IVY

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IVY

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'Parsley Crested' with its bold crisp and curled leaves, and 'Triton' because it does not look like an ivy at all.

If I had to choose ivies for using in arrangements to decorate particular events these would be my selection.

Romantic celebrations call for heart-shaped leaves. Hedera helix 'Deltoidea' is an ivy with a distinctive dark green heart-shaped leaf, so much so that it was called 'The Sweetheart Ivy' in the USA. This ivy has rather stiff stems which can be used to advantage in many forms of arrangement. If you need something more pliable choose H.h.'Sark'. This has beautifully heart-shaped light green leaves on soft stems.

Not quite so heart-shaped, and popular in bridal nosegays for its bold splash of yellow, is H.h.'Goldheart'. The leaves are deep green on the edges which emphasises the golden centres, set on pink-red stems.

An unusual alternative to 'Goldheart' is H.h.'Angularis Aurea'. Its leaves are small and heart-shaped with mottled yellow variegation. This has woody stems which might suit some upright designs.

An ivy with larger heart-shaped leaves is H.h.'Persian Carpet'. This has just about the palest green leaves of any ivy with prominent white veins.

For wedding decorations and silver wedding anniversaries you have the choice of several silver-white variegated forms. H.h.'Glacier' is popular because of its long silvery trails very full with leaves. My favourite silver varieties are 'Adam' and 'Ardingly'. Both have small leaves with a hint of a pink edge in winter. However, a new variety called 'White Knight' has by far the most silver-white colour of any cultivar and has already become very much sought after by arrangers.

For golden wedding celebrations there is much more choice. H.h.'Midas Touch', a new variety, has to be the best by a long way for golden variegation. There are many more sorts with bright golden-yellow, or with a more subtle delicate yellow which suits the taste of some arrangers better. One such ivy is 'Golden Ingot', another is 'Goldchild'.

At Christmas you will need some 'ivy' ivy to go with holly. You can do no better than 'Hibernica' for medium to large sized leaves. Or 'Old English' for well shaped medium sized leaves. 'Harrison' for small leaves, or 'Baby Face' for even smaller leaves. All have a rich green colour.

There is one thing for sure, whichever sorts you choose, you will bless the day you planted your ivies and wonder how you previously managed without such a wealth of material.

RW

IVY research

This is the third part of the translation from the Russian language of Pojarkova's paper. The first part was published in the Journal Vol 12 Part 4 pp 9-12, December 1989. The second part in Volume 13 Part 1 pp 18-21.

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Translated by Sylvia Yates

A.I. POJARKOVA

THE CHINESE SPECIES OF IVY AND THEIR TAXONOMIC AND GEOGRAPHIC CONNECTIONS

In south-east Asia, in addition to the six species considered (H. nepalensis C. Koch, H. sinensis (Tobl.) Hand.-Mazz., H. potaninii Pojark., H. robusta Pojark., H. shensiensis Pojark. and H. tobleri Nakai), two additional species have been described, H. pedunculata Nakai from the Ryukuyu archipelago and H. formosana from the island of Taiwan. I have been unable to find so much as a diagnosis of either of these species. Only in Tobler's (1927) work could a brief mention be found of an indication by Nakai that these two species had stellate hairs. Since hair structure is a feature of vital importance in the taxonomy of Hedera species and since the only south-east Asian species with hairs that could be called stellate are H. tobleri and H. shensiensis, it is suggested that the two island species are closest in the main to to the species of the Toblerianae series. If this hypothesis is confirmed then the area of distribution of the Toblerianae series acquires greater geographical precision as confined to the eastern part of the continent of Asia.

Analysis of the taxonomic and geographic relations between the ivy species found in south-east Asia leads to the conclusion that in this area the genus Hedera is represented by at least three phyletic branches. None of these three branches show any close relationship to each other; they appear to be isolated and even to be lines of species development whose divergence is of ancient date. The only hope of arriving at a more definite idea of the taxonomic relationships between them is to consider them in

terms of the overall taxonomy of the genus Hedera, which has yet to be postulated.

As is known, the genus Hedera is native to the Old World only. Its area of distribution stretches from the Atlantic to the Pacific oceans: from the Macaronesian islands to the islands of Japan and Taiwan. This extensive range is broken into two parts by a large discontinuity in the region of the Iranian and Afghanistan deserts. The western part of the range of the genus Hedera comprises the Macaronesian islands, the countries bordering the Mediterranean, the Crimea, the Caucasus and the adjoining forested parts of Iran bordering the Caspian, and central and western Europe. The eastern part of the range, the western border of which runs along the eastern Hindu Kush, has already been described in sufficient detail when looking at the areas of distribution of individual south-east Asian species.

EIGHT

The following eight species occur in the western part of the range: H. canariensis Willd., H. chrysocarpa Walsh (= H. poetarum Bertol.), H. helix L., H. taurica Carr., H. caucasigena Pojark., H. colchica C. Koch, H. pastuchovii G. Wor. and H. scotica A. Chev., which is regarded as the hybrid H. canariensis x H. helix.The taxonomic and geographic connections of H. colchica and H. pastuchovii establish their phylogenetic significance as paleo-endemics with the taxonomic links to south-east Asia considered above.

Another undeniable Tertiary relic is H. canariensis. This large-leaved climber grows in the evergreen laurel (Laurus canariensis Webb. et Berth.) woods of the Macaronesian islands The flora of these woods is full of Tertiary endemics, whose ancient age is attested by their taxonomic connections to distant tropical areas in the Old and New Worlds, and sometimes too by the direct evidence of their appearance in fossil remains of southern European Neogene flora.

The laurel woodland of the Macaronesian islands is today the most perfectly preserved site of the flora native to the region of the ancient Mediterranean sea during the Miocene and Pliocene, and H. canariensis is one of the components of this Neogene subtropical flora. Taxonomically, H. canariensis is isolated. In this species it is difficult to discern any close relationship to other black-berried and possibly equally ancient Tertiary relics such as H. colchica and H. robusta. However, they and H. canariensis do have some common features: the large size of the leaves and berries and flat, typically squamiform hairs (although with fewer rays). These features, which are characteristic of Tertiary relic species, appear to the

author to be more primitive than small leaves and fruits and agminate or stellate hairs.

From the phylogenetic standpoint, the series Helix Pojark., must be recognised as the youngest and most advanced branch of the genus (Pojarkova, 1950); it comprises, in addition to H. helix L., H. taurica Carr. and H. caucasigena Pojark. All the species of this series have small leaves, small berries and stellate hairs with few rays (consisting of 4-8 cells). The Helix series shows clear traces of recent species-forming processes, probably caused by the geological and climatological changes taking place in the Mediterranean and central European areas during the late Tertiary and Quaternary. The geographical distribution of the Helix series and the confinement of its component species principally to plant communities that had already come together by the postglacial period, also corroborates the idea of this series as a recent borealized branch of the genus.

DIFFERENCE

The Helix series is closest to the Toblerianae series, and it may readily be supposed to be a derivative of that branch of the genus. The principal difference between the Helix and Toblerianae series resides in the hairs. In the species of the Toblerianae series, these appear to be in a process of reorganisation or transformation from many-rayed agminate-squamiform hairs to stellate ones by a reduction in the number of cells. The species of the Helix series show the completion of this evolutionary process.

As a result of the nature of the morpholological links between the species of the Toblerianae series and H. pastuchovii and between the former and the Helix series, the Toblerianae series must be placed between the single-species series Pastuchovianae and the Helix series in the taxonomy of the genus. These three branches of the genus may readily be considered as descended from a common ancestor consequent to a number of successive species-formation processes occurring at different times and resulting from species dispersal and habitat changes. The age of H. pastuchovii is fixed by the age of the Hyrkanian woodland flora of which it is a component. Toblerianae is a more advanced and borealized series; the appearance of its ancestral forms from a form akin to H. pastuchovii is probably of a much later date in the late Tertiary. Later still, probably, it would seem that a form closely related to the present-day Toblerianae gave rise to the original ancestor of the Helix series, from which recent species-forming processes produced the present-day geographical races.

The Sinenses series has no close relatives in the western part of the range of the genus Hedera. There are some

morphological similarities between this series and H. pastuchovii (in hair structure and partially in the shape of the leaves on sterile shoots in H. nepalensis). The yellow-berried east-Mediterranean H. chrysocarpa Walsh is very distant from the orange-berried Sinenses, but shares many features with the Helix series: stellate hairs with few rays, an inflorescence with a long common axis and similar leaves on the fertile shoots. The taxonomic relationships in the genus Hedera which have been discussed above are summarised in the classification below:

Series I. canariensis Pojark.

1. Hedera canariensis Willd. - the Azores, Canary and Madeira islands, mountains of north Africa (Morocco and Algeria).

Series II. Robustae Pojark.

2. Hedera colchica C. Koch - western Transcaucasia (on the east, up to the Suramskiy range), western Ciscaucasia [northern Caucasus], Turkish Lazistan [now Rize province, N.E. Turkey] and Trabzon province.

3. Hedera robusta Pojark. - south-west China, eastern part of Sikang province.

Series III. Pastuchovianae Pojark.

4. Hedera pastuchovii G. Wor. - eastern Transcaucasia (Tionetskiy range, Talish mountains, the districts centred on the towns of Zakataly, Nukha [now Sheki], and Kuba) and the wooded part of Iran bordering the Caspian (Mazanderan and the Asterabad district).

Series IV. Toblerianae Pojark.

5. Hedera tobleri Nakai - Japan and southern Korea.

6. Hedera shensiensis Pojark. - central China: southern, mountainous part of Shensi [Shaanxi] province.

The following may also belong to this series:

7. Hedera pedunculata Nakai - the Ryukuyu islands.

8. Hedera formosana Nakai - Taiwan

Series V. Helix Pojark.

9. Hedera helix L. - Mediterranean region, western and central Europe, the Baltic coast and southern Scandinavia.

10. Hedera taurica Carr. - the Crimea and the Dobrogea [or Dobruja - area lying along Black Sea coast shared by Romania and Bulgaria, east of the Danube and south of the Danube delta].

11. Hedera caucasigena Pojark. - Caucasus: western Ciscaucasia, western Transcaucasia, in eastern Transcaucasia in the Teletskiy range and in Kakhetia [geographical region of E. Georgian SSR drained by the upper Alazan river], in the south - in the northern part of

Armenia.

Series VI. Chrysocarpae Pojark.

12. Hedera chrysocarpa Walsh - western Transcaucasia, northern coast of Asia Minor and the eastern part of the Balkan peninsula (Thessaly, Thrace, Macedonia and Attica).

Series VII. Sinenses Pojark.

13. Hedera nepalensis C. Koch - north-western Himalayas.

14. Hedera sinensis (Tobl.) Hand.-Mazz. - eastern Himalayas, south-western, central and, possibly eastern China.

15. Hedera potaninii Pojark. - south-west China, eastern part of Sikang province.

EVOLUTIONARY

The phylogenetic relationships within the genus reflected in the proposed classification show a number of features specific to the Hedera. Firstly, this small genus is strongly differentiated; of its fifteen species the thirteen available to the author for study belong to seven different phyletic branches. Three of these lines of development contain one species only, the rest two or three species. As has been seen, most of the species are unquestionably Tertiary relics. Two of the series, Sinenses and Toblerianae, all of whose species occur in mountainous parts of south-east Asia where the Tertiary-relic nature of the vegetation is well preserved, show close links with Tertiary flora. A period of recent species-forming processes was evidently survived only by the Helix series, and possibly also by Sinenses and Toblerianae. All this would indicate the Hedera to be a very ancient genus that has travelled a long evolutionary road and, apart from a few phyletic branches, is at present dying out and composed of relics.

This view of the considerable geological age of the genus is fully confirmed by paleobotanical data. A relatively large number of fossil remains have been identified as Hedera leaves; a few of these identifications, however, are doubtful or are clearly errors. An analysis of all the available material would be a task for a special research project. The first reliable finds of fossil species of Hedera (H. obliqua Newb., H. primordialis Sap.) come from Cenomanian deposits (Raritan beds) in North America (New York State) (Newberry, 1892).

By Turonian times (Dakota and Magothy [central Maryland] beds) the genus was represented by a large number of forms in the eastern and central States (Knowlton, 1919). Later the genus was observed in those areas in upper Cretaceous

deposits - Senonian and Danian stages (Laramie beds) - and lower Paleogene deposits (post-Laramie in Wyoming, McKenzie Eocene [western N. Dakota], Fort Union beds in Montana).

The genus Hedera evidently died out early in the eastern half of North America where the tropical flora of the early Tertiary succeeded the temperate Cretaceous flora. The indications for Neogene deposits in North America are doubtful, the Colorado Miocene imprints designated as H. marginata Lesq. (Lesquereux, 1883) do not belong to the Hedera. In the Arctic (Greenland, Spitzbergen) the genus appears in much more recent deposits (Senonian and Danian stages) than in North America. In northern Asia the first ivy leaf imprints (at Simanova, Sakhalin) also belong to the Senonian (Kristofovic, 1941).

In the Paleogene, ivy species were common in the far East: Paleocene imprints were observed by the author on the western coast of Kamchatka; Kristofovic found Paleogene imprints on De Vries Island [sic.; perhaps in Friz [or Vries] Strait, which lies between Urup and Hurupislands in the S. Kuriles] and Oligocene imprints on Sakhalin, and I.V. Palibin(1936) found upper Oligocene imprints at Lake Baikal. No ivy imprints have been found in Neogene deposits in Northern Asia (Siberia). In central Europe, the first ivy remains, in the form of leaf imprints of H. primordialis Sap. (Saporta, 1879) appear in Bohemia [now part of Czechoslovakia] in Cenomanian deposits of the same age as the Raritan beds in North America.

FRANCE

They have been found in Paleocene deposits in France (Sezanne: H. prisca Sap.) and the USSR (Tim [50 km east of Kursk], mount Ushi [lower Volga]), in Oligocene (Aix: H. Philiberti Sap.), Miocene and in particular in Pliocene deposits in southern Europe, which even then, according to Schimper (1874) contained forms (H. Strozzi Gaud.) ressembling the present-day H. helix.

It is clear from brief survey of the distribution of the Hedera in past geological periods that the genus was in existence both in Europe and in North America by the Cenomanian stage in the middle Upper Cretaceous. From there the Hedera spread northwards, being distributed throughout the Arctic by the late Cretaceous and early Tertiary, whence it also made its way into northern Asia.

In Arctic deposits, leaf imprints of Hedera species are found together with imprints of representatives of a temperate large-leaved flora, whose existence is an enigma that has long attracted the attention of research workers,

among them Russians (A.N. Kristofovic, 1932; A.I. Tolmacev, 1944).

By the end of the Paleogene, with the coming of a period of falling temperature this flora had in part died out and in part migrated to warmer latitudes, to Siberia and North America. Here, as a result of mingling with the indigenous flora, which was continuously enriched by immigration of temperate components from south-east Asia, and subsequent evolution in new climatic conditions, a deciduous flora was formed that existed for a lengthy period in Siberia and North America (the Turgay flora of Kristofovic).

In northern Asia in the Paleogene, and as late as throughout the Oligocene, this flora, as has been seen, also contained representatives of the Hedera, but later the genus was forced even further to the south, into the region of the more warmth-loving flora of China and Japan. In Neogene remains of Siberian flora no Hedera are found.

In Europe, the Hedera may be supposed to have existed continuously from the Cretaceous or the Paleocene, but its species composition could also have been enriched by immigration from the Arctic, since the process of displacement of flora from high latitudes (Arcto-Tertiary in the narrow sense) southwards also took place on the western edges of Eurasia.

LAND BRIDGE

The existence of a land bridge between Greenland and Europe in the region of Iceland and Great Britain had by the Paleocene (Mazarovic, 1938, p. 341) created favourable conditions (particularly in times of marine regression) for an exchange of species between the temperate flora of Greenland and the tropical flora of south-west Europe and the Mediterranean, which as a result was enriched by components of Arcto-Tertiary flora coming, in contrast to eastern Asia, primarily from the more westerly parts of the Arctic. It is common knowledge that during almost the whole of the Paleogene the flora of the Mediterranean and central Europe had very little contact with the flora of south-east Asia owing to the way land and sea were distributed in the region of the Mediterranean geosyncline.

These may also be the historical reasons for the absence of any close link between the Tertiary relic H. canariensis, a representative of the ancient flora of the western Mediterranean and Macaronesia, and the species of the Robustae series, which are associated with the flora of south-east Asia. The occurrence of H. colchica, a vicarious race of the Chinese H. robusta, in Colchis [the

eastern Black Sea area], is considered by the author to be the result of immigration by this species (or its immediate ancestor) into the Caucasus, together with other migrants of Chinese-Himalayan flora, along the "Mediterranean macroisthmus" (D.V. Nalivkin, 1936) as early as the Neogene. H. colchica in a fossil state has been observed in Chaudanian beds in south-west Guria [geographical region of W. Georgian SSR, on Black Sea, S. of the lower Rioni river] (Kara-Murza, 1941). An indication of this species for the Akchagylian stage in southern Kakhetia [geographical region of E. Georgian SSR drained by the upper Alazan river] (Palibin, Petrov & Cyrina, 1934) is probably H. pastuchovii. In the Chaudanian beds in Guria, leaf imprints identified as H. helix L. have also been observed. In central Europe H. helix leaf imprints are fairly frequent in deposits of the second interglacial stage.

This in general outline is the distribution of the genus Hedera in different geological periods according to the paleobotanical material available to the author. In her view, it supports the conclusions reached earlier on the geographical connections within the genus.

To be continued.

A VICTORY FOR COMMONSENSE

During international discussions at a recent Botanical Congress in Sydney, Australia, under a new international rule on plant nomenclature which allows the retention of familiar names of commercially important plants, it is learnt that the winter flowering Erica carnea (heather) is to be allowed, although recently, botanists have decreed that it should more correctly be known as Erica herbacea. This is on the grounds that 15 - 20 million plants are sold worldwide under the name Erica carnea which is how it has been known for many years. It is therefore a plant of economic importance - a victory for commonsense.

With this ruling in mind, how do we ivy enthusiasts treat Hedera canariensis in its several variegated forms, under which species name it has been known for many years? Now, according to recent botanical re-alignment by Dr. Hugh McAllister, it is to be Hedera algeriensis. There is to be a meeting of the ISHS for Nomenclature and Registration in August of this year at the International Horticultural Congress in Florence at which there will be proposed revisions to the International Code for the Nomenclature of Cultivated Plants. The last published Code is dated 1980.

Stephen Taffler

IVY

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