FIELD TRIP TO COOXROX FOREST

A TOUR OF COOXROX FOREST[1]

David B. Cook[2]

The Cooks of Cooxrox Forest were delighted to welcome a distinguished group of friends and fellow workers and to show them our collection of larch species and hybrids on a magnificent, blue summer day. To have 77 of our professional colleagues all at one time made it a memorable occasion indeed.

For twelve years, NEFTIC has heard Dave Cook talk about larch as a magnificent forest tree. I am sure that many have wondered how much of the story was over-heated imagination, how much was cold fact. So, on this our 13th meeting, it was my privilege to show the group the living and growing basis for my enthusiasm, that they might see and judge for themselves. And I showed them not only our conspicuous successes but also some of our dismal failures, and pointed out the lessons to be learned from each.

Cooxrox Forest is a privately-owned, privately-supported, taxpaying property devoted to research and demonstration. We specialize in larch, and for thirty years we have striven to find answers to the problems of larch silviculture and genetics--to grow our trees bigger, better, faster, cheaper.

The Forest is situated near the southeast edge of the Rensselaer Plateau, a much-folded, oval mass of Cambrian rock about 600 million years old. This bedrock is Rensselaer Greywacke, a chlorite-rich sandstone much intruded with quartz, which breaks up into large blocks that are very resistant to weathering, The soils are reddish loams derived from the Greywacke. They have adequate depth for tree growth, good internal drainage, moderate fertility and a pH of 4.8 to 5.5. The climate is modified continental, with long, cold winters (to -23°F.), short, hot summers (to 101° F.) and abrupt transitions in spring and autumn. Average yearly temperature is 45°F., the growing season about 140 days. Annual precipitation is 41 inches, considerably augmented by frequent and heavy dews; snowfall is about 60 inches. The latitude is 42° 35'N. elevations 1.125 to 1.409 feet.

By pure chance, the first planting on Cooxrox Forest was of superior European larch, which I got from the late Prof. Samuel N. Spring, then of Cornell. By 1935, it was evident that larch would grow spectacularly well on our mountain but, by then, all our open land had *been* planted up to red and white pine, white and Norway, spruce. More land to plant could be had only by converting from woody weeds, for which purpose larch was especially well suited because of its rapid juvenile growth. So, since 1936, we have planted almost nothing but larch, and most of that on cut-over hardwood land. What knowledge we have of conversion to conifers and of the silviculture of larch was acquired in the process.

In our first operations, we were satisfied to plant trees that were "true to name"; then we began planting only larch trees; more recently, we have planted mostly pedigreed larch trees. Perhaps the time will come when we will plant only genetically improved larch trees!

[1] This is a summary of the information presented by Dave Cook during the tour of Cooxrox Forest. (Editor)

[2] Owner and operator of Cooxrox Forest.

When we started planting, tree species were considered to be distinct, homogenious and separate biological units. This concept is no longer valid—not for the genus Larix and certainly not for the hybrid swarms. Beyond F_1, variation is the usual situation.

Cooxrox Forest clearly demonstrates the advantages of private ownership and individual initiative, We have to ask approval of no one and so our accomplishments are limited by our silvicultural skill, managerial ability, money and muscle, and not by organizational inertia. We have the added asset of living and working intimately with our trees, winter and summer, fair weather and foul, even to the point of knowing some of our more spectacular ones by name,

The objectives of our NEFTIC tour were:

To see larch growing under near-optimum conditions; as individuals and in forest stands;
To compare the several species and races of larch;
To observe the botanical and silvicultural characteristics of a number of hybrids of known genetic background;
To compare larch with other species, both wild and planted, both native and exotic, and;
To admire some truly magnificent trees.

The tour started in European Larch No. 1, the first plantation made on Cooxrox Forest, in the spring of 1930. We have no record of its origin, but the trees fit the description of what the Scots call "Morayshire" On the basis of cone size and shape, it is not Sudeten. The stand was badly blown by the Great Wind of 1950. The best tree we saw was NORTHEAST, 14.5" x 73[1] at 36 years[2], with superior form and fine branching. I commented that one of the four planters who set No. 1 was the late Prof. A. B. Recknagel of Cornell, an able man with a mattock as well as a good friend and an inspiring teacher.

From there we proceeded north on the highway, then cut west through a badly-weeviled, moderately vigorous plantation of white pine (No. 6, P-1931[3]) to a 1/10 acre planting of Japanese larch made on very stony ground cleared from birch scrub (No. 6-B, P-1936). The GIANT in 6-B is an exceptional tree, having completely outgrown the hardwood brush, some older associated pines and a nearby larch and recovered from the loss of its top to the Great Wind of 1950. It is 15.4" x 68' at 30 years=

Beyond the pines, we paused to look at European larch No. 27, P-1941, of that superior local Cranston race. On the average, these trees are tall enough for their age but much too slender, their diameter growth having been severely cur tailed by repeated twig-clipping by red squirrels. The best tree, No. 27's BEST, is 9,7' x 58' at 25 years

Alongthe west edge of No. 27 and extending south through Plantations No. 6-A (white pine, P-1931) and No 7 (red pine, P-1931), is a scattering of Dunkeld hybrid larch of SL[4] E-207 (P-1936) reputed to be F_3 "from its original source, Dunkeld in Perthshire", which exhibits both tremendous vigor and considerable variation in stem form, branching and cones:

[1] Diameter breast high read from a diameter tape, and total height taken with a clinometer. All measurements taken October 16, 1965, so as to reflect a full season's growth.

[2] All ages are from planting, usually with 2-0 seedlings, occasionally with 3-0.

[3] P-1931 = Year of plantation establishment.

[4] SL = Seedlot number.

MEADOWEDGE 1, 15.3" x 68', a massive heavy-branched tree.
BRUSHPILE, 12.3" x.68', a fine-limbed, slender stem resembling the best European types and perhaps a back-cross.
TRAILSIDE 6-A, 14.2" x 70', an exceptionally good tree and a good seeder. We have made several cone collections, one of which provided the stock for Plantation No. 44, P-1960,
GIANT in 7, 16.0" x 75', growing intimately with red pine; of superior form and size and perhaps the finest larch on Cooxrox Forest. This tree was planted in a single-spot fail in a good red pine plantation, has outgrown and suppressed the nearby pines, which are 5 years older. The best red pine is 12.6" x 60' at 35 years.

The trail then ran east through hybrid larch No. 41, P-1955. This is F2, its parents being a plantation on Montgomery State Forest No. 1, P-1933, made with seed from the original Japanese "mother trees" at Dunkeld, from which Larix eurolepis was described. Plantation No. 41 shows considerable variation in height, branching, leader form, cone shape and autumn color. We had hoped to show the cones, but 1965 has been a hungry year for the squirrels and they have already consumed the whole of a promising crop. The best tree is 4131, 5.6" x 32' after 11 years.

Hybrid larch No, 44, P-1960, is open-pollinated progeny of TRAILSIDE 6-A, seen earlier, and is presumed to be F_4. There is some variation in form and foliage color, a few trees being quite glaucous. This spring, early in their ninth year from seed, a number of trees bore male flowers but no females were produced. The best tree is "4454," 20.5 feet tall, with a sixth-year increment of 57 inches, despite a very dry growing season. This leader exceeds by inch our best previous record--56.5 inches on the VOLUNTEER in 1960. Certainly, the performance of this and other plantings of hybrids of F_9 and beyond does not substantiate the contention that hybrid vigor declines with succeeding generations beyond F_1.

Next north is Plantation No. 40, P-1954, F_1 progeny of Japanese larch EDGER 20 WEST; the pollen presumably from European larch No. 1, close by to the southwest. These seedlings were selected in the seedbed, as 2-0, on the basis of twig color. The crop is vigorous but quite variable; the best tree is 4026, 6.1" x 39' at 12 years. The stand coned lightly in 1963; in 1964 collections from three trees yielded 4.5 ounces of seed, which was sown last autumn. Squirrels got the 1965 crop.

On the basis of their progeny in Plantations No. 40 and No 44, EDGER 20 WEST and TRAILSIDE 6-A would qualify as elite trees.

Beyond, in Cranston Larch No. 39, P-1954, the bad effects, on both growth and stem form, of grosbeak, squirrel and porcupine damage were strikingly evident.

Back on the highway and headed south, we paused to consider the genetic implications of the Big Oak Tree, a tremendous, open-grown red oak over a century old, 42" x 60', with a spread of more than its height--a specimen to which no tree improver would give a second look. Yet, the poor form is almost certainly the result of repeated frostings during its first half century, when all the surrounding land was open pasture. Its true genetic potential is best expressed by its progeny across the road--beautifully formed sawtimber stems that grew up in the protection of a forest environment.

We turned east into European larch No. 28, P-1941; the record shows it to be of "Sudeten" origin but the cones indicate a mixed ancestry. Some stems are wavy, as is characteristic of Sudeten, but many are fine, straight trees with short, slender branches and rather light foliage. The SENTINEL, at the gap, is a fine stem that

has been used by the College of Forestry in some of its larch improvement work. Further along is the WOBBLER, in which the exaggerated crookedness is genetic. The best tree is HILLTOP, 11.0" x 57' at 25 years.

The comparison between No. 28 and the adjoining No. 2, P-1930, was most unfavorable to the heavy-limbed, slow-growing white spruce, which here is off site.

On the steep southeast toe of the ridge is Japanese larch No: 30, P-1942, somewhat bigger than No. 28, and with heavier, longer limbs and greater masses of foliage. This stand was hit hard by the Great Wind of 1950, which came from the east, blew down or tipped many trees. The second thinning, done with sodium arsenite, has liquidated most of the off-plumb stems. The best tree seen along the trail was 10.5' x 55' at 24 years; best in the plantation is APPLETREE, at the foot of the slope, 13,4" x 71', a spectacular tree indeed.

At the bend in the trail is ROBIN HOOD'S BOW, one of the No. 30 Japs that was tipped 45° by the wind, subsequently bowed the stem upward, then grew straight up from there.

Next stop was ELI S FOLLY, a 1951 planting of six Japanese larch, in the southwest corner of European larch No. 28. These Japs were selected for size and quality from production beds at Saratoga by E. J. Eliason, at a level of 1:10,000. The best tree is 7,5" x 39' at 15 years on a difficult site. This was the first deliberate attempt in New York to produce a super-Dunkeld hybrid from selected parents--in this case, between carefully selected Japs and the thinned stand of No. 28,

In a quick turn around the House Lot, we observed three more E-207 Dunkelds, 30 years planted:

EASTER, 13.6" x 65', a consistent and prolific seeder, producing excellent seedlings (12,750 2-0s in 1965),
APPLESIDE, 15 4" x 72, a magnificent tree but a light seeder,
GIANT in 10-B, 16.2" x 65', a massive, heavy-crowned tree growing among poor white spruce.

On the north edge of Japanese larch No. 20, P-1936, stands EDGER 20 WEST, 14.0" x 65' at 30 years, the seed parent of hybrid larch No. 40. Cones have been collected from at least two other fine Japs in No, 20 in the hope that they, too, might yield F1 progeny.

At the edge of the meadow stands the VOLUNTEER, a self-sown seedling, apparently pure European and presumed to be from No. 1, 5.0" x 33' at 12 years <u>from seed.</u> In 1964, a modest showing of cones yielded ounce of seed (SL X-173); the current crop promises well, As previously indicated, this tree had a 1960 increment of 56.5 inches.

In the Burying Ground is a hand-pollinated F1 hybrid, LARSEN'S OWN, from seed sent me by Dr. Carl Syrach Larsen of Denmark, 6.2" x 32' at 12 years in spite of tip injury; and three Dahurians, courtesy of Dr. J. W. Wright, the biggest of which is 27 feet tall at 12 years.

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A bountiful lunch, topped off with apple pie and cheese, was served by the Ladies Aid Society of the Federated Church of Stephentown.

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Back at Cooxrox, we assembled at the entrance to our private Blueberry Road, At the south corner is a slender, thin-foliaged Siberian larch, P-1957, from Krasnoyarsk, at 57° N- Because of its inherent adjustment to a longer summer day and to a shorter growing season, this tree stops elongation and forms a terminal bud about July 15, whereas Japs and Europeans from lower latitudes continue to grow past September

At the far edge of the spruce, on the south, is a single selected Polish larch out of SL X-9, P-1959, which well illustrates the slender stem, upturned branching and thin foliage of this race of Larix decidua From what we have seen at Cooxrox, this race is susceptible to damage by snow-bending, Chermes, sawfly and porcupine.

Beyond is a little planting of Dahurian larch (No. 22, P-1937) from seed out of Harbin, Manchuria. It is a moderately vigorous species, stiff-stemmed against snow-bending, with an unusual red, plated bark,

On the north is hybrid larch No 37, P-1954; part F_1, part F_2, both lots from Robert F. Wood of the British Forestry Commission staff, This planting is on well-watered but very rocky soil, which was clear-cut from a stand of soft maple-grey birch of pulpwood quality The larch already dominates the site, There was a scattering of cones in 1963 (10 years planted) and a considerable crop in 1964: Prospects for 1965 are good, provided the squirrels let them alone. The best tree is the BEDGEBURY GIANT, 6,4" x 40' after 12 years.

Beyond No, 37 is our newest conversion--hybrid larch No, 47, P-1965, open-pollinated progeny of that fine E-207 Dunkeld ; the GIANT in 19; and therefore presumed to be F4: A rough stand of maple and birch was clear-cut last fall, the brush windrowed, 2-0 seedlings planted this spring at 6 x 10 feet. Despite a very dry summer, survival is still above 90 percent, The biggest tree--4752--was 30 inches tall in August, ultimately grew to 45 inches, This shows the speed with which the best seedlings get up out of the herb-&-fern stratum, begin their rapid push to dominance.

Further down, on the left, we saw hybrid larch No. 46, P-1963, and Japanese larch No 45, P-1961, both held back by a patchy hardwood overstory. At the bend in the road there was a chance to compare well-grown Adirondack balsam (No.. 17, P-1933) with younger Jap larch (Nor 23, P-1937)--8" x 50' against 12" x 65'.

Here we cut to the right into larch No. 34, P-1950; alternate rows of Japanese (SL 273) and European (SL 252) larch, the latter probably of high Alpine origin. The Japs are good, vigorous trees with a survival of 90 percent, the best being 7"x 45'. The Europeans are mostly spindly, feeble, declining trees, the biggest being only 3" x 25'; survival was poor, perhaps 40 percent,

Then we viewed the east end of larch No. 23, P-1937; part Japanese (SL 42), part European (SL 40) from the Dolomite Alps, part Sudeten European (SL 22), growing together on very rocky ground. The Japs are fine, big trees, the best being in the 13" x 70' class; the Sudetens almost as good, the Dolomites rough, unthrifty, much squirrel-cut, the best only 8" x 50'; all at 29 years.

Plantations No, 34 and No. 23 (and also No. 35, not seen) are striking examples of the difference in growing capacity between superior trees of suitable origin, and trees that do not fit the site, for whatever reason.

The climax of the tour was Dunkeld larch No. 19, P-1936 (actually November 9, 1935), a very fine stand of SL E-207 and our only pure planting of that seed lot: It contains a number of spectacularly good stems, perhaps the best being the GIANT in 19 (photo p. 8), 14.4 x 76' at 30 years, and the seed parent of our new Plantation No, 47. Other high diameters run to 13".

And, as the group sat there amid the tall, clean boles of these beautiful hybrid larches, our tour was brought to a fitting close by some well-timed words of wisdom and caution from Ernie Schreiner, about what we can reasonably expect from genetic gain in forest tree breeding.