

## The VIth International Poplar Congress.

Report by NIALL MORRIS

THE IXth Meeting of the International Poplar Commission and the coincident Congress, held in Paris in April 1957, together with the Associated Study Tours in France, marked the culmination of a decade of endeavour and of steady progress by this subsidiary organisation of the F.A.O.

It was but fitting that France should have been the meeting place on that particular occasion because it was in France that the idea of having such a Commission first originated and it was following a meeting held in Paris in 1947 and at which the representatives of nine nations attended, that the International Commission was established. For a time the headquarters of the Organisation was in Paris but later it was transferred to the F.A.O. headquarters in Rome.

### *The Congress.*

The IXth meeting of the International Commission and the VIth International Congress were in effect the same meeting which differed from the normal annual meetings of the Commission through the presence there of representatives of non-member nations.

Held at the Palais d'Orsay, Paris the Congress took place over the course of four days. Some one hundred and thirty delegates, representative of twenty-eight countries, including Ireland, were present.

Apart from organisational matters which were dealt with the greater part of the time was occupied with the reports of the activities of the National Commissions, and of the specialised working parties established by the Commission. These reports presented a wealth of information on almost every aspect of the poplar industry. Though not always conclusive in their findings, they evinced a high degree of determination to grapple with difficulties and from the accounts of the advances achieved to date it seems evident that outstanding progress can confidently be expected in the future.

From the reports the following items have been selected.

### *National Poplar Commissions.*

The nature and composition of the National Poplar Commissions generally may be gauged from the example of the Belgian Commission. It is composed of fifteen members including representative of the Ministry of Agriculture, the Poplar growers, the Poplar timber users, the Nurserymen, the Research Institutes and the Government, Water and Forest Services.

† *Clone Study.*

In Belgium the officially approved and most widely planted poplars are the Euramerican hybrids "robusta," "serotina," "serotina erecta," "gelrica" and "marilandica." The study of a large number of other potentially interesting and useful clones is also being carried out. As an aid to this study selected growers in various parts of the country are given free supplies of cuttings belonging to the clones being studied. The only condition attaching to acceptance of the cuttings is that free access to the resulting trees is thereby granted to members of the National Commission. Thus the Commission has the advantage of being able to carry out its investigations at a minimum of cost.

*The Poplar Industry in the Netherlands.*

In Holland the annual consumption of poplar timber totals 3,300,000 cu. ft. (Hoppus), as follows:—Clog-making, 59%; matches, 19%; plywood and veneers, 10%; packing timber, 9% and paper and pulp, 3%. Because of the premium prices paid for match and veneer quality timber the prices for poplar in general tend to render clog-making less profitable than formerly and as an industry it tends to decline. In the match making industry all the commonly grown poplars are used, but there is a preference for "marilandica". In the box-making industry poplar is considered preferable to spruce—especially where food or fruit containers are concerned.

*Poplars Versus Grass Production.*

The great majority of Dutch poplars are grown along roads, streams and in boundary plantations. The effects of such trees on the grass production of adjoining lands is a matter of considerable importance. With a view to ascertaining the facts involved the National Poplar Commission conducted an investigation. A series of 43 trials were made and it was found that pasture within twenty metres of the trees showed a reduction in both the quality and the quantity of the grass produced by comparison with corresponding areas outside the deleterious influence of the trees. In ordinary circumstances the production of the 20 metre belts showed a grass output reduction of 23%. When additional artificials were applied this was improved to a 15% reduction. Where drains were cut, separating the poplar from the fields the difference in grass output was reduced to 9% when normal artificial dressings were applied; when in addition to the drains, extra artificials were also applied to the 20 metre strips their grass production was not reduced at all.

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† A Clone is the term used to designate a group of plants, no matter how large, produced by the vegetative propagation of a single plant.

### *Underplanting of Poplar.*

This question is the subject of study in many countries. In Germany especially it is considered important that underplanting should be carried out. The problem as to which are the best trees or shrubs with which to underplant is not readily solved however. In Britain, Holland and several other countries trials are in progress. In Holland it has been found that the presence of willow in the understory can have a serious effect in reducing the increment of the poplar crop.

### *Propaganda.*

In most of the National Commission reports details of propaganda campaigns aimed at increasing the growing of more and better poplars were given. In Holland a series of radio broadcasts on the subject of poplars was given. In Spain and Germany special films were made and distributed widely. In Germany also, a "Poplar Calendar" was published in 1957 and ran to two editions. In most countries the more fundamental propaganda of ensuring the provision of good advice and of adequate supplies of good quality plants to poplar growers was not being overlooked. In many countries a steady flow of scientific, technical and popular publications relating to poplar is being maintained. In consequence of such encouragement poplar growing is on the increase. In Italy, for example, where Black Poplars and their hybrids are those most frequently grown, and on a rotation averaging about thirteen years, the area of land under poplars increased by more than 10%, or some 385,000 acres, in the two years from 1954 to 1956.

### *Poplar Research and Development in Great Britain.*

In Britain this work is one of the responsibilities of the Forestry Commission which serves as Britain's National Poplar Commission. Poplar growing is encouraged by the Commission through grants made to those who plant a minimum of two acres with poplars, or who plant a minimum of two hundred such trees. The trees approved for planting are *Populus berolinensis*, *P. canescens*, *P. deltoides-missouriensis*, and the Euramerican hybrids "robusta," "serotina," "gelrica," and "eugenei."

The Forestry Commission Authorities consider that the Balsam Poplar hybrids would prove very useful in Britain were they not so generally susceptible to that most serious of poplar pathogens there, the Bacterial Canker. These trees are held to be better adapted to cool and humid conditions than are the Black poplars. Great hopes are therefore being reposed in two Balsam hybrids—*P. tacamahaca* × *trichocarpa* 32 and 37—which have in recent times been found to exhibit exceptional resistance to the disease.

In Sweden the breeding of new poplar hybrids—those of the Leuce section in particular—is being carried on. Specimens of an interesting

hybrid—*Populus tremula* x *tremuloides* have grown thirty feet in height in eight years and have yielded a Mean Annual Increment of 86 cu. ft. (Hoppus) per acre over the same short term.

Amongst the Black Poplars a remarkable female tree, found in mixture with commercial "robusta" and now named "Clone No. 25" has surpassed all others under trial—including "robusta," "gelrica," "serotina," "regenerata," and several Italian hybrids. At Ekebo in southern Sweden it reached a height of 67 ft., after 17 years, when it had attained a breast height diameter of 20 inches and a stem volume of 55 cu. ft. (Hoppus).

From *Austria* it was reported that in the inner Alpine valleys Aspen and White poplar are extensively grown. They are often produced and propagated vegetatively in those regions, by means of root-suckers and vertically set root-cuttings.

In those mountainous regions also, a new hybrid produced through a back-cross of one of the Euramerican hybrids with *P. nigra* L., has been found of considerable value. In some places it has been found to grow satisfactorily at elevations up to 2,000 ft.

#### *The Diseases of Poplar.*

Though in Britain and Northern Europe generally Bacterial Canker appears to be the most serious disease affecting poplar, it is the onslaughts of the fungus *Dothichiza populea* which are causing the greatest concern to continental growers in general. From Germany, for example, it was reported that approximately 15% of the poplars in the nurseries were affected by the disease and the estimated losses in plantations ranged from 10 to 12%.

The International Commission has been paying special attention to this problem of *Dothichiza* and a great deal of information concerning it has been assembled. A special working party has been established to conduct a further enquiry and it is hoped that as a result of its efforts and those of the National Commissions already studying this disease, that effective control will be found possible.

#### *Poplar Leaf Rusts.*

The increasing incidence of these diseases was mentioned in some of the reports. Though seldom fatal the rusts can cause serious loss of increment in poplars. The fungi *Melampsora allii populina* (with a member of the onion family as secondary host) and *Melampsora larici populina* Kleb (with larch as the secondary host) are amongst the principal pathogens involved.

Among the *Insect Pests of Poplar* the most troublesome appear to be the wood borers *Saperda carcharias* and the larva of the goat moth—

*Cossus cossus*. Trees attacked by these pests are greatly reduced in value.

*Poplar Identification and Nomenclature.*

Of the primary tasks which the International Poplar Commission set itself at its inception was the resolution of the extremely complicated and closely allied problems of poplar identification and nomenclature. A good measure of progress has been achieved but a great deal of work still remains to be done. The Commission has decided to act as a Registration Agency for poplars, in accordance with the International Code of Nomenclature of Cultivated Plants. During the course of the congress a definite step forward was taken when the first batch of some thirteen †Cultivars was approved for registration.

Painstaking work in poplar identification is being carried on by several national commissions. In Britain, for example, following the careful measurement of large numbers of their leaves it was found possible to prepare alignment charts which enabled the separation of *P. serotina* and *P. gelrica* on one hand and *P. robusta* and *P. deltoides* ss. *missouriensis* on the other.

*Statistical Methods in Poplar Experiments.*

In order that the results of experiments with poplar, as carried out by the various member countries of the International Commission, will be directly comparable with each other, an attempt has been made to arrange a generally acceptable code of measurements and general procedure. Following the issue of a questionnaire to all members, and the receipt of replies a working party was formed for the purpose of preparing the code which, it is hoped, will find general acceptance and be applied in field practice by all of the National Commissions.

*Willows.*

Following the meeting of the VIIIth Session of the International Commission held in Latin America in 1956, and the study of the growth of willows in the Parana delta of the Argentine it was decided that willows should thenceforth be included within the scope of the Commissions' interests. At the Paris Congress the question of willows was discussed further. While some delegates felt that the propagation of willows might also mean the propagation of the great array of insect and fungous pests to which the genus is said to be host, there was general agreement that further study of willows might be rewarding. This, it was suggested, would be particularly true of regions where soil and climatic conditions are not altogether ideal for poplars.

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† A "Cultivar" is a limited group of closely related Clones the individuals of which are similar in their appearance and reaction to environmental conditions.

*The Study Tours.*

The Study Tours which preceded and succeeded the Congress proved of very great interest from the point of view of the poplar industry. In addition they were otherwise enlightening and memorable experiences. Arranged with the utmost forethought by the French Poplar Commission they were carried through in a calmly efficient manner which did credit to all concerned. Planned to provide as comprehensive a survey of the many facets of the poplar industry in France as time would allow they proved highly successful. In addition they afforded delegates the opportunity of learning something, first-hand, of the natural beauty of rural France, of the relics of her glorious past, of the vigour of her modern industrial enterprise and above all of experiencing the kindly welcome and hospitality of her people.

*The Itinerary.*

The whole itinerary, including a day-long, yet interesting, train journey from Paris to Toulouse involved a total journey of some 1,800 to 2,000 miles. The principal centres of interest lay in the Middle and Lower Valleys of the Garonne, the Valley of the Seine and its tributaries, the Blois region of the Loire Valley and the Calvados region of Normandy.

*The French Forests.*

Before dealing with interesting matters which were studied in the course of the tours it might be useful to put things in proper perspective by giving some general data as to Forestry in France and the place of poplar in the French timber industry.

The total area of land classed as forest in France is 28,000,000 acres or 21% of the entire land surface. Of this, approximately 70% is under hardwoods such as oak and birch and 30% is under softwoods such as maritime pine, Scots pine and spruce. Of the total forest area poplar represents but 1.3%—a seemingly insignificant part. It is in its productivity however that the poplar displays its real importance. It represents no less than 21% of the total of national timber production, and of the hardwoods grown, it yields 57% of the industrial timber produced.

*Poplar Growing means Black Poplar Growing.*

In France as in Italy and indeed in most of those European countries where poplar culture is traditional, to speak of poplars is to mean Black Poplars. Aspen and White Poplars do occur but they are of relative inconsequence by comparison with the others.

As in other countries also poplar growing tends to concentrate in certain areas—by and large, in the alluvial valleys of the great rivers. In France some 50% of the poplars grown are to be found in the area known as the Paris Basin—the Valley of the Seine and its tributaries, 25% occur in the Valley of the Garonne and the balance is distributed in the valleys of the Loire, the Rhone and in other areas to the West and North.

*Uses of Poplar Timber.*

The wide use made of poplar timber is indicated by the following statistics supplied by the French National Poplar Commission. Some 55½ million hoppus feet of poplar are consumed annually by the French timber industry as follows :

|                                    |        |     |
|------------------------------------|--------|-----|
| Building and furnishing industries | ...    | 46% |
| Laths and panelling                | ... .. | 3%  |
| Box wood                           | ... .. | 17% |
| Light packing wood                 | ... .. | 20% |
| Cheese boxes                       | ... .. | 5%  |
| Plywood                            | ... .. | 7%  |
| Matches                            | ... .. | 2%  |



Cross-cutting of Poplar logs into billets for peeling, at cheese-box factory in Calvados.



*The Valley of the Garonne.*

In the Departments of Tarn et Garonne and Lot et Garonne poplar growing originated along the river margins as a means of bank fixation and as a general protection from floods. In this highly fertile region which has a local rainfall of but 25 inches per annum the restless Garonne regularly overflows its banks following the rapid melting of snows around its Pyrenean head streams or the occurrence of torrential rains in its upper valley. On occasions it rises as much as thirty feet above its normal level. It has therefore been necessary to build twenty foot retaining embankments, or *Mattes* as they are locally known, to prevent wholesale devastation. Outside these a mixed agriculture is carried on, tobacco, maize, vegetables, and a variety of fruits being grown—often interspersed between poplar groves. Between the banks and the river, poplar growing is extensively carried on and stock are grazed on the fertile meadows.

While in the older plantations of the valley trees such as *P. deltoides* cv. "Carolinensis," *P. nigra* cv. Blanc de Garonne, *P. nigra* cv. "Verte de Garonne" and *P. deltoides* cv. "Virginiana" still occur, in the younger plantations "robusta" and "regenerata" more generally occur. In recent times the Italian Clone "I. 214" has been introduced.

From the city of Toulouse the first tour was routed through the Lower Valley via Auvillar, Agen, Marmande and Cousson. From a parapet overlooking the river at Auvillar an example of the general pattern of poplar growing in the region was seen. At a low lying place between the *Matte* and the river near Cousson, a number of stands averaging 16 to 17 years of age were seen and in these Mean Annual Increments were found to vary from as low as 86 cu. ft. (Hoppus) per acre in the case of "serotina" to 280 cu. ft. (Hoppus) in the case of "regenerata."

In this region experience shows the benefits to be derived from inter cultivation between poplars in their early years. In one case where one part of a "robusta" stand had been intercultivated and the other not, the Mean Qr. Girth B.Ht. of the trees on the cultivated area was 26% above that of the trees on the uncultivated area, after thirteen years of growth.

*Middle Valley of the Garonne.*

In this region the itinerary included the towns of Moissac, Malause, Montech and Bourret.

At the box-factory of the Societe des Emballages de Moissac, which was visited, some 10,000 tons of poplar are used annually in the manufacture of fruit and vegetable baskets and boxes. Of the total production some 80% is exported to North Africa. This factory was said to be representative of a large number of similar ones owing their existence to the poplar groves of the Garonne Valley.



*The Regional Populetum.*

Close to Bourret—the 12 acre Regional Populetum of the Garonne Valley was visited. It is on a site with an alluvial soil with a p.H. which ranges from 7.9 to 8.9 and a water table which varies from  $3\frac{1}{2}$  to 10 ft. In this populetum some twelve clones are being grown for comparative purposes and the benefits of inter-cultivation are also being investigated. Though the populetum was established as recently as 1954 the Italian Clone "I. 214" already gives promise of being the most adaptable as to site, and the most vigorous of the trees planted. The benefits of inter-cultivation are also becoming apparent in the populetum.

*The Lower Valley of the Rhone.*

En route from Toulouse a stop was made at Nimes, a city of great antiquity which is often and rightly referred to as the 'Rome of France'. There in the bright and warm April sunshine, comparable to that of an Irish June, some time was spent viewing buildings and other great structures dating back to Roman times. Of these the excellently preserved 'Coliseum'—still occasionally used for bull-fighting displays—and the famous aqueduct known as the Pont du Gard, built by Agrippa about 19 B.C., will best be remembered.

By contrast the next stage of the route led close by the towering steeple of the atomic development centre at Marcoules. On reaching that great commercial artery, the River Rhône, the party crossed from Port L'Ardoise to the island of La Piboulette and examined some characteristic natural stands of White Poplar there. An explanation of the treatment of these dense stands was given and as an indication of the growth of this tree—*P. alba* L. var. *nivea*—a 22 year old stand stated to have a Mean Annual Increment of 166 cu. ft. (Hoppus) per acre was visited. Leaving La Piboulette the party travelled down-stream by boat to historic Avignon. There, in bright sunshine but with the local 'mistral' wind blowing freshly, after brief visits to the Chateauneuf-du-Pape—the one time home of the Papal exiles—and to the famous Pont d'Avignon the party boarded the 'mistral' express bound for Paris.

*The Middle Valley of the Loire.*

In the course of a day excursion from Paris the National Populetum of Vineuil situated south of the Loire near Blois and the Experimental Centre of the Pre-au-Chast in the Chambord demesne were visited.

The Populetum which was established in 1949 is on a soil of silty to clayey texture with a p.H. of 6.6—6.0 and a mean ground water level which ranges from 3-7 ft. over the area. The Populetum is sub-divided into (i) a  $13\frac{1}{2}$  acre collection arboretum; (ii) a  $10\frac{1}{2}$  acre forest arboretum; and (iii) a  $2\frac{1}{2}$  acre nursery. The collection arboretum contains some 900 poplars sub-divided according to the various sections—

*Airgeiros*, *Leuce* etc. This collection is used in the study of all the various clones available in France or introduced as being of interest. It is also used as a centre from which material of newly introduced trees is distributed throughout the country.

#### *The Forest Arboretum.*

This serves as the Regional Populetum of the Loire Valley. It contains 800 trees belonging to ten different clones. They are grown for comparative purposes and in the form of small stands. Though it is as yet rather early to come to final conclusions, the Italian tree, "I. 214", is already showing a noticeable superiority over the other clones.

#### *The Nursery.*

This includes a half acre stool-bed with some 2,000 stools set at 20 × 40 inch spacing. In the sixth year of its growth the bed yielded from 50-60,000 poplar cuttings which were distributed to the French Forest Service and to commercial nurseries throughout France.

#### *The Experimental Plantation of Pre-au-Chast.*

Intended as an extension to the National Populetum this 11½ acre plantation was established in 1955 on acid soil which varies from a gleyed sand with a pH. of 4.9-5.4 to a moderately deep peat of a 6.3 (approx.) reaction. Though here again it is rather soon to draw conclusions the indications are that success will be very limited—especially on the peat.

#### *Normandy.*

At the Leroy factory of Saint Pierre-Sur-Dives in the Department of Calvados some further evidence of the industrial potential of poplar was seen displayed. There, where some half a million boxes for the famous Camembert cheese are produced daily, the annual consumption of poplar is 20,000 tons and the number of persons employed is 500 (approx.). In order to ensure continuity of supply of poplar the factory owners, some years ago, launched a campaign to encourage poplar growing. They did so by reclaiming and planting 100 acres of local marsh-lands. Later they were joined by other land-owners in a co-operative effort and to date some 600 acres have been planted. The trees used are "robusta" and "serotina du poitou". The Italian clones "I. 214", "I. 455", "I. 92/40" and "I. 154" are being tested as possible trees for future plantings. In this locality where the rainfall is 31 inches *per annum* (a high figure for most of France) the water table is relatively stable and in the areas where the poplars are being grown, it is generally high. It has become a practice, therefore, to plant all poplars as unrooted sets—the idea being that it is best to leave it to the



Part of a 10 year old crop of *P. x euramericana* cv. "robusta" growing near Argences, Normandy. The soil has a pH. of 7.9 and an organic content of 22%. In 1956 the Mean Qr. Girth (B. Ht.) of the crop was 6.8" and the Mean Breast Ht. increment for that year was  $\frac{3}{4}$  inches Qr. Girth.

tree to select the optimum rooting level in such soil conditions. While some excellent stands of "robusta" were seen in this area the inadvisability of extending poplar planting to improperly drained, stagnant soils was also demonstrated.

#### *The Paris Basin.*

In the Valley of the Oise where the annual rainfall is 23 inches (approx.) some 300 acres of marsh and meadow lands have been rented for poplar growing by the national match and tobacco concern—the SEITA. The trees used are "robusta", "serotina du poitou", "serotina de champagne", "I. 214" and *P. deltoides* cv. "virginiana de Frignicourt". The planting spacing adopted is 23 × 23 ft. except in the case of "virginiana de Frignicourt" which is set at a 26 ft. spacing. In this area "serotina du poitou" has been found more tolerant of a high water table than the other trees.

#### *The SEITA Match Factory.*

This plant which is situated at Saintines consumes some 14,000 tons of poplar annually and gives employment to 350 people. It produces one-third of French match requirements and one-fifth of its match splint requirements.

In addition to growing poplars and making matches the SEITA organisation conducts research into several aspects of poplar, including identification, growth rhythm studies, *Dothichiza* investigation, etc.

Close to the town of Noyon in the Valley of the Verse the SEITA has established an experimental plantation of poplars where intensive study is being given to the problem of disease arising through *Dothichiza populea*, *Cytospora chrysosperma* and the *Fusarium* fungi.

#### *The Valley of the Marne.*

In this area one of the chief centres of interest was the poplar plantations owned by the Societe des Eaux Vannes, established since 1929 on a poor chalk soil which has been irrigated by the waste waters of Rheims. The trees grown are "regenerata" and "robusta". Yields generally may be gauged from that of a 25 year old "robusta" stand which had a mean annual increment of 162 cu. ft. per acre. The price being paid for poplar in this area is approximately 4/- per cu. ft. (Hoppus) standing.

At the saw-mill of Vitry-le-Francois near Châlons-sur-Marne the breaking down of poplar to boards and planking for general use and also the manufacture of block-board from poplar were seen.

*Valley of the Seine.*

At the plantations of the Administration des Eaux et Forêts, near Troyes on an alluvial clay of 7.9-8.4 p.H. and with summer water table of two-and-a-half feet, crops of "serotina de champagne", "regenerata Ourcq", "regenerata Yonne" and "robusta", twenty-three years of age, showed mean breast height quarter girths of 9, 9.9, 10.6 and 10.7 inches respectively.

At these plantations a demonstration of high pruning of poplars was given. The saw was the light-weight "Erve" saw manufactured at Nancy and found to be the best of its type for this purpose. The ladder was one especially designed for the purpose by the technicians at the Ecole Forestière at Nancy. The combined use of the saw and ladder made the pruning of the tallest trees a rapid and apparently easy matter.

Following a visit to the recently established Populetum of Sainte Benoist near the village of Courmononcle, where the effect of various planting distances are being tested, the party travelled to Romilly-sur-Seine where on a gleyed soil of 7.9-8.1 p.H. and with a mean water table at 3 to  $3\frac{1}{2}$  ft., interesting stands of "serotina de champagne" were visited. These crops which ranged from 17 to 19 years of age showed mean annual increments ranging from 112 cu. ft. to 146 cu. ft. (Hoppus) per acre. In this case the presence of roots of old coppice in the gleyed soil was said to have proved helpful to the poplar crop by opening an otherwise compact soil ensuring an adequate supply of needed oxygen to the tree roots.

Leaving these impressive "teen-age" stands of poplar, the party returned by road to Paris. There at the Palais d'Orsay the members took leave of the many friends with whom they had renewed acquaintance or whom they had come to know during the course of the Congress and tours. Each went his way with a feeling of gratitude to the members of the French National Poplar Commission through whose efforts the visit proved so memorable an occasion and so very fruitful as a source of new knowledge of poplars, their production, their cultivation and their use.