

C. Syrach-Larsen, Pioneer in Forest Tree Breeding

On his retirement



What qualities and external conditions influence a human being to become a pioneer? The interaction between them is undoubtedly complex and consists of many possible combinations to bring forth such a result. However, one of the deciding influences to effect this product is the field of work where one's centre of activity lies and the time of development for these characters.

By birth, CARL SYRACH-LARSEN was placed into surroundings which became his life. He was born among trees — not just ordinary trees of home origin — no, the trees which surrounded his cradle had, for the most part, been of first introduction into Denmark. Some of these trees were to stay in their unaltered form. Many of these trees, however, were later used by him to improve other species — adapted to our own conditions. One of the great merits of C. SYRACH-LARSEN was to have noticed the possibility and to carry out the first experiments which were to form the basis for a rational forest tree breeding.

Already as a youngster his character for pioneering was made use of by bringing flowers from trees down to the heights of man so that the professor of forest botany was able to study the otherwise inaccessible flowers. Here at an early stage CARL'S characteristic vitality and undeterred nature came already to light.

The Forest Botanical Garden at Charlottenlund, which was founded in 1938 and which had been in charge of his father, G. SYRACH LARSEN, was taken over by C. SYRACH-LARSEN in 1933. The garden harbours many tree species of early introduction into Denmark. His place of birth and the early spheres of interests with close contacts to forest botany must undoubtedly have played a deciding role in the choice of CARL SYRACH-LARSEN'S career. The study of forestry was chosen instead of the other two related studies: botany or horticulture. Thus forestry became the choice influenced partly through his esteem for E. M. DALGAS, the pioneer in cultivating the heathland of Jutland, and partly due to the romantic view of BOGANI'S in respect to wild

life and hunting, which was strongly connected with the forest. This later became one of SYRACH-LARSEN'S interests and was embodied in the foundation of the 'Wild Life Planting' effectuated in collaboration with the Ministry of Agriculture.

On graduation in 1923, when the question of specialization presented itself, two people played an important role. One of these men was the botanist C. H. OSTENFELD, who taught C. SYRACH-LARSEN the value of systematics, and their collaboration resulted in: 'The species of the genus *Larix* and their geographical distribution' (Kgl. Danske Vidensk. Selskab Biol. Meddel. 9:2: 1—106, 1930). OSTENFELD introduced later SYRACH-LARSEN to the geneticist Ø. WINGE, who helped him in understanding the meaning of variation for an evaluation of species. Ø. WINGE thus became the other person to influence the development of SYRACH-LARSEN. Quite soon after association with these two important men the character of the pioneer clearly evolved by the production of the first artificial crosses in the genus *Abies* (1924).

Initiative is a highly developed character of his and this combined with his extensive knowledge and urge to give this freely to others resulted in fruitful exchanges of views and ideas for both host and guest in his travels. A deciding role played a one year stay at the Royal Botanic Gardens, Kew, 1928—29. Here C. SYRACH-LARSEN obtained an insight into the value, from the forest botanical point of view, of the collections of living species. A visit to Scone Estate in Scotland, the home of the famous two trees of Douglas fir directly sent through DAVID DOUGLAS, triggered off ideas to synthesize and merge these examples directly in forest tree breeding. Thus the two Douglas fir trees were to SYRACH-LARSEN'S mind really a kind of seed orchard.

Private foundations in Denmark made it possible to intensify the production of artificial crosses on trees in the Forest Botanical Garden in 1929—30. The material resulting from the selfing and crossing work that had been made in these early years was described in his: 'Forest Tree Breeding', Royal Vet. & Agricult. Coll., Yearbk. 1934: 93—113 (1934), with special emphasis on artificial pollinations in species of *Abies*, *Picea*, *Larix*, and among broadleaved species *Juglans*. He emphasises here the importance of: 'Through the means of the Arboretum, the living collection of trees, it is possible in the future to preserve our from a forest point of view most luxuriant beeches, oaks, spruces etc., the Arboretum thus solving a problem which has been tackled in vain by libraries, archives and museums, and which is of the utmost importance to forestry, as a basis for improving our forest trees.' Thus, from the start C. SYRACH-LARSEN contributed actively to the problem of gene preservation — a problem which is still of great concern to forest geneticists. Two other important tools from the forest tree breeders' point of view are treated in this paper: Vegetative propagation and the seed orchard. As regards seed orchards it says: 'I strongly urge, therefore, taking up vegetative propagation and, in conjunction with experiments of artificial pollinations, the establishment of seed plantations for the supply of seeds for practical use.' In this period the foundation of the Arboretum at Hørsholm becomes a reality and C. SYRACH-LARSEN becomes its first director giving it its unique status. At the same time he obtained the degree Dr. agro. (the first of its kind to be awarded by the Royal Veterinary and Agricultural College)

in 1937 for a thesis on: 'The Employment of Species, Types and Individuals in Forestry.' Royal Vet. & Agricult. Coll., Yearbk. 1937: 154 pp. (1937). Here he elucidates in the chapter on 'Breeding' the methods which he regards as the most suitable to improve in the simplest way the material at-hand and that which will become available in the future to silviculture. He also stresses the meaning of 'conservation of the valuable genotypes'. In 1936, just prior to defending publicly his thesis, C. SYRACH-LARSEN had the opportunity to put his ideas before an international forum at the Second International Congress of Silviculture, Budapest, where he delivered a paper on: 'The importance of vegetative propagation in respect to forest improvement plans'. Here too his thoughts regarding the gene-pool idea are stressed as follows: 'I should like, at this early stage, to recommend most emphatically an international co-operation for the protection of such valuable genotypes within the forest trees characteristic to each country'. The recommendation was advanced to carry out the practice of 'exchange of controlled seed' and vegetative propagation.

In collaboration with M. WESTERGAARD the first result of a joint cytological investigation appears as: 'I. A triploid hybrid between *Larix decidua* MILLER and *Larix occidentalis* NUTT.' (Journ. Genetics 36: 523—530, 1938). This is followed up by another important joint publication from the Arboretum, the Laboratory of Genetics and the Laboratory of Systematic Botany, which bears the title: 'II. *Alnus* Studies'. (Royal Vet. & Agr. Coll., Yearbk. 1941: 44—58).

Unfortunately this fruitful team work was not continued. However, many other problems of importance for the development of forest tree breeding were taken up. Besides the notable pioneering work on home grounds which naturally could not be confined solely to the territory of the Arboretum and the Forest Botanical Garden, activities extended to other spheres and materialized in establishments like: the Tree Improvement Station of the Danish State Forest Service, the East Sjælland Forest Tree Improvement Association, the Forest Tree Seed Centre of the Danish Health Society. The Seed Committee of the Danish Forest Society was also influenced through the work of C. SYRACH-LARSEN. Furthermore, contacts to other countries were continued in 1946 by a visit to the United States of America and to Canada. This was followed up by a round the world trip in connection with the participation of The Seventh Pacific Science Congress in New Zealand in 1949. Extensive travels by C. SYRACH-LARSEN in Europe, in East Asia, in Africa and in North- and South-America benefitted not only international understanding between colleagues but his pioneering activity was also put to use for cooperation with the developing countries. The establishment of the Thai-Danish Teak Improvement Centre may be taken as an example where he successfully used tree breeding for initiating cooperation in a broader field.

The election of a leader of Section 22, Plant Study, of the I. U. F. R. O., at the time of reconstruction in the late 1940's,

came naturally to C. SYRACH-LARSEN. Here too he did his utmost to create the best possible conditions for forest tree breeding. Although the other subjects of the section took a secondary rank, it must be stressed that it was his merit that the section grew from an outlook restricted to subjects within the temperate zone to become world-wide for selection of topics. His positive form of leading the section was later continued by JOHN MATTHEWS after 1961.

Dr. SYRACH-LARSEN's contact to foreign countries was all-embracing. Many foresters, whether as postgraduates or as students, were given the opportunity to spend some time at the Arboretum, and parties from abroad were all made welcome. He always took time to introduce these guests to the work on forest tree breeding.

His non-didactic form to present his point of view has given ready response to his ideas. His well known book: 'Genetics in Silviculture' (1956) affirms this point. Even non-professional bodies appreciated his notable work which is expressed in the invitation to participate in the educational work of the University Extension. The pioneer C. SYRACH-LARSEN has been honoured by many for his original work. Throughout the years he has been the recipient of many academic honours and has become the honorary member of a long series of societies both in Denmark and abroad. These honours includes: the Award for Achievement in Biological Research (U. S. A., 1957), Honorary Doctor of Philosophy (the University of Copenhagen, 1959), the Honorary degree of Doctor of Laws (the University of Aberdeen, Scotland, 1966). The professional societies which have bestowed honorary membership on C. SYRACH-LARSEN include: Association of Dendrology and Park Care (Sweden), Swedish Forest Society, Finnish Forest Society, Society of American Foresters, New Zealand Institute of Foresters, Royal Scottish Forestry Society, Association of Danish Graduates of Forestry, Society of Forestry History (Denmark).

C. SYRACH-LARSEN is a member of the following learned societies: The Academy of the Technical Sciences, and the Royal Danish Academy of Sciences and Letters.

Having had the pleasure to cooperate with C. SYRACH-LARSEN for about 18 years — I know of him. — Neither quantity nor quality of his ideas have decreased during this period — the tendency has possibly been to turn them to a more realistic form.

The Scandinavian Association of Geneticists has taken the opportunity on his retirement to honour C. SYRACH-LARSEN for his outstanding work on forest tree genetics by arranging a symposium on "Forest Tree Seed Orchards". Invited speakers and participants from far and near formed a seminar to discuss together with C. SYRACH-LARSEN the topic with the scope for the future. (The symposium has been held at Copenhagen, Denmark, from 7—9 October, 1968).

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BENT SØEGAARD