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THE EUROPEAN MISTLETOE (*Viscum album*)

EVER since my boyhood in Germany I have been fascinated by the mistletoes growing on various host trees. The yellowish-green bushes—on the bluish dark-green Scotch pines, on the Black Forest firs, on the deciduous trees—contrasting with the plant on which they grew, made a lasting impression.

The European mistletoe has been admired since ancient times. The ancients were mystified by it. The Greeks attributed certain powers to it in the hands of Hermes; the Romans associated it with Mercury and Aeneas. In Nordic mythology, Odin used the twig; Balder, the sun god, was killed with a twig used as an arrow in the hands of Hotherus; and, since then, the mistletoe twig has been used at the time of the awakening sun as a symbol of new life—much appreciated in Great Britain. After the early establishment of the Christian Church its use was allowed during the winter festival of Christmastime, incorporating it—as well as holly and other plants from earlier religious tradition of decoration—into the rites commemorating the birth of Christ. Even now the mistletoe branch hangs over the door of many an Anglo-Saxon on New Year's day.

In Europe the beautiful, white, glistening berries are the specialty of the mistletoe thrushes. These birds distribute the seeds as they try to brush off the sticky berries from their beaks on the branches of other trees. This is a hit-or-miss affair, because the seed, although it may germinate, has been known since ancient times to grow usually on the same species of host plant on which the mother plant grew. Mistletoe from *Pinus sylvestris* will grow only on *P. sylvestris*; from *Abies alba* (*pectinata*), only on *A. alba*. On the deciduous trees there are also different races known—on *Malus*, on *Acer pseudoplatanus*, on *Populus*, on *Tilia cordata*.

Until the early 19th century, no trees from other continents were present in European gardens to which mistletoe could spread. Since then, however, many plants from Asia and America, have been introduced into European gardens, and it has become possible for mistletoe on deciduous hosts, where there were

no other own-host plants nearby in the parks, to be spread by the birds to nearby partially related trees.

Since the European mistletoe is very hardy—known in the mythology of Celts, Druids, Germans, and Vikings alike, finding its way into the customs pertaining to the winter solstice and Christmas—I wanted to try to grow the plant here in America. *Viscum album* and the American mistletoe, (*Phoradendron flavescens*), belong to the family *Loranthaceae*, which consists of half-parasitic plants. The American mistletoe does not grow north of Maryland and New Jersey or west of Indiana and Missouri. The limit is along the Mississippi River south of St. Louis, near Festus, Missouri. Therefore I could not grow it at my former home in Pennsylvania nor in New England.

My conscience bothered me some when I considered bringing the European mistletoe to America for experimentation, as we have enough parasites in the United States. I remembered the experiences with chestnut blight, Japanese beetles, gypsy moths, and others. But many years of research gave me the answer to this problem.

We do not have the specific bird species here that are known to distribute the berries. The plant grows so slowly that my 15-year-old seedlings are only 8–10 inches tall. The mistletoe, as a half-parasite, takes only minerals and water from the host plants, since it has chlorophyll for its own assimilation process. The common host plants of the European mistletoe (in Europe) are not native to America. If it grows on American plants, it does not become a pest, but rather becomes a beautiful asset.

I tried germinating seeds as early as 1923, without success. Correspondence with botanical authorities in Berlin, Vienna, Innsbruck and Frankfurt, resulted in the information that the seed loses its viability in the dark very quickly. It has to be kept in the light. Then I found that seeds from Europe by air arrive in America soon enough, but less than 1 per cent germinate. The continental climate here, with extremes of temperature in summer and winter, is just not conducive to their good germination and growth.

The flowers are dioecious. So far my plants have not produced berries. It takes a long time and much patience in waiting for them to appear.

Where the native host trees were few, the thrushes, in flying to nearby American trees in the parks and botanical gardens in Germany, distributed the berries to some American trees. Thus, apparently, over the centuries, adaptation took place, resulting in the spreading of the European mistletoe to non-European trees. The mistletoe grows on *Acer saccharinum*, the silver maple, on *Juglans nigra*, the black walnut, and on *Robinia pseudoacacia*, the black locust—a marvelous sight in winter. The mistletoe from apples spread on one American pin oak, *Quercus palustris*, in the public park in Badhomberg. Also, in France, tourists can admire the dense clusters of evergreen branches in the Canada poplars growing along the Seine River between Paris and Versailles. So, over the cen-

Botany in Boston's Restaurants



Lecturers: Dr. Richard A. Howard, Director of the Arnold Arboretum
Dr. Carroll E. Wood, Associate Curator

Boston offers a variety of restaurants serving "foreign foods". We have chosen five of them to introduce you to the plants and plant products that are used in making exotic dishes. After an introductory session at the Schoolhouse on the Case Estates in Weston to become familiar with some botanical hors d'oeuvres, we will meet and eat at a different restaurant *every other week*. A menu and directions will be supplied in advance. At each meeting, the raw materials and/or herbarium specimens of the botanical components of the meal will be the subject of "scholarly" discussions. Recipes will be available at some meetings. A final dinner will be prepared by some of the Arboretum staff to offer tropical plant materials not readily available in most restaurants.

This course is open only to "Friends of the Arnold Arboretum"* and must be limited to 22 individuals. Registration is for the entire course only. If you cannot attend a meeting you may send a substitute. The registration fee of \$45.00 covers the meals, taxes and gratuities only. We regret we cannot serve alcoholic beverages of the country at this price. If, however, you are interested, we can offer a post-course meeting to discuss and taste various wines at an additional fee.

October 30, meet at the Schoolhouse, 133 Wellesley Street, Weston, at 7:30 P.M. for an introductory talk and botanical hors d'oeuvres.

November 6, 20, December 4, 18, and January 8 we meet in various Boston restaurants featuring Chinese, Italian, Syrian, French and Scandinavian foods.

Meeting time—6:00 P.M.

January 22, meet at the Schoolhouse, 133 Wellesley Street, Weston for a Caribbean dinner featuring tropical foods.

Reservations for this series should be accompanied by payment of \$45.00 for each person registering. Please make check payable to the Arnold Arboretum of Harvard University.

* Information on how to become a "Friend of the Arnold Arboretum" can be obtained by writing or calling the Arnold Arboretum, Arborway, Jamaica Plain, MA. 02130. Tel : 524-1717.

Evenings with Friends

A series of talks by members of the organization known as the "Friends of the Arnold Arboretum".* In this group numbering nearly 900 members there are many fine speakers with extremely interesting subjects. We will hear from five "Friends" who will speak on five very different topics. All talks will be illustrated.

Time: Tuesday evenings, October 21 to November 18, 1969. Refreshments will be served at 7:30 P.M. Programs will start at 8:00 promptly.

Place: The Schoolhouse, 133 Wellesley Street, Weston, Mass.
Please park in the area indicated near the barn.

October 21: *Famous Gardens of Japan.* Mr. and Mrs. David Milliken
The Millikens have visited Japan three times and have taken many excellent pictures of outstanding gardens there, mostly near Tokyo and Kyoto. A talk for travelers, photographers and gardeners.

October 28: *Bonsai for Beginners.* Mrs. Ara Derderian
Mrs. Derderian, Honorary Curator of the Arnold Arboretum Bonsai Collection, will discuss how bonsai are trained and maintained. Special emphasis will be placed on the Arnold Arboretum's remarkable collection of these increasingly popular plants.

November 4: *Problems of Big City Beautification.* Mrs. Augusta Bailey
Mrs. Bailey is president of the Roxbury-Dorchester Community Beautification Programs, Inc. She has had seven years of experience here in this type of work, some rewarding and some depressing but the work goes on. Some of the Arnold Arboretum staff are involved to an extent in this work and a progress report will be of great interest.

November 11: *The Spruce Bog, an Essay on Ecology* and *The Embryonic Development of Fish.* Mr. Joseph Durden
Don't let the titles frighten you. These are remarkably well done color sound films. The film on fish has won awards at film festivals in Budapest, Venice, Berlin and Padua.

November 18: *A Walk in My Own Yard.* Mrs. Richard Pratt
Mrs. Pratt is an expert photographer. She presents studies of common things of the garden and yard. Flowers, both wild and cultivated, and insects are some of her subjects. This will be a fitting conclusion to this unusual series of talks.

Limited space makes it necessary to restrict the size of this group to no more than 30 members. Registration fee for Friends of the Arnold Arboretum \$5.00; others \$10.00. Any member of the immediate family of a "Friend" may register for these meetings but a registration fee must be paid for each member.

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PLATE XXI

The European mistletoe in poplars along the Seine River, France.

turies it has been distributed to a few American trees growing in Europe.

To grow the European mistletoe, the seed must be pressed on the bark (it does not have to be imbedded). The seed germinates and sends a small stem with a suction cup into the bark the first year. In the second year the bark grows around this, and the little seedling appears. The seeds will germinate on any surface—a piece of wood or a piece of glass—but only on their host plants will they get enough nourishment through the bark to develop. Even if a seed from the Scotch pine mistletoe germinates on a linden or an apple, it will usually die after a few months. Some chemical reaction prevents further growth. No one has found the reason.

The American mistletoe, growing in the southeastern United States, grows only on species of deciduous trees. It must have taken a few hundred years for the European mistletoe which grows on *Acer pseudoplatanus* to spread to the American silver maple, to the black walnut, and to the black locust. However, this did occur in Badenweiler near Freiburg in the foothills of the Black Forest and on locusts in Hannover, Germany.

I have been growing a plant of European mistletoe on a silver maple tree for 15 years. This spring this tree was donated to the Arnold Arboretum and planted in the holly collection in the woods at its Case Estates in Weston. I also have donated two others growing on European lindens to the Arboretum, hoping that, with all the resources there, the Arboretum will keep alive the study of this very interesting plant.

HEINRICH ROHRBACH
Formerly owner of:
Heatherfels Nursery
Andover, Massachusetts

Recently moved to Baden-Baden, Germany.