

Society of Irish Foresters Annual Study Tour – The Czech Republic, 20-27 September, 1997

Introduction

On Saturday, 20 September 1997, 34 members of the Society of Irish Foresters set off bright and early for the Czech Republic. This was the Society's second sojourn to eastern Europe, having visited Poland in 1995.

The group were the guests of the Czech Forest Service for the week, with internal arrangements by Dr John Cross. The leader/interpreter for the tour was Petra Ziegrosserová, who did an excellent job in explaining all forestry systems encountered. For one day, the Society were guests of the Mendel University of Agriculture and Forestry at Brno, the country's second largest city.

The Czech Republic was part of Czechoslovakia for a mere 74 years when it officially split with the Slovak Republic in January 1993. The country comprises the ancient territories of Bohemia and Moravia and had been for many years under the sway of its close neighbours, Austria and Germany.

The Czech Republic is approximately the size of the island of Ireland and has a population of 10.5 million people. Its largest city, Prague, has a population of 1.2 million. Forests covers 33% of the land area, the main species being Norway spruce (60%). In natural forest areas, species composition differs, with conifers accounting for 35% and the remainder comprising broadleaves. There is pressure on the Forest Service to reduce the area under spruce and to increase broadleaf planting. Throughout the tour, participants were greatly impressed with the quality of the stands and the excellent silviculture employed.

John Mc Loughlin
Tour Convenor

Saturday, 20 September

Leaving the damp overcast conditions of Dublin behind us, we flew *via* London into the Czech capital of Prague, to be greeted by fine sunshine. Unfortunately, there wasn't much sunshine for six members of the group, whose luggage failed to arrive. Thankfully, the missing items turned up a day or so later!

We were met at the airport by representatives of the Travel Agency Lesser, before being transported to Hotel Aron on the east side of Prague. Checking-in completed, the remainder of the afternoon was free to 'explore'.

Sunday, 21 September

The morning dawned bright and sunny with a glorious day to follow. In fact, we were to have magnificent weather all week. After breakfast, time was our own, during which this writer set off to sample the extensive transport system of which Prague boasts. What became known as the '10 penny ticket' gave great value on the bus, metro and tram. The latter was a most enjoyable method of getting around. One can only imagine the benefits to Dublin if the city still had its trams!

Following lunch, we left by bus to the city centre for an afternoon's guided sightseeing

tour. Known as 'The City of a Hundred Towers and Steeples', Prague has kept its extraordinarily rich heritage of historic buildings and townscape intact like no other European capital. Even the ravages of the second world war left the physical fabric of Prague largely untouched, as few bombs fell on the city. Our walking tour brought us by the Castle, across the Charles Bridge and into the Old City, with beautiful buildings at every turn. It was a fascinating tour. The few hours provided a real eye-opener, leaving many of us with a wish to return again at some future date.

Back at our hotel in the late afternoon, we were introduced to our guide and interpreter for the week, Petra Ziegrosserová of the Lesy České Republiky (LCR) - the Czech Forest Service. Petra joined us at Stary vrch, a farm just outside Prague, for an evening spent sampling authentic Czech, Moravian and Slovak culture, including food, drink, music and dancing – a lively affair!

Monday, 22 September

Another grand bright morning, with a touch of frost in the air. After breakfast, we set off north-west from Prague for Jirkov in Northern Bohemia, bordering Germany. This is an area of rich agriculture, producing crops such as sunflower, corn, cereals and hops. The fields were extensive and without hedgerows. Nearer the German border, low grade coal is mined, large quantities of which are burnt to generate electricity. The resulting smoke emissions have given rise to serious air pollution. Petra pointed out the distinctive gray horizons in the sky which are typical of the atmospheric impurities. Over the years, the affects on forests have been startling, as would become apparent later in the day.

During our journey, Petra gave us some basic facts about forestry in the Czech Republic. Approximately 33% of the country is under forestry, amounting to about 2.6 million ha. Norway spruce represents 60% of the forest resource, with the remainder including Scots pine, fir, larch, beech and oak.

Some 2 hours after leaving Prague, we arrived at the sawmill at Jirkov to be welcomed by the Director and Executive Director of this shareholder company. The sawmill, which employs 90 workers, utilises approximately 70,000 m³ of round timber annually, including spruce, fir and pine, with the raw material drawn by rail from an average transport distance of 250 km. The method of selling timber in the Czech Republic is that organisations buy standing trees from the Forest Service. After harvesting, these organisations in turn sell the logs to the mills. Yearly turnover is approximately 110 million Czech Crowns (IR£2.3 million), and roughly 70% of the sawn produce is exported to Germany as boards, flooring and pallets. Recovery rates at the mill average 56%, with the remainder made up of sawdust, chips and bark. The latter is used in compost and is also compressed into briquettes for the domestic market. The mill suffered a major fire in 1984, after which some reconstruction began, including the installation of some new machinery.

Logs arriving off rail wagons are sorted into 4, 5 and 6 m lengths. The supply of timber is scarce, due to a variety of reasons including poor growth and recent flooding in catchment areas. As a result, very little raw material is stock-piled in the yard. The whole complex had a very dreary and shabby look, and but for the sunshine, it would have been a rather dismal visit. Matters relating to safety seemed to take second place. Several of us watching the de-barker in action were horrified to witness a log being flung up and out of the machine, with its flight path intercepted by a pillar supporting the roof. But for this obstacle, the tour list could have been down a few participants!



Instruction in Czech forestry by tour guide and interpreter, Petra Ziegrosserová, and other members of the Lesy České Republiky (Photo: J. Mc Loughlin).

Thus ended our tour of the Jirkov Sawmill. The Chairperson duly expressed a word of thanks to both mill representatives for showing the group around the facility. With that, it was back on the bus for the short distance to LS Janov. A picnic lunch was enjoyed in the warm sunshine before we sat down to a briefing in the local district forest office. Executive Director of LCR, Bretislav Jakubec, bid us a warm welcome to his district and wished the group a happy stay in the Czech Republic. Mr Jakubec and his assistants then proceeded to give us some background information on their area. Covering almost 10,000 ha, it is divided into eight working areas. The annual cut is 11,000 m³, with reforestation on clearcut sites of between 170-190 ha/year. Much of the work is carried out on contract. For environmental reasons, the future trend will be towards natural regeneration. Since the 1960s, air pollution has caused problems in forest crops. Added to this, storm damage in 1976 and frequent outbreaks of bark beetle make for difficult management of the area. Hospitality was extended to the group by way of coffee - boy, was it strong! Mr Jakubec presented the Society with a print, for which our Chairperson thanked him most sincerely. The remainder of the afternoon was spent in the field at a number of stops.

Stop 1: Norway spruce blown in 1976. Cleared of all timber, the area was rapidly colonised by naturally regenerated birch. In 1988, 20 m strips were cut through this cover at regular intervals, and were subsequently ploughed and planted with beech (10,000 plants/ha), larch and Douglas fir (5,000 plants/ha). Birch timber was sold and exported to Sweden as firewood.

Stop 2: A brief halt to see where the remaining birch strips had been thinned out and underplanted with beech.

Stop 3: A strip cleared of birch and recently planted with larch, spruce and fir, thus ensur-

ing a good species diversity. Wonderful sunshine, no wind, a wonderful day to be out.

Stop 4: Dealing with air pollution. Extensive area of Norway spruce killed. Timber removed, limed and planted with larch and blue spruce, both species, along with broadleaves, being less prone to air pollution. In the distance, the group could see smoke rising from one of the power stations. Filters are now being installed to reduce emissions.

Stop 5: One of the few remaining original spruce stands to have survived atmospheric pollution. The severe winter of 1995-96, however, caused mortality. Dead trees were removed and the area was subsequently underplanted with beech, fir and Scots pine. Again, lime was added to the soil. Measures are required to minimise deer damage, with a deterrent paste applied to a number of stumps throughout the area.

All too soon, it was time for us to begin the journey back to Prague. Our Chairperson thanked all concerned for providing such an interesting afternoon, commenting on how we in Ireland are most fortunate to have some of the healthiest forests in Europe. We arrived back in Prague not long after sunset, thus ending a most enjoyable day.

Richard D. Jack

Tuesday, 23 September

We departed from Hotel Aron and headed south from Prague into southern Bohemia. Our programme for the day included a visit to a forest tree nursery at Olesná followed by a trip to Nové Hradky Forest in the District of Ceske Budejovice. We crossed the Vltava River at Prague and joined Route 4 heading south-west to Pribram, 50 km away. In the last century, Pribram was a mining town producing silver and lead. Passing Pribram, we veered south towards Pisek, which, we were informed, has the oldest standing stone bridge in central Europe. After a short stop, we continued eastward for about 10 km, crossing over the Vltava River once again before arriving at Olesná.

The forest tree nursery at Olesná is a shareholders' company. It is funded primarily by investors, none of whom are from the forestry sector, with some additional funding for specialised work provided by the Ministry of Agriculture. Four main areas of business are pursued at the nursery:-

Production of plants for commercial use: Plants are produced from both seed and cuttings. The nursery supplies 1.5 million transplants and approximately 500,000 plants from cuttings each year, the latter taking 2-4 years to produce before being ready for sale. This activity accounts for 40% of the enterprise's income. The use of vegetative propagation to produce conifers was well illustrated during a visit to the section of the nursery given over to transplant lines. We were shown 2+1 transplants produced from cuttings taken from trees in the Krusne Hory Forest which we had visited the previous day. Due to severe pollution in the forest, no seed has been produced for many years. Using vegetative propagation, however, it was possible to produce plants specifically for the site.

Production of bare-root and potted plants for the gardening, parks and landscape markets: The nursery produces around 65 different varieties of broadleaves and conifers, providing the overall enterprise with 30% of its revenue.

Landscape design and landscaping: The nursery provides landscaping services anywhere up to 300 km away. As well as providing its own plants, the nursery imports 'standards' from Holland. These activities account for 30% of the nursery's income.

Micropropagation of woodland trees from shoot tips (in-vitro propagation) for commer-

cial planting: The complex of buildings where *in-vitro* reproduction is carried out includes a laboratory completed in 1996, and a high-tech glasshouse completed in 1997 which is used to condition plants. To date, production of planting stock has concentrated on wild cherry, pedunculate oak and lime, although work has recently commenced with beech. Micropropagation is expensive and has to be subsidised by the other three businesses carried out at the nursery, with some funding from the Ministry of Agriculture. The manager is, however, optimistic that this system will eventually become profitable.

Modern equipment is evident throughout the nursery, from the *in-vitro* laboratories to the computerised irrigation systems in the glasshouses used for developing cuttings and cloned material. Herbicides are also used but there is still a considerable amount of manual weeding carried out. Overall plant quality was good, despite the wet and cold summers which adversely affect conifer seedlings.

From the nursery at Olesná, we continued on our journey heading south-east for approximately 100 km *via* Pisek and Ceske Budejovice to our next stop at Nové Hradý on the Czech/Austrian border. The district of Ceske Budejovice covers 162,000 ha, of which 52,000 ha (32%) is afforested. Conifer species account for approximately 85% of the forest cover.

Nové Hradý has a forest area of 1,500 ha comprising 60% broadleaves (70% beech, 25% oak and 5% lime and horse chestnut) and 40% conifers (spruce, pine and white fir). Also present are approximately 120 red deer, with some wild boar and roe deer.

In its simplest terms, the principle of forest management in this area is to grow beech on a 140-year rotation and Norway spruce on a 120-year rotation, using natural regeneration, while at the same time, managing the deer herd to provide hunting revenue. Throughout the afternoon, we were given a brief outline of the steps involved in the beech cycle. Gradual reduction of the beech commences at year 20. Every 12-15 years after that, selective thinnings are carried out to remove poorer quality stems. This process continues up to year 100, when the process of natural regeneration begins. The ground is lightly scarified prior to mast drop, with mast years occurring every 4 years. Seeds are left to germinate, and when the resulting seedlings reach a height of approximately 2 m, the felling of the mature trees commences. Trees are usually felled in groups 30 m wide (equivalent to the height of a mature tree). This process continues until a complete understorey is in place.

In tandem with that of the forest, the deer population is also managed. A variety of protective measures are used to reduce deer damage, including the retention of small stems for fraying, protective netting around selected trees, salt licks to provide mineral supplements, and various chemical applications. These efforts are not always successful, as demonstrated by some of the damage observed. It is also expensive and we were informed that the revenue from timber sales did not pay for the protection required.

Each year around nine stags are culled, along with 10 young deer and 18 1-year olds. The hunting is leased, usually to Germans, who pay IR£5,500-6,000 per stag for the privilege.

Following a pleasant walk to the hunting lodge to view a collection of trophy heads, we began our final leg of the day. We passed numerous small man-made ponds and lakes which contain many species of fish, most notably carp, which forms the basis of the traditional Christmas meal. We headed back through Ceske Budejovice, stopping briefly at the town square, and then west for 40 km to the town of Prachatice.

Richard Clear



Tour participants, Liam O'Flanagan
and Pat O'Sullivan
(Photo: J. Mc Loughlin).

Wednesday, 24 September

Departed Prachatice for the National Forestry Museum Ohrada near Hluboká nad Vltavou. The museum contains a wide range of exhibitions demonstrating the multi-faceted history of forestry in the Czech Republic, and its integration with non-wood enterprises such as game management and wildlife and other associated activities such as charcoal production, bee-keeping and musical instrument making. While the overall atmosphere of the museum was drab and dusty, the sheer quantity and diversity of exhibits (over 200,000, according to the equally drab catalogue) made it a worthwhile visit. Wildlife dominates the museum. In addition to numerous exhibits of animal life, the furniture in the museum's main hall is made entirely from deer antlers. The invalid gamekeeper Klenovic spent over 36 years designing and constructing the suite in the 18th century.

Although undated, the catalogue brings the story of the museum up to the height of the communist era in the mid-1970s. It makes interesting reading which reflects communist thinking at the time. For example, the collection of poachers' weapons is, according to the catalogue, a reminder "of the time when social conflicts existed in capitalist game management".

The next stop was Furniture Cooperatie Dobrá Voda – a furniture factory at Ledenice. The factory manufactures flat-pack furniture mainly for the export market. Over 80% of its output is purchased by the Swedish group, IKEA, with the remainder earmarked for UK's Habitat and the domestic market. The products include kitchen presses, living room furniture and computer desks made from a veneered chipboard. The factory occasionally produces furniture specifically for the domestic market, although this line was not in operation during our visit. The total turnover at the factory, which employs 90 workers, is in excess of IR£1.0 million. Most of the work, such as veneering, sanding and cutting, has a high manual input. The factory is run on a co-operative basis, with its average weekly wage of IR£40 being 30% higher than that for forest or sawmill workers.

After sampling their finished product in the company's local furniture store, the group drove west out of South Bohemia and on to the beautiful town of Telc in South Moravia. Telc was rebuilt in the 16th century after a major fire destroyed its wooden Gothic buildings. The group was treated to a guided tour of the Chateau, but the real beauty of Telc lies in its huge cobbled stone square surrounded by Renaissance arcades and lined with pastel

coloured houses, all over 300 years old. Some of the group joined an excellent guided tour of the square, while others simply sampled the unique architectural atmosphere and the excellent local beer before returning to the bus for the short journey to the Hotel Pod Kastany.

Donal Magner

Thursday, 25 September

We departed from Telc for Mor Budejovice, where we visited a private forest estate as the guests of Mrs Petrová and her daughter, the forest manager. Mrs Petrová informed us that her father had purchased the 280 ha estate in 1938, only to have had it taken away from the family in 1948. In 1991, ownership was returned to Mrs Petrová, who, with her husband, commenced management on 1 January 1992.

Government regulations specify that if a forest manager has no formal forestry training, a trained forest manager must oversee and guide the various forest operations undertaken. This function is carried out on the estate by Mr Dobesjri.

Mr Dobesjri explained that the forest estate was in poor condition upon its return to the Petrová family in 1991. Additional problems arose in 1993 in the form of storms which caused windbreak damage to 5,000 m³ of a conifer plantation. Following this, the forest suffered an outbreak of bark beetle which resulted in the loss of a further 5,000 m³. It is now planned to reforest 30 ha. As grants from the government are inadequate to compensate for these losses, the shortfall will be funded by the owner. This work will be carried out by two permanent staff and seasonal workers employed on the estate.

The area, with an elevation of 400 m above sea level, is located in the south of the Czech Republic. The rainfall is low at 400 mm/year. As rainfall fell to 350 mm/year during 1993 and 1994, it is thought that there is a connection between low rainfalls and bark beetle damage. Rainfall increased in 1995 and 1996 and no bark beetle damage was noticed in those years.

In the afternoon, we traveled to LS Zidlochovice where we were introduced to Mr Necas and Mr Policansky of the LCR. At this point we were treated to a traditional outdoor lunch, with beer, by the Forest Service. Hardened veterans of the Polish tour refused the sausages on sticks – bitter memories! LS Zidlochovice is a natural oak woodland area drained by the River Moravia. Thirty percent of the woodland of the Czech Republic is found in this region. It is 160 m above sea level, with rainfall of 500-550 mm/year falling mainly between April and September. The level of rainfall in the vegetative period has fallen in recent years, and the water level has dropped by 1.5 m over the last 30 years. The stocking rate is approximately 300 m³/ha, with no natural regeneration.

As we travelled through the area, we saw the damage to crops and fodder caused by the severe floods which took place earlier in the summer, making world headlines. Floods are expected every 10 years, following long periods of rainfall in areas further north which cause rivers to overflow their banks. In the past, floods have been channeled into the forests to save villages.

The group observed oil wells in the forest which have been in production for 60 years, yielding a good quality oil for use in the pharmaceutical industry.

We were shown a stand of 103-year oak grown on a 140-year rotation, with a dbh of 48 cm, a top height of 33 m and a stocking rate of 447 m³/ha. There was evidence of top die-back which was thought to be a consequence of the low water table.

We then moved to a 26-year stand of oak which had received its first thinning. Here,

we were introduced to Mr Vicha who informed us that the stand comprised 90% oak and 10% ash, with 400 stems/ha (8 m³/ha) having been removed. At this stage, white bands had been placed on final crop trees. Dense undergrowth is encouraged to prevent the emergence of epicormic shoots. The area, originally planted at 10,000 plants/ha, will be thinned again in 5-7 years time.

At the next stop, we saw a 2.16 ha area of 14-year oak, with sugar beet and corn planted between the rows to help keep weeds at bay. The area was planted at the rate of 19,000 plants/ha. Approximately 9,700 stems/ha were left after the first thinning, with a further two thinnings due before the crop reaches 25 years.

Both this and the previous area had been under water for 2 months during the summer. None of the sites were showing any ill effects. Foliage was a deep green and showed no sign of colour change at this late September stage. The idea of flooding the areas periodically as a way of assisting growth is currently under consideration. It is planned to allow in the water in spring and then to release it slowly.

Finally, we saw an area where acorns were machine-sown 15 cm apart. It is an experimental planting site and as before, had been under water earlier in the year.

This stop concluded the tour for the day, during which we saw unique silvicultural practices matched with the unusual prevailing climatic and soil conditions.

Frank Nugent



Outdoor hospitality, Czech style (Photo: J. Mc Loughlin).

Friday, 26 September

We left the Hotel Moravia in the town of Boskovice, located approximately 43 km north of Brno. All was quiet on the bus, with fatigue beginning to beset our minds and bodies after 4 successive days on the road. Having travelled west for about 3 km, we made the connection with the E461 and thereafter headed directly south for Brno. The journey lasted a little over an hour, with much of the route lined with spectacular Norway spruce and Scots pine woodlands, terraced vineyards and rich farmland, all bordering the southern portion of the Draheny Highlands.

I was apprehensive about our impending visit to the Mendel University of Agriculture and Forestry, Brno, with visions of boredom looming. It was therefore a pleasant surprise to be greeted by the cheerful and upbeat Tomas Parik, our leader for the morning. This welcome was the beginning of a day which, for all of us, was destined to become the highlight of the tour.

Established in 1919, the university is the oldest University of Agriculture in the Czech Republic. It provides bachelor, graduate, postgraduate and continuous education in agricultural, biological, horticultural, economic and forest sciences. It comprises four faculties - agronomy, horticulture, economics and forestry and wood technology.

Within the Faculty of Forestry and Wood Technology, 16 separate departments provide a broad spectrum of forestry subjects and courses. Students have the option of a 5-year Graduate Engineering programme or a 3-year Bachelor Studies programme. Each programme operates on a semester system, no credits, all exams.

Within the Graduate Engineering programme, students can select either forest or wood engineering, depending on their desired choice of profession. The first specialises in forest management and administration, preparing students for managerial positions in forest administration, nursery companies, protected nature reserves and in commercial, state and private companies. The second specialises in wood technology and manufacturing, allowing students to qualify for work in the wood and forest industries such as commercial production companies in the wood, furniture and joinery sectors.

Students opting for the Bachelor Studies programmes can again specialise in forest or wood engineering. There is, however, less emphasis on the sciences and a greater emphasis on the economic, administration and business activities in forestry and the wood processing industries.

Both streams offer a solid grounding in core subjects such as game management, environmental management and protection. This reflects the historic and deep-rooted traditions in forestry training and education in the Czech Republic, with current silvicultural management practices based upon game management principles dating back to the early 17th century. The emphasis on environmentally-friendly practices reflects the extend of current problems associated with air and water pollution in Central Europe.

There are approximately 600 students attending the various programmes at the university, with an estimated 80-100 due to qualify in 1998. As in Ireland, career opportunities for forestry graduates in the Czech Republic are limited and are largely confined to private sector forestry and the wood processing industry.

We travelled north to the Masaryk Forest at Krtiny, managed by the Training Forest Enterprise (TFE) and utilised by the university for practical training in all forestry disciplines. Masaryk Forest forms a continuous complex of forests to the north of Brno covering 10,500 ha, including 840 ha declared as nature reserves. The forest, which comprises diverse site and stand conditions managed to unchanged principles for approximately 100 years, is ideally suited as a facility for education and research by students and faculty staff alike, and also provides for normal commercial forest production. During the afternoon, the group made a number of stops throughout the forest.

Forest Arboretum and Recreational Park at Ricimanice: Long-term analysis by the TFE indicate that its forests are visited annually by a large numbers of Brno inhabitants. Here at Ricimanice, various measures have been undertaken to enhance the multi-functional role of the forest. These measures include the creation of forest meadows and glades, and the construction of forest lakes, wells and view-points on higher elevations. An extensive range of exotic species have also been introduced for aesthetic purposes. The area includes

a collection of memorials celebrating various aspects of trees and forest culture. Entrance to the park is free, with its development and up-keep funded by TFE and the Mendel University.

Technological developments in logging operations: As part of their research into environmentally-friendly logging and reforestation technologies, TFE engineers are engaged in the development of machinery for sale to the state and private forest sectors. One such machine is the Larix 550 Cable System, a new type of middle line and middle loading cableway suitable for low harvesting volumes. The unit operates from a tractor PTO shaft and can be used as an endless or main line system. The group observed a demonstration of the unit in a beech stand located on a steep slope, which was being selectively thinned for seed regeneration. Haulage distance to the road was set at maximum capacity (550 m) and output rate achieved was stated to be approximately 70 m³/day. Extraction cost was estimated at between IR£8-22/m³ to roadside. Machine set-up time by a 3-person crew over the maximum yarding distance is normally 5-8 hours. Maximum loading capacity is 2 tonnes, with a maximum carriage speed of 2.2 m/sec. In addition to extraction from main haul lines, logs can also be pulled into the main line up to a distance of 70 m on either side, making the system ideal for selection felling of mature stems. In subsequent discussion with TFE personnel, it was highlighted that the extraction costs were considered to be excessive by Irish standards. It was, however, pointed out that the remit of the TFE was to research, develop and demonstrate logging technologies allowing the management and harvesting of stands in an environmentally-friendly manner. The use of cable systems afforded the minimum of damage to ground surfaces and remaining trees. Furthermore, it is common practice in the Czech Republic to pay the contract logging companies a higher price to extract timber on difficult sites and in stands where the volume removed is low. The Larix 550 therefore enables forest owners to achieve higher prices for timber sold on roadside, as opposed to standing sale to a contract company.

Beech management – natural regeneration by shelterwood felling: Beech is one of the major commercial species in the Czech Republic, and its importance is set to increase with the growing emphasis on the gradual replacement of conifers with natural stand species. Beech stands account for over 27% of the total area of Masaryk Forest. The TFE has a long tradition in the finer methods of forest management, including shelterwood regeneration and the application of continuous selection management principles. Within the forest, beech stands are subjected to a 130-year rotation, with measures designed to facilitate natural seeding introduced at 100 years. These include group and border shelterwood felling against the prevailing wind, with the retention of a small number of good quality trees for seeding purposes. At year 60, individual sub-dominant trees are released *via* the selection of strong individuals displaying poor quality stems and/or poor crown structure, with the resulting increase in diameter growth compensating for losses associated with the removal of the larger diameter trees. After this treatment, the stand appears ‘younger’, with its canopy restored to a compact layer. This method of selection encourages an even, more open canopy from the middle age of the stand onward, providing the ideal basis for future natural regeneration. This method of management has been used with great success, with an average stem volume between years 116-126 in excess of 2 m³, and a volume/ha of 333-368 m³.

Regeneration of Norway spruce stands: Norway spruce is the second most important commercial species in the Masaryk Forest, occupying 25.7% of the total area. The species occurs both in mixed stands and in pure blocks. Our excursion itinerary included visits to stands which were regenerated on the shelterwood felling system and the continuous

selection (Wagner's 'Blendersaumschlag') system, the latter based on the harvesting of trees which have reached their MMAI and are of exploitable diameter.

Following a summary and discussions on the day's itinerary, our Chairperson thanked Mr Truhlar and his staff for extending their vast wealth of knowledge and experience in the finer methods of forest management. After making our farewells, we reluctantly boarded the bus and began the first stage of our journey back to Prague. We were indeed reluctant to leave, as we all felt that the day's proceedings represented a most fitting culmination to our tour. It enabled us not only to put into perspective all the traditions and management systems encountered during the week, but also created a desire to return to the TFE at some future date in order to learn more about the finer aspects of environmentally-friendly forestry practices.

Eamon Larkin

Tour Participants

Richard Clear
Tadgh Collins
Jim Crowley
Dermot Cuniffe
Gerry Dolan
Jack Durand
Charles Farmer
John Fennessy
Jerry Fleming
Brigid Flynn
Gerhardt Gallagher
Tony Gallinagh
John Gault
George Hipwell
Richard Jack
Eamon Larkin
Donal Magner

Tony Mannion
Kevin Mc Donald
Patrick McCloskey
Tom McDonald
James McHugh
John Mc Loughlin
Brian Monaghan
Frank Nugent
Michael O'Brien
Liam O'Flanagan
Mairtin O'Neachtain
Tim O'Regan
Pat O'Sullivan
Denis O'Sullivan
Thomas Purcell
Joe Treacy
Arie van der Wel