out that active local and regional societies are necessary to have a successful American Camellia Society. The fourth speaker was Hulyn Smith who gave his illustrated talk on hybrid camellias.

After the program there was the usual fellowship hour in various rooms prior to the banquet. Joe Pyron was honored with everyone singing "Happy Birthday" as Joe was celebrating his 75th. ACS President Roy Stringfellow gave an interesting and provocative talk on camellia shows and exhibits. This was followed by an illustrated talk by ACS Executive Secretary Milton Brown on his trip to China and Japan. Ann Hackney had contributed two lovely camellia paintings in proper frames for the successful raffle, which were won by Jim Lively of Nashville. Also included in the raffle were two *C. sasanquas*, 'Our Linda', donated by Dot Urquhart.

I would like to add my personal thanks to the Men's Camellia Club of Charlotte, headed by Scott Coble, and Son Hackney for the tremendous organizational work that they have done since it was decided in February to try for an Atlantic Coast Camellia Society. The Men's Camellia Club (from the food, you know that it was the ladies of Charlotte) gave an excellent cocktail and buffet pool party at the hotel on Friday night.

If you wish to join this exciting and informative organization, you can do so. Single membership is \$6.00; joint membership in \$9.00. You can send check or money order to the treasurer, J. L. McClintock, Jr., 1235 E. Barden Road, Charlotte, N. C. 28211.

Plan now to attend the 1981 meeting of the Atlantic Coast Camellia Society in Myrtle Beach on Sept. 25-26.

**1981 DUES
PAST DUE**

In Memoriam

GEORGE B. MORGAN

George B. Morgan of Beaumont, Texas died Monday morning, October 20. "An extremely successful businessman, Mr. George B. Morgan is one who is truly dedicated to camellias and to the organization which does the most to promote their beauty, cultivation and popularity—The American Camellia Society". Thus wrote Lois and Dudley Boudreaux in an article "The Tall Texan—George B. Morgan" in *The American Camellia Yearbook*—1973.

George became interested in camellias as early as 1940 and became a Charter Member of The American Camellia Society in 1945. In addition to being a Charter Member, George was a Life Member, an active Accredited Judge of the ACS, Presidents Club member No. 2 of the ACS Endowment Fund, a Vice President of the ACS for the Gulf Coast territory and the Chairman of the Finance Committee. He had served on the Board of Trustees of the ACS Endowment Fund for many years and was an active member of that Board until his death.

In addition to this, he spent some three months on a project getting ready the booklet *The Camellia—Its Culture for Beginners*; he financed the cost of publication of the large first printing. It was his idea to give a copy of this to each new member joining the ACS. He was also active in the Gulf Coast Camellia Society and the Texas Camellia Society.

We will miss this "Tall Texan".

CLAY B. FOREMAN

Clay B. Foreman of Elizabeth City, North Carolina died suddenly on August 31. Clay had been a very active member of The American Camellia Society, the North Carolina Camellia Society and the Virginia Camellia Society. He had served as a Vice President and a State Director of the ACS and was also active in promoting the aims and goals of our Society. For many years Clay and his wife, Erline who survives him, were the "wheelhorses" of the very successful camellia shows in Elizabeth City. No distance seemed too far for Clay to bring flowers to help out shows in areas where adverse weather conditions wiped out much of the bloom. He and Erline attended many ACS conventions and many of the camellia shows along the east and south coasts.

Clay was such an affable person that to meet him was to love him. He will be sorely

missed by all of us who had the pleasure of meeting him and knowing him.

WALTER G. HAZELWOOD

Walter G. Hazelwood of Beecroft, New South Wales, Australia died on October 17, 1980 at the age of 95. Mr. Hazelwood was a Charter Member of the American Camellia Society and joined on October 3, 1945. For many years, Mr. Hazelwood was the ACS Representative in Australia and did his usual outstanding job in that capacity as well.

In an outstanding article about the late Mr. Hazelwood, Eric Craig properly described him as "the gentleman giant of Australia camellia history". His love for camellias began as early as the late 1920's and his nursery was the first in Australia to import a wide range of *C. sasanquas* and he organized the first exportation of *C. reticulatas* from China in 1948.

He, along with Professor E. G. Waterhouse, Alex Jessep and Dr. Raoul Merrillies, were the co-founders of the Australia Camellia Research Society. Mr. Hazelwood will long be remembered and his loss deeply felt by his camellia admirers throughout the world.

ROBERT O. RUBEL

One of ACS's greatest benefactors, Robert O. Rubel of Mobile, AL, died in September 1980 at the age of 91.

In his early years Mr. Rubel, a native of Kentucky, established Longview Nursery near Mobile. He specialized in camellias and azaleas. Only a few old varieties were available at that time. He heard of old camellias on plantation sites and back roads along the Gulf Coast and travelled hundreds of miles in Alabama, Mississippi and Louisiana locating these. He either purchased whole plants or scions, making these available. Otherwise, these might have been lost to the camellia world. These were mostly unnamed varieties or bore local names. This resulted in nomenclature confusion, many varieties being known by several names.

In attempting to straighten out the confusion, Mr. Rubel bought every illustrated book on camellias available. In so doing, he assembled possibly the finest camellia library in existence. This library is now at our ACS Headquarters, thanks to Mr. Rubel and the generosity of Mr. and Mrs. William P. Kemp.

He wrote a book on greenhouse culture of camellias and reprinted Halliday's *Practical Camellia Culture*.

In his will Mr. Rubel left a generous bequest to the ACS Endowment Fund.

BRING YOUR TO SAN FRANCISCO!!

- Wednesday, 18 Hospitality room opens 5:00 P. M. Room 3106.
Plenty of food and drinks.
Dinner on own, if you are still hungry?
Also Registration.
- Thursday, 19 8:30 A. M. Registration.
9:00 A. M. Committee Meetings, A.C.S. Board Meetings and
Endowment Board Meetings.
Lunch on own.
9:00 A. M. For those not attending board meetings. Bus tour
of San Francisco or Garden tour of Dave Feathers,
etc. TAKE ONE CHOICE. Return to hotel by
1:00 or 2:00 P. M.
Lunch on own.
A similar tour will be arranged for the members of
the Governing Board, Board of Trustees and Com-
mittees at a time to be arranged that day.
7:00 P. M. Dinner at hotel.
- Friday, 20 8:30 A. M. Registration.
8:30 A. M. Hospitality Room 3106 open for coffee.
9:30 A. M.
until Educational Program in Cypress Room.
11:30 A. M. Lunch not necessary.
12:30 P. M. Buses leave hotel for Woodside.
1:00 P. M.
until President's Reception and Cocktails at Charles and
Marjorie O'Malley's home.
4:30 P. M. Buses will return you to hotel.
Dinner on own, if needed.
7:00 P. M.
until Cultural meetings in Cypress Room.
10:00 P. M.
- Saturday, 21 8:30 A. M. Registration.
8:30 A. M. Hospitality room open for coffee.
11:30 A. M.
until Judges Luncheon Buffet for All Conventioneers.
2:30 P. M. Judges will eat, when they return from judging.
1:00 P. M. Buses leave for Show.
1:30 P. M. Camellia Show Preview for A.C.S. members.
2:00 P. M. Camellia Show opens to public.
6:30 P. M. Hospitality Hour at Hotel.
7:30 P. M. Annual Banquet.
After dinner a dance band.
Full Convention—\$85.00
Friday and Saturday—\$65.00
Saturday only—\$50.00

Please come and have fun with us in San Francisco. You won't be sorry.
Register with hotel as early as possible. Please send Registration Fee to:

Dunfey Hotel, 1770 S. Amphlett Blvd. Nancy or Jack Mandarich
San Mateo, California 94402 700 Woodland Ave.
February 18, 1981 - February 21, 1981 Menlo Park, Calif. 94025

Hotel Bus meets you in center lane S. F. Airport.

The Cultural and Educational events will be *truly outstanding*. The yellow
species *C. chrysantha*, now present in the U. S., will be discussed in all of its

phases. Dr. Bruce Bartholomew, Curator of the Berkeley Botanical Gardens, who is growing plants of this species, will discuss progress of its presence in the U. S. along with Jack Osegueda who works closely with Dr. Bartholomew. Dr. Bartholomew will also be able to bring us later information of camellias in the People's Republic of China resulting from his three-month trip that began on August 15th. "Mr. Camellia" of the hybrids and otherwise, David L. Feathers will be a sort of honcho of this panel. The Northern California Camellia Society Research Committee works with this program. Julius Nuccio will be on the program telling us about various camellia species. As a bit of icing on the cake, Yvonne Cave, the noted camellia photographer will talk on her forte; she and her husband Harry of New Zealand will be in our country at the time. This is an added bonus for us all. Oh yes, we did mention culture, too. Art Gonos of Fresno will be our cultural speaker—talking on various phases of camellia culture, that is.

All of this is one convention!!! Isn't that great? Why not stay over in California while you are there—at least over the weekend as Monday will be a National Holiday—the birthday of a true Virginian and a true American, General and President George Washington.

Y'ALL CUM TO SAN MATEO,
HEAH!

—ACS—

Additional Judges Appointed

CALIFORNIA

Carmichael:

L. Jocelyn Vervalle

Fresno:

Bill W. Harris
Mrs. Bill W. Harris
Donald R. Martin

Sacramento:

James M. Randall

TEXAS

Arlington:

D. S. Mallory (Nov.)

1981 ICS Congress

The 1981 Congress of the International Camellia Society should be a very interesting one. It is a split Congress with a week in between to give delegates an opportunity to visit on the Continent or in England.

We received a very interesting letter on December 2nd, 1980 from ACS Life Member Juan Armada Diez de Rivera from Santiago de Compostela, Spain. He informed us that ICS President Tom Savige informed him of a group of 40 Australians who are attending, Mr. Jean Laborey of Paris has made reservations for 60 persons, John Tooby is leading a group from England to visit Galicia in Spain and Portugal.

Sr. Armada gave us a rundown of the most interesting events in Santiago, Spain, and its vicinity beginning on March 20 and ending on March 25. As our British friends would say, "The program is smashing!" He informed us that the travel tour representative in the U. S. is Melia Travel, Overseas International Tours, 1003 DuPont Plaza Center, Miami, FL 33131.

You can then have an enjoyable visit through Spain, Portugal and France or elsewhere on the Continent or a few days in England before the second half of the conference begins on the

Isle of Jersey in the Channel Islands. The Congress meetings will begin on March 31 through April 4; there is an additional three days of touring Guernsey Island and the Isle of Sark April 5-7. We had the distinct pleasure of attending an International Camellia Society Congress in the Channel Islands a few years ago and can attest to the warm hospitality and the exciting gardens available to the conferees. For information on the cost of the time in the Channel Islands, you should contact Con-Sol Ltd., 68 Bath Street, St. Hellier, Jersey, C. I.

The costing can be obtained from them as the dollar has been fluctuating so badly in the last two or three years that it would be virtually useless to give the quotes at this time. As for your travel to Spain and back from England, you would have to make those arrangements separately through a travel agency or through your own airlines.

It is hoped that there will be a goodly number of Americans in attendance. There will not be another ICS Congress until 1983, so you might want to be sure to attend this one to renew old friendships and to make new acquaintances.

—ACS—

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(Continued on page 34)

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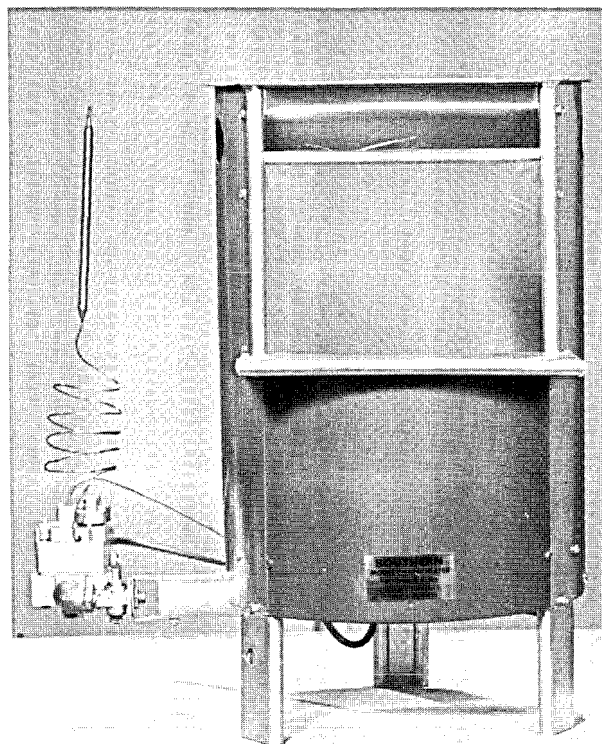
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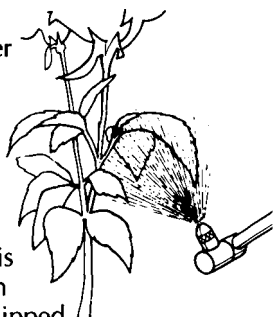
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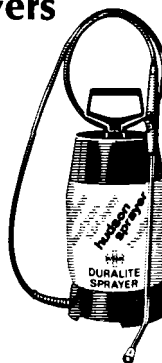
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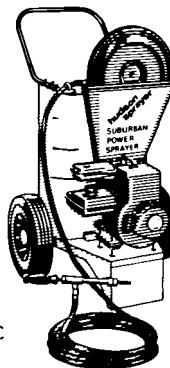
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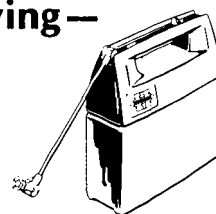


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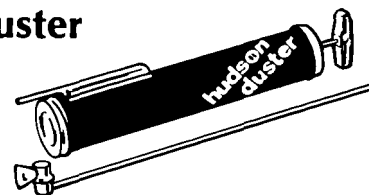


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(See *The American Camellia Society Yearbook-1980* for an article on sprayers and spraying for your camellias.)

From the Desk of the Executive Secretary/Editor

Special Species Issue

This particular issue of *The Camellia Journal* is truly a milestone in camellia publications thanks to the detailed and excellent articles by the authors involved. It may seem somewhat detailed to some of our members, but such an update on camellia species has not been as thorough or complete since Mr. J. Robert Sealy published his *A Revision of the Genus Camellia* in England in 1958. In his case, the work was done with dried herbarium specimens and the book was finished in 1951 but not published until 1958. Much of the work involved in this particular Special Issue is from earlier books, but also first-hand observation of many of the species. Such a publication also underscores our Charter, which states in part: "To promote interest in the genus *Camellia* L., scientific research in its culture . . . dissemination of information concerning the above . . .".

Royal Letter

We received a letter of 19 September from the Royal Residence, Clarence House, London, England:

"Dear Mr. Brown,

"Queen Elizabeth The Queen Mother has bidden me write to thank you and all the members of the American Camellia Society for your charming card and message of good wishes on Her Majesty's 80th birthday.

"The Queen Mother greatly appreciated your thought of her at this time, and sends to you all an expression of her sincere thanks.

Yours sincerely,

Frances Campbell-Preston
Lady-in-Waiting"

Incentives

We always like to pass on some activities of local clubs that interest old members, new members and, hopefully, prospective members. The Pioneer Camellia Society of Maryland, which holds its meetings in Baltimore, has a mini-workshop at each meeting. They describe this as "a free period open to all to ask questions, to present specimens for study, to solve cultural problems, TO LEARN". Various societies encourage people to come to meetings by having outstanding plant raffles, which assists their budget; door prizes of camellia-related articles; and by giving free plants to people who join the American Camellia Society. At the recent show of the Middle Georgia Camellia Society, for example, the girls at the office put up a large sign saying FREE CAMELLIA PLANT to anyone joining ACS; 17 new members were thus gained. We are interested to hear from other groups on what they do to encourage other members for their societies and for ACS. We will try to have a full article on this in a later issue.

Life Memberships

Since our last issue, we were saddened to learn of the deaths of six of our Life Members. They are: Mrs. Robert E. Hightower, Thomaston, GA; Clay B. Foreman, Elizabeth City, NC; Robert O. Rubel, Mobile, AL; James C. Liipfert, Fort Valley, GA; George B. Morgan, Beaumont, TX and Howard Phillips, Orlando, FL. In line with our hopes that we can always report new Life Memberships in each issue of the *Journal*, we are pleased to add the following six new Life Members: Richard Reuter, West Germany; E. R. Heise, Jr., Savannah, GA; Ms. Martha Ann Walter, Redondo Beach, CA; Mr. & Mrs. H. C. Ram-

bath, Sacramento, CA; and Mrs. Paschal Muse, Perry, GA. The total of our Life Members is 244.

Awards

At the banquet at the end of the ACS meeting in Charleston on November 22, the designation of Fellow was bestowed on William L. Ackerman for his having made substantial and new contributions for scientific knowledge of camellias. This is the first time that this high honor has been bestowed on a member of ACS since 1975. At the same time J. W. Ellis, Sr., was awarded the Certificate of Commendation for his significant contributions to the accomplishment of the aims and purposes of the Society. It was also announced that the coveted award of being selected as varieties in the national American Camellia Society Camellia Hall of Fame went to 'Grace Albritton' for the *C. japonica* and 'Valentine Day' for the hybrid. The variety 'Grace Albritton' was originated by the late Mr. A. D. Albritton of Tallahassee, Florida. The *C. reticulata* hybrid 'Valentine Day' was originated by Howard Asper of Vista, California.

The May issue will carry highlights of the meeting in Charleston in November, 1980 and the meeting in San Mateo, California in February, 1981.

—ACS—

PHOTOGRAPH CONTEST

We have been able to obtain the services of a top camera club in Portsmouth, Virginia to judge the photographs and slides in the ACS photograph contest. That outstanding club is composed of both amateurs and professionals and has won several national prizes.

RULES. An additional rule which was inadvertently omitted from page 9 of the November 1980 *The Camellia Journal* is as follows:

5. Anyone can send in as many slides and/or black-and-white photographs as he or she wishes. There is *no limit* on the number of entries in each of the six classes.



'ELIZABETH ASTLES'

'Elizabeth Astles' is a seedling from 'Buddha' raised by Edgar Sebire at Wandin North, Victoria, Australia. The plant is vigorous, with upright growth, and the very large semidouble flowers are bright pink in color with a distinct and prominent display of golden stamens.

It is one of the best camellia cultivars introduced by Edgar. 'Beryl Sebire' enjoys a similar display of stamens, so it is really no surprise that we find a 'Buddha' seedling with such beauty in a flower bearing the name of 'Elizabeth Astles', Beryl's mother's name. This variety was registered with the Australian Camellia Research Society in 1976. (Photo by Dr. R. M. Withers. Color separations courtesy of the Australian Camellia Research Society which published it on the cover of *Camellia News*, No. 71, June 1979.)

The *Camellia* Journal

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Volume 36 Number 1 February,

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'ROBERT HILLS'

ACS Reg. No. 1708

A chance *c. japonica* seedling of Ferol and Sam Zerkowsky of Tammia Nursery, Slidell, Louisiana. Blooms 4 inches wide by 2½ inches high when treated. Flowers variegated and probably will bloom solid pink or white; firm texture; some petals imbricated; 12 to 15 tiers in moired effect. Splotches of white on dark pink create an unusual outstanding camellia. Propagated by Tammia Nursery; available Fall 1981.